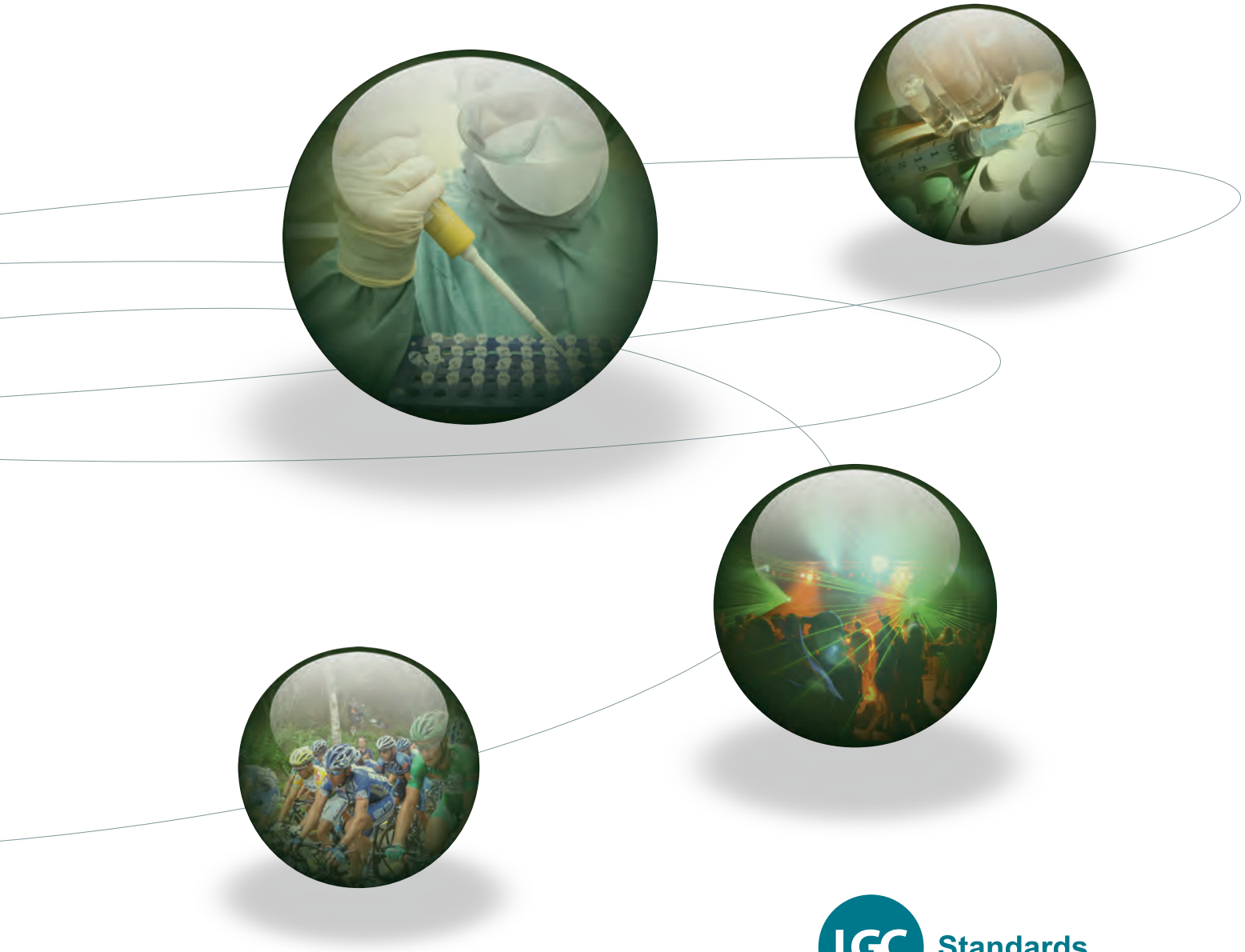
Reference materials for clinical, forensic and sports drugs applications 2011/2012



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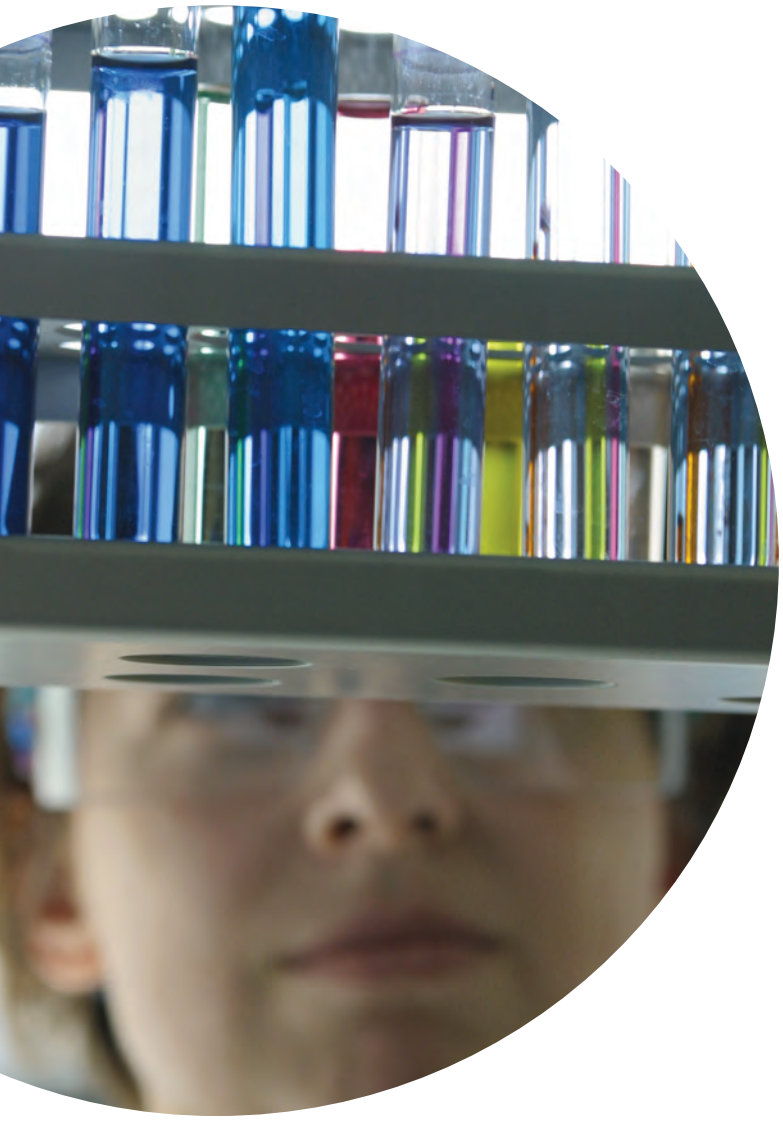

Introduction

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Dear Colleague and Researcher,

welcome to the new 2011/12 LGC Standards catalogue for “Reference materials for clinical, forensic and sports drugs applications”.

First of all, thank you to all our existing and welcome to all new customers. This paper catalogue is an extract of the full portfolio of materials offered by LGC Standards. It is primarily targeted at laboratories and scientists working in the fields of clinical, forensic and sports drugs testing, but also has relevance to many other laboratory processes. This paper copy provides a summary of materials available at the time of printing (August 2011).

Since the last edition of this catalogue, LGC Standards has continued to expand the range of materials and products available to end users. This new expanded edition includes:

- The New LGCFOR range of solid drugs and metabolites produced by our own laboratories in Luckenwalde, near Berlin
- A growing portfolio of “Legal Highs” or “Research Chemicals” consolidated from suppliers over the world
- An increased range of pure drug materials from Cerilliant, National Measurement Institute of Australia and other reference material producers
- Significant additions to the range of matrix materials calibrators and controls

Our product range is constantly expanding. If you are unable to find the specific drug, metabolite labelled material or matrix-matched substances, please contact your local country representative and we will endeavour to meet your specific needs.

LGC Standards is Europe’s most comprehensive source of reference materials from the world’s leading producers. Our many years’ experience in reference materials and associated analysis enables us to provide high levels of customer service and technical support. This experience, in combination with our network of European offices and relationships with key reference materials suppliers throughout the world allows us to provide you with short delivery times and customer support on the differing requirements for the importation of controlled and uncontrolled reference materials.

Thank you once again for your custom over the last year. We always value feedback on our customer service and look forward to hearing from you.

Regards

Dr Peter Pack
Managing Director, LGC Standards

LGC Standards

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Content

Introduction 7

Availability of products 7
Handling and safety 7
Controlled substances 7
General ordering information 7

Clinical applications 13

Blank matrix materials 13
Coagulation factors 14
Drugs 14
Drugs in serum 14
Electrolytes 15
Electrolytes in serum 15
Enzymes 16
Enzymes in serum 17
Metabolites and substrates 18
Metabolites and substrates in serum 19
Metabolites and substrates in urine 22
Non-electrolyte metals in serum 22
Non-electrolyte metals 22
Non-electrolyte metals in blood 22
Non-electrolyte metals in urine 23
Non-peptide hormones 23
Non-peptide hormones in serum 24
Occupational health and hygiene materials in blood 25
Occupational health and hygiene materials in serum 27
Occupational health and hygiene materials in urine 28
Occupational health and hygiene materials in other matrices 29
Proteins 30
Proteins in blood 31
Proteins in serum 31
Proteins in other matrices 32
Veterinary materials 32
Vitamins and micronutrients 33
Various control materials 34
Blood cell size reference material 37

Forensic applications – Alcohol 41

Primary reference materials 41
Secondary reference materials 42
Working reference materials 43
Alcohol congeners in water 45
Ethanol in serum 46
Alcohol congeners in serum 49
Ethanol in blood 50
Markers for identification of ethanol use 50

Forensic applications – pure materials 53

Powder materials produced by LGC Standards 57

Drugs of abuse and metabolites of forensic interest 82

Drugs of abuse and metabolites 82
Explosives 162

Phytos 168

Antifungal drugs 174

Antiviral drugs 175

Molecular biology products 176

Forensic applications - drugs in blood, hair, serum, urine 181

Anticonvulsant drugs 181
Antidepressiva 181
Antiepileptics 182
Barbiturates in serum 182
Benzodiazepines 182
Benzoylecgonine 183
Buprenorphines 184
Cannabinoids 184
CDT 184
Cotinine 185
Meperidine 185
Metabolites and substrates in urine 185
Neuroleptics 185
Opiates 186
Drugs used in opiate substitution therapies 187
Therapeutic drug monitoring 188
Tricyclic antidepressants 189
Various drugs of abuse 190

Sports drugs and steroids 198

Ordering of certified reference materials for sports drugs analysis 198
Anabolic steroid reference materials 198
1-Androstendione 198
Aromatase inhibitors 198
Selective estrogen receptor modulators (SERMs) 198
Bolasterone metabolites 198
Boldenone and metabolites 198
Calusterone and metabolites 199
Catecholamines 199
Clostebol metabolite 199
Danazol metabolite 199
Drostanolone metabolites 199
Endogenous steroids 199
Estrogen antagonist 200
Finasteride metabolite 200
Fluoxymesterone and metabolites 200
Formebolone metabolite 200
Furazabol metabolite 200
Growth promotants and metabolites 200
Aromatase inhibitors 201
Hydroxysteroids 201
Mesterolone metabolites 201
Methenolone and metabolites 202
Methandienone and metabolites 202
Methyldienolone 203
Methyltestosterone and metabolites 203
17alpha-Methyl-1-testosterore 203
Nandrolone and metabolites 203
Norbolethone and metabolites 205
Norethandrolone and metabolites 205
Oral turinabol and metabolites (dehydrochloromethyltestosterone) 205
Oxandrolone metabolite 206
Prohormones and metabolites 206
PDE-5 Inhibitors 206
Selective estrogen receptor modulators (SERMs) 206
Anti-estrogenic substances (others) 206
Stanozolol and metabolites 206
Stimulants 207
Suppressor of estrogen biosynthesis 208
1-Testosterone 208
Tetrahydrogestrinone and precursors 208
Trenbolone metabolite 209
Testosterone and metabolites 209
Others 211
Commercial materials (not certified by NMIA) 212
Steroid matrix reference material 212

WADA funded sports drug testing materials 213

Proficiency testing schemes 217

Introduction

Availability of products

If you are seeking a product which is not listed in this catalogue, please let us know. We will endeavour to trace the material for you and add the product to future catalogues.

Items listed in the catalogue may not always be available at the time of ordering. Should this situation arise, an LGC Standards representative will contact you and, if possible, an alternative product will be suggested. Once a particular batch of a given CRM is sold out, there may be a considerable delay before a replacement is available. The analytical data mentioned with the specific products were exact at the time of print. **Replacement products may differ in analytical profile and analyte value.**

For critical and sensitive analytical procedures, where the use of a reference material is essential and demanded by regulations, customers are recommended to establish the use of two reference materials from different producers.

Handling and safety

The correct handling for the intended use of RMs and CRMs is described in instructions, certificates, reports, and other product accompanying documents. Please note that it is important to ensure sufficient homogeneity if RMs must be reconstituted, e.g. by dissolving lyophilised material, or diluting samples. Furthermore, regard has to be paid to the amounts recommended in the instructions, because a reduction in the sample size might not correspond to the certified quality parameter. During opening of containers any contamination must be strictly avoided. Opened containers must be closed tightly to avoid any influence of humidity and protected from light. It is recommended that unopened containers are stored in the same manner. Some clinical, forensic and toxicological RMs are classified as hazardous. All necessary safety information, including possible risks to health, are described in detail in the certificates of analysis, reports and other accompanying documents. Instructions on how to handle these hazardous RMs or hazardous materials containing RMs, are given in detail in the MSDSs. Any hazardous RMs should only be handled by a specially trained technician or member of staff.

All RMs and CRMs based on human body fluids are tested for infectious diseases as specified in the accompanying documents. However, as no test method can offer complete assurance, all human samples should be handled at bio-safety level 2 conditions.

All reference substances and standards in this catalogue are for laboratory analytical use only and not for use in humans.

Controlled substances

A number of the forensic reference substances described in this catalogue, notably narcotics, tranquillisers, precursors and drugs of abuse, are controlled substances. Anabolic steroids are also considered as controlled substances in certain countries. The purchase, possession and use of controlled substances is subject to national and international regulations designed to limit their abuse. It is the responsibility of the customer to obtain any authorisation necessary to purchase and possess controlled substances, in compliance with the laws of the importing country, before ordering. However, LGC Standards can assist you in completing the necessary procedures and documentation

The complex administration associated with the supply and possession of controlled materials makes it necessary for LGC Standards to ensure all customers requiring controlled substances are aware of all the relevant national requirements, the associated charges and consequential delivery times. Customers wishing to obtain controlled substances should therefore contact their LGC Standards sales office before ordering, and clarify with the sales specialists at LGC Standards the procedure to be followed, and the exact cost.

All orders for controlled substances must be provided in writing and signed by an authorised person and must be accompanied with the original import permit and/or possession permit. Please send the order and all related documents to the LGC Standards sales office that is responsible for your country.

General ordering information

Prices and delivery procedures are shown in the price list that accompanies this catalogue, or are available from your local LGC Standards sales office. For products requiring special delivery procedures (cooled shipping, special licensing, controlled substances, etc.) additional charges apply. Please check with your local LGC Standards sales office for detailed procedures and transport charges where applicable. Unless agreed in advance and in writing, orders are accepted only against LGC Standards' standard terms and conditions of sale. Once delivered to the customer, reference substances are non-returnable. For this reason it is very important for users to be certain that the product ordered meets their needs. LGC Standards' technical staff is available to advice on the use and suitability of a particular product. Customers requiring assistance with the use or application of a particular reference substance should contact their local LGC Standards office, contact details are provided at the beginning of this catalogue.

We constantly add new products to our range, so please contact us to find out about new products and services and to make sure you are automatically kept up to date by subscribing to our free newsletter.

Just send an e-mail to clintoxfor-news@lgcstandards.com

Reference materials for clinical applications

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LGC Standards combines expertise in analytical science, and experience in international standards, to offer laboratories throughout Europe the ideal solution to sourcing high quality certified reference materials.

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CERTIFICATE OF ANALYSIS

ERM® - DA120a

Frozen Human Serum – Trace Metals			
Constituent	Certified value [1,2] (µg/kg)	Uncertainty [3] (µg/kg)	
Copper	1 130	33	(*k*=2.1)
Selenium	64.1	3.0	(*k*=2.2)
Zinc	658	33	(*k*=2.1)

1) The certified values are mass fraction determined using isotope dilution mass spectrometry (IDMS).

2) The certified values are considered traceable to the SI through the use of pure reference materials (see page 3).

3) The quoted uncertainty is the half-width of the expanded uncertainty interval calculated using a coverage factor, *k*, which gives a level of confidence of approximately 95 %.

This certificate is valid for 3 months from the date of shipment provided the sample is stored under the recommended conditions.

The minimum amount of sample to be used is 0.5 g.

NOTE

European Reference Material ERM®-DA120a was produced and certified under the responsibility of LGC according to the principles laid down in the Technical Guidelines of the European Reference Materials® co-operation agreement between BAM-LGC-IRMM. Information on these guidelines is available on the Internet (http://www.erm-crm.org).

Accepted as an ERM®, Teddington, December 2010.

Signed: _____

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Additional Material Data			
Constituent	Concentration [1] (µmol/L)	Uncertainty [2] (µmol/L)	
Copper	18.18	0.53	(*k*=2.1)
Selenium	0.830	0.038	(*k*=2.2)
Zinc	10.30	0.52	(*k*=2.1)

1) The concentration and uncertainty have been calculated using the density of serum: 1.0226 kg/L, expanded uncertainty (*k* = 2): 0.0203 kg/L measured at LGC and molar masses of 63.546 g/mol, 78.96 g/mol and 65.38 g/mol for copper, selenium and zinc respectively (G. Audi and A.H. Wapstra, The 1993 atomic mass evaluation, Nucl Phys A565 (1993) 1-65.).

2) The quoted uncertainty is the half-width of the expanded uncertainty interval calculated using a coverage factor, *k*, which gives a level of confidence of approximately 95 %.

DESCRIPTION OF THE SAMPLE

Human serum from a single donor was prepared from blood obtained at the Royal Surrey County Hospital (Guildford, UK). Five donations were taken, with a minimum of 13 weeks between each donation. The blood was allowed to clot at room temperature, centrifuged, and the serum pipetted into an acid washed container which was then stored frozen at -70 °C ± 10 °C. Each batch of serum collected was added directly into the same bottle. The 'clean' serum was mixed thoroughly and then 1.1 mL dispensed into 2 mL plastic screw-cap Nalgene® cryovials (Jencons, Leighton Buzzard, UK).

Approximately 1000 units of the candidate reference material were produced, which were stored at -70 °C ± 10 °C.

INTENDED USE

This reference material is intended for use in the validation of new and existing methods, and monitoring the performance of methods, commonly used in clinical laboratories to determine the important trace elements copper, selenium and zinc in human serum samples. It can also be used in the training and evaluation of staff.

The material is clinically relevant since it closely matches the lower level of the normal range for serum selenium in the population.

ANALYTICAL METHOD USED FOR CERTIFICATION

The analysis was carried out using an Agilent 7500ce ICP-MS operating in gas mode. Helium was the cell gas for the copper and zinc isotopes; hydrogen was the cell gas for the selenium isotopes. Each analysis comprised 10 x 100 replicate ratio measurements of the $^{63}Cu/^{65}Cu$, $^{66}Zn/^{67}Zn$ and $^{78}Se/^{77}Se$ ratio.

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Agilent 7500ce ICP-MS Parameters

RF Power (W)	1520
Carrier Gas (L/min)	0.88
Make-up Gas (L/min)	0.25
Sampling Depth (mm)	7.5
Nebuliser	Quartz micromist
Spray Chamber	Quartz Scott-type cooled to 2 ºC
Cell Gas He (mL/min)	4.4
Cell Gas H_2 (mL/min)	4.4

Primary calibration materials were purchased from NIST: SRM 3114 (Copper - lot number 011017), SRM 3168a (Zinc - lot number 080123) and SRM 3149 (Selenium - lot number 992106).

^{77}Se and ^{65}Cu enriched isotope spikes were obtained as metal from AEA Technology plc (Harwell, Didcot, Oxfordshire, UK), and dissolved in nitric acid (HNO_3). A ^{67}Zn spike was obtained as a metal from Oak Ridge National Laboratory (Oak Ridge, Tennessee, USA) and dissolved in HNO_3. The concentration of copper, selenium and zinc in the spikes were determined by reverse isotope dilution using the primary standard as calibrant.

Human Serum Certified Reference Material BCR 637 was used as a matrix quality check for selenium and zinc. Seronorm Level I was used as a matrix quality check for copper. Single element standard solutions were used as a calibration check: selenium and zinc from Ultra Scientific (Kingstown, RI, USA), copper from Romil (Cambridge, UK).

Ten vials of the material were defrosted and equilibrated to room temperature. Each vial was analysed in duplicate, 0.3 g of a mixed spike (^{77}Se, ^{65}Cu, ^{67}Zn) was added to 0.5 g of serum and diluted to 10 g with 1 % HNO_3.

CONFIRMATORY DATA

The Royal Surrey County Hospital organises a proficiency testing scheme, the Trace Element Quality Assurance Scheme (TEQAS) in which over 100 laboratories participate. Serum ERM®-DA120a was used for one round of the TEQAS scheme for the determination of copper, selenium and zinc, in which 50 laboratories participated. The results are shown in the table below.

TEQAS results

Constituent	Number of results	Assigned value		Standard deviation	
		µmol/L	µg/kg	µmol/L	µg/kg
Copper	47	17.6	1096	1.5	93
Selenium	33	0.794	61.3	0.076	5.9
Zinc	46	9.9	632	2.0	128

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HOMOGENEITY

The material was tested for homogeneity by analysing randomly selected 0.5 g samples for copper, selenium and zinc using the method detailed above. The material was judged to be homogeneous as the variation between the samples tested was not significantly greater than the method variation.

STABILITY

The nature of the material is such that deterioration is not anticipated over the life of the material stored under the recommended conditions.

ANALYTICAL METHOD USED FOR THE DETERMINATION OF DENSITY

The density of the serum was determined in order to calculate the concentration on a unit/volume basis. Water and 10 serum vials were placed in a water bath at (20 ± 0.02) °C for 2 hours. An Eppendorf Multipipette was calibrated, using high purity water and a calibrated balance, to dispense 0.5 mL. The weight of 0.5 mL of serum was determined by dispensing 0.5 mL portions into a pre-weighed empty container. This process was repeated 10 times for water and 10 times for the serum (each from a different serum vial).

PARTICIPANTS

The Royal Surrey County Hospital collaborated with LGC in the production and characterisation of this material, through their proficiency testing scheme, the Trace Elements Quality Assurance Scheme (TEQAS). This collaboration included the preparation of materials and the provision of confirmatory data.

SAFETY INFORMATION

The material is of human origin and should be handled with adequate care. The material was tested for HIV ab, Hep B Surface Ag and Hep C. All were found to be negative.

For further details refer to the safety data sheet.

INSTRUCTIONS FOR USE

Prior to use, the material should be thoroughly thawed by equilibration at room temperature for at least 2 hours, and mixed by inverting the vial several times. LGC has no data on the effect of further freezing and thawing of the material before use, and therefore it is recommended that, after opening, the material is stored at refrigerator temperature (5 ± 4 °C), and used within 1 month.

STORAGE

The material should be stored at (-20 ± 5) °C in the original closed vial until it is first opened.

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Unit Number:	Shipment Date:

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Production of this reference material and certificate was funded by the UK National Measurement System.

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Clinical applications

Blank matrix materials

Code	Product	Unit
ME 40161	**Human whole blood control** Native human lyophilised whole blood control (Medidrug Basis-line VB) can be used for base line determination in different applications, as negative control or as dilution medium of concentrated blood from patients.	10 x 2.5 mL
ME 40151	**Human serum control** Native human lyophilised serum control (Medidrug Basis-line S) can be used for base line determination in different applications, as negative control or as dilution medium of concentrated serum from patients.	10 x 2.5 mL
DTI-600-1	**OraFlx negative - synthetic saliva** A synthetic, non-biological, homogeneous saliva that can be used as negative control or as dilution medium of concentrated samples. Formulated to avoid issues with ion interference, foam and infection risk.	1 L
DTI-600-2	**OraFlx negative - synthetic saliva** A synthetic, non-biological, homogeneous saliva that can be used as negative control or as dilution medium of concentrated samples. Formulated to avoid issues with ion interference, foam and infection risk.	10 mL
AC-UR15.025.005.001	**Blank control, urine** Analytes — Matrix verification* Amphetamine x; d-Methamphetamine x; MDMA 3,4-Methylenedioxymethamphetamine x; MDA 3,4-Methylenedioxyamphetamine x; MD(E)A 3,4-Methylenedioxyethylamphetamine x; Cocaine x; Benzoylecgonine x; Ecgoninemethyl ester x; Morphine x; Codeine x; Dihydrocodeine x; 6-MAM 6-Monoacetylmorphine x; 7-Aminoflunitrazepam x; Flunitrazepam x; Clonazepam x Diazepam x; Bromazepam x; Nordiazepam x; Oxazepam x; Temazepam x; Midazolam x; Lorazepam x; THC Δ9-Tetrahydrocannabinol -; 11-OH-THC 11-OH-Δ9-Tetrahydrocannabinol -; THC-COOH 11-nor-Δ9-THC carbonic acid x; Buprenorphine x; Norbuprenorphine x; Methadone x; EDDP 2-ethylidene-1,5-dimethyl-3,3-diphenyl-pyrrolidine. x; Creatinine x	10 x 5 mL
ME 40201	**Human urine control** Native human lyophilised urine control (Medidrug Basis-line U) can be used for base line determination in different applications, as negative control or as dilution medium of concentrated urine from patients.	9 x 5 mL
CER-720-1	**Synthetic urine** (Surine TM - negative urine control)	1 L
CER-720-2	**Synthetic urine** (Surine TM - negative urine control)	50 mL
CER-720-3	**Synthetic urine** (Surine TM - negative urine control)	5 mL
DTI-710	**Surine E - synthetic urine for trace metals** A synthetic, non-biological, homogeneous urine specifically designed for trace metals analysis at low concentrations. Formulated to avoid issues with odor, foam and disposal issues associated with human urine.	1 L
DTI-766	**Surine negative for blind quality controls** A synthetic, non-biological, homogeneous urine specifically designed for use as a blind negative quality control urine specimen. Formulated to avoid issues with ion interference, foam and odor.	60 mL
AC-SE015.025.010.001	**Blank control, serum** This material consists of pooled, blank, lyophilized serum and is intended for use as a negative control for laboratories. It is suitable for use as a matrix blank quality control material Analytes — matrix verification Amphetamine x; d-Methamphetamine x; MDMA 3,4-Methylenedioxymethamphetamine x; MDA 3,4-Methylenedioxyamphetamine x; MD(E)A 3,4-Methylenedioxyethylamphetamine x; Cocaine x; Benzoylecgonine x; Ecgoninemethyl ester x; Morphine x; Codeine x; Dihydrocodeine x; 6-MAM 6-Monoacetylmorphine x; 7-Aminoflunitrazepam x; Flunitrazepam x; Clonazepam x Diazepam x; Bromazepam x; Nordiazepam x; Oxazepam x; Temazepam x; Midazolam x; Lorazepam x; THC Δ^{9}-Tetrahydrocannabinol x; 11-OH-THC 11-OH-Δ^{9}-Tetrahydrocannabinol x; THC-COOH 11-nor-Δ^{9}-THC carbonic acid x; Buprenorphine x; Norbuprenorphine x; Methadone x; EDDP 2-ethylidene-1,5-dimethyl-3,3-diphenyl-pyrrolidine. x; Creatinine -	10 x 2.5 mL

Clinical applications

Code	Product	Unit
AC-WH015.025.015.001	Blank control, whole blood Blancheck consists of blank lyophilized human whole blood and is intended for use as a negative control for laboratories. It is suitable for use as a matrix blank quality control material.	10 x 2.5 mL

Analytes	matrix verification	Analytes	matrix verification
Amphetamine	x	Diazepam	x
d-Methamphetamine	x	Bromazepam	x
MDMA 3,4-Methylenedioxymethamphetamine	x	Nordiazepam	x
MDA 3,4-Methylenedioxyamphetamine	x	Oxazepam	x
MD(E)A 3,4-Methylenedioxyethylamphetamine	x	Temazepam	x
Cocaine	x	Midazolam	x
Benzoylecgonine	x	Lorazepam	x
Ecgoninemethyl ester	x	THC Δ^{9}-Tetrahydrocannabinol	x
Morphine	x	11-OH-THC 11-OH-Δ^{9}-Tetrahydrocannabinol	x
Codeine	x	THC-COOH 11-nor-Δ^{9}-THC carbonic acid	x
Dihydrocodeine	x	Buprenorphine	x
6-MAM 6-Monoacetylmorphine	x	Norbuprenorphine	x
7-Aminoflunitrazepam	x	Methadone	x
Flunitrazepam	x	EDDP 2-ethylidene-1,5-dimethyl-3,3-diphenyl-pyrrolidine	x
Clonazepam	x	Creatinin4	-

Coagulation factors

ERM-AD148	Thromboplastin, bovine (OBT/79) The sample is the lyophilised form of an 2.2 g aliquot of bovine brain thromboplastin combined and is intended for prothrombin time determination on blood plasma. It is kept under vacuum in sealed glass ampoules. Parameters of the calibration line Prothrombin time slope ..... 1.011 ± 0.015 Prothrombin time intercept ..... - 0.321 ± 0.025	Amp.
ERM-AD149	Thromboplastin, rabbit The sample is the lyophilised form of an 0.5 mL aliquot of the extract of rabbit brain tissue, without calcium ion added and it is intended for the determination of the prothrombin time in human blood plasma in accordance with the described methodology. It is kept under nitrogen in sealed glass ampoules. Parameters of the regression line Prothrombin time slope ..... 1.257 ± 0.013 Prothrombin time intercept ..... - 0.242 ± 0.019	Amp.

Drugs

ERM-AC200	Digoxin This is a pure material, intended for use in the validation, calibration and monitoring of measurement procedures for digoxin. Analysis of Digoxin is, e.g. done by medical laboratories to alleviate some of the symptoms of heart failure and to help control heart rate and abnormal heart rhythms. The material was characterised using high performance liquid chromatography with UV detection (HPLC-UV), and its structural identity confirmed using nuclear magnetic resonance spectroscopy (NMR). Certified value (mass fraction) ..... 98.0 ± 0.5 %	vial
ERM-AC803	Theophylline This is a pure material intended for use in the validation of new methods, and in monitoring the performance of methods commonly used in medical laboratories to determine the level of theophylline in patient samples. Theophylline is a bronchodilator used as a treatment for respiratory diseases such as asthma and chronic obstructive pulmonary disease (COPD). The material was characterised by high performance liquid chromatography with UV detection (HPLC-UV) and its identity was confirmed by gas chromatography – mass spectrometry (GC-MS). Certified value % mass fraction: ..... 99.95 + 0.05% to - 0.08%	500 mg

Drugs in serum

NIST-1599	Anticonvulsant drug level assay standard This material is certified for mass concentrations of two anticonvulsant drugs (valproic acid and carbamazepine) in processed human serum base. It is intended for use in the calibration and standardisation of procedures employed in clinical laboratories for the determination of these drugs in serum. It can also be used for critical evaluation of working or secondary reference solutions prepared either in-house or supplied commercially. This material is supplied as a set of four different freeze-dried preparations, three different mass concentrations and a blank.	4 x 5 mL

Analytes	low	medium	high
Valproic acid	14.5 ± 0.3	69.1 ± 4.2	142.5 ± 4.1 µg/mL
Carbamazepine	2.8 ± 0.4	8.8 ± 0.3	19.4 ± 0.9 µg/mL

Code	Product	Unit
NIST-900	Antiepilepsy drug level assay standard This material is certified for mass concentrations of four antiepilepsy drugs (phenytoin, ethosuximide, phenobarbital and primidone) in a processed human serum base. It is intended for use in the calibration and standardisation of procedures employed in clinical laboratories for the determination of these drugs in serum, and for the critical evaluation of working or secondary reference solutions prepared either in-house or supplied commercially. One set contains four bottles with freeze-dried human serum, including a blank (0 µg / mL) and three different concentration levels. Analytes — toxic µg/mL — therapeutic µg/mL — sub-therapeutic µg/mL Phenytonin ..... 60.7 ± 0.9 ..... 16.7 ± 0.3 ..... 4.2 ± 0.1 Ethosuximide ..... 174.7 ± 0.6 ..... 75.9 ± 0.5 ..... 11.8 ± 0.4 Phenobarbital ..... 103.6 ± 0.3 ..... 21.6 ± 0.2 ..... 5.3 ± 0.2 Primidone ..... 18.6 ± 0.7 ..... 8.1± 0.2 ..... 3.6 ± 0.1 Currently not available	4 x 5 mL
ERM-DA200	Digoxin in human serum These reference materials are intended for use in the validation of new methods, and monitoring the performance of methods commonly used in clinical laboratories to determine the digoxin content of human serum samples. They can also be used in the training and evaluation of staff. They are clinically relevant since they closely match the upper and lower decision levels for digoxin monitoring. Digoxin is used clinically in the treatment of heart problems, and has a very narrow range for therapeutic efficacy. The materials are being certified using isotope-dilution liquid chromatography-tandem mass spectrometry (ID-LC/MS-MS). The method uses exact matching isotope dilution LC-MS, in which the serum is spiked with d3-digoxin and then extracted with tert-butyl methyl ether. Liquid chromatography is conducted using a C18 column and a mobile phase of ethanol / water + 0.1% formic acid. An electrospray interface is utilised and is operated in positive ion mode.	vial

Electrolytes

NIST-915b	Calcium carbonate, clinical This material is intended for use as an analytical standard of known purity. It is intended primarily for use in the calibration and standardization of procedures for calcium (Ca) determinations employed in clinical analysis and for routine critical evaluation of the daily working standards used in these procedures. The certified values for this material are expressed as % mass fractions. Certified value $CaCO_3$ ..... 99.907 ± 0.021 % Ca ..... 40.0104 ± 0.0083 % CO_3 ..... 59.923 ± 0.012 %	20 g
NIST-924A	Lithium carbonate (clinical) This material is intended primarily for use in the calibrations and standardisation of procedures. It is supplied in crystalline form. Certified purity (mass fraction) ..... 99.867 ± 0.017 %	30 g
NIST-929a	Magnesium gluconate dihydrate This material is intended for use as an assay standard for magnesium. The material is highly purified magnesium gluconate dihydrate [$Mg(C_6H_{11}O_7)_2 \cdot 2H_2O$] Certified value (mass fraction) Magnesium ..... 5.362 ± 0.027 %	5 g
NIST-918B	Potassium chloride This material is intended for use as an analytical standard of known purity. It is intended primarily for use in the calibration and standardization of procedures for potassium (K) and chloride (Cl) determinations employed in clinical analysis and for routine critical evaluation of the daily working standards used in these procedures. The certified values for this material are expressed as % mass fractions Certified value KCl ..... 99.927 ± 0.014 % K ..... 52.4121 ± 0.0086 % Cl ..... 47.5284 ± 0.0049 %	30 g
NIST-919B	Sodium chloride This material is intended for the production of saline solutions of accurately known concentration and the calibration of instrumentation and standardization of procedures used in the determination of sodium and chloride ions in clinical analysis. A unit consists of a single glass bottle containing 30 g of the material. The certified values are expressed as % mass fractions. Certified value NaCl ..... 99.835 ± 0.020 % Cl ..... 60.564 ± 0.014 % Na ..... 39.2747 ± 0.0075 %	30 g

Electrolytes in serum

BCR-304	Calcium (II), Magnesium (II) and Lithium (I) in human serum Each sample is in lyophilised form equivalent to about 5.3 mL of human serum kept under vacuum in rubber stoppered vials. Amount-of-substance concentration in the reconstituted material Analytes Ca ..... 2.201 ± 0.019 mmol/L Mg ..... 1.85 ± 0.03 mmol/L Li ..... 0.985 ± 0.029 mmol/L	vial

Clinical applications

Code	Product	Unit
NIST-956C	Electrolytes in frozen human serum This material is primarily intended for use in the calibration and validation of procedures and methods employed in clinical analysis for the determination of electrolytes in either diluted or undiluted human serum or plasma. It can be used for calibrating direct-reading ion-selective electrode analyzers [1] and for validating secondary reference materials. A unit consists of six sealed ampoules of frozen human serum, two ampoules each of three different concentration levels. Each ampoule contains approximately 2.0 mL of human serum. Certified values for elements at three levels.	set (6)

Analytes	level 1	level 2	level 3	
Ca	2.981 ± 0.022	2.538 ± 0.016	2.095 ± 0.013	mmol/L
Cl	104.9 ± 3.2	121.5 ± 2.5	137.4 ± 1.8	mmol/L
Li	1.606 ± 0.024	1.068 ± 0.016	0.457 ± 0.007	mmol/L
Mg	1.247 ± 0.013	0.857 ± 0.010	0.470 ± 0.005	mmol/L
K	5.976 ± 0.051	3.977 ± 0.034	1.982± 0.017	mmol/L
Na	118.8 ± 1.0	137.5 ± 1.6	157.4 ± 1.4	mmol/L

Code	Product	Unit
NIST-909C	Human serum This material is intended primarily for use in validating analytical methods for the determination of specified constituents in human serum. This SRM can also be used for quality assurance when assigning values to in-house control materials. A unit consists of three bottles, each containing 2 mL.	6 x 10 mL

Analytes	value mmol/L	value mg/dL
Cholesterol	3.703 ± 0 081	143.2 ± 3.1
Creatinine	0.07289 ± 0.00161	0.8245 ± 0.0182
Glucose	5.050 ± 0 059	90.98 ± 1.07
Total glycerides	1.214 ± 0.017	107.5 ± 1.5 (b)
Urea	4.321 ± 0.089	25.95 ± 0.53
Uric acid	0.278 ± 0.006	4.68 ± 0.10

Analyte	µmol/L	ng/mL
Selenium	1.503 ± 0.035	118.7 ± 3.3

(b) Results in mg/dL are expressed as the equivalent concentration of triolein

This product is not a direct replacement for NIST-909B

Code	Product	Unit
HEC JCCRM111	Sodium, potassium and chloride in frozen human serum This material is primarily intended for evaluating the accuracy of serum (plasma) Na, K and Cl measurements with (direct and indirect) ion selective electrodes (ISE) in clinical laboratory tests. It can also be used to assess the accuracy of serum Na, K measurements by flame spectrometry and serum Cl measurements by routine coulometric titration. A unit of the material consists of 3 vials, each containing 1,5 ml serum at different levels of the components. Certified values (amount of substance concentration) in mmol/l.	set (3)

Certified concentrations and uncertainties

	Na	K	Cl	
High level JCCRM 111-6H	157.2 ± 0.4	5.662 ± 0.018	120.8 ± 0.4	mmol/L
Medium level JCCRM 111-6M	141.3 ± 0.4	4.473 ± 0.017	106.4 ± 0.3	mmol/L
Low level JCCRM 111-6L	123.9 ± 0.3	3.246 ± 0.010	89.8 ± 0.2	mmol/L

Enzymes

Code	Product	Unit
BCR-647	Adenosine deaminase (ADA 1), human The intended use of the material is to validate, to calibrate or to assess the performance of adenosine deaminase catalytic concentration measurement procedures. The user must confirm that the transfer procedure is satisfactory. Each sample is in lyophilised form and equivalent to about 1 mL of solution of purified adenosine deaminase (ADA 1) from human erythrocytes. The preparation has been stabilised by incorporation in a matrix of 50 mmol/L Tris/HCl buffer pH = 7.4 and human serum albumin 30 g/L. No contamination, as assessed by measurement of their catalytic activity, has been detected for the following enzymes : acid phosphatase, acetylcholinesterase, glutamate dehydrogenase, glucose-6-phosphate dehydrogenase and adenosine deaminase isoenzyme 2. L-lactate dehydrogenase, alanine aminotransferase and aspartate aminotransferase were found in trace amounts 0.39 %, 0.01 % and 0.09 %, respectively (% of total adenosine deaminase catalytic activity). Catalytic concentration ..... 2.55 ± 0.09 µkat/L	1 mL
ERM-AD454	Alanine aminotransferase Each sample is in lyophilised form and equivalent to about 1 mL of a solution of purified alanine aminotransferase from pig heart. The material is kept under dry nitrogen in sealed glass ampoules. Catalytic concentration of alanine aminotransferase in reconstituted material as determined by the IFCC method at 37 °C Analyte Alanine aminotransferase ..... 186 ± 4 U/L ..... 3.09 ± 0.07 µkat/L	Amp.
IRMM/IFCC 456	alpha-Amylase Each sample is in lyophilised form and equivalent to about 1 mL of a solution of a partially purified human pancreatic α-amylase. The material is kept under nitrogen gas in sealed glass ampoules. Catalytic concentration of α-amylase in reconstituted material as determined by the IFCC method at 37 °C Analyte α-Amylase..... 546 ± 19 U/L ..... 9.1± 0.3 µkat/L	Amp.

Code	Product	Unit
ERM-AD457/IFCC	Aspartate transaminase (AST) This material is primarily intended to be used to control the performance of the IFCC reference procedure for the determination of AST at 37 °C. The material is a lyophilised powder from 1.0 mL of recombinant AST from E. coli in a pH 7.5 buffer, supplied in a glass vial. The certified values were assigned using the IFCC reference procedure for the measurement of catalytic activity concentrations of enzymes at 37 °C. When the material is used as a calibrant in a particular measurement procedure the commutability should be verified for the assay concerned. AST .....104.6 ± 2.7 U/l ..... 1.74 ± 0.05 µkat/l	vial
BCR-299	Creatine kinase (CK-BB Isoenzyme) from human placenta Catalytic concentration (IFCC recommended method) of creatine kinase in reconstituted material U/l..... 325 ± 10 µkat/l ..... 5.42 ± 0.17 Each sample is in lyophilised form and equivalent to about 1 mL of solution of partially purified creatine kinase (CK-BB) from human placenta. The preparation has been stabilised by incorporation in a matrix of bovine serum albumin. The material is kept under nitrogen gas in rubber stoppered vials.	Amp.
ERM-AD455	Creatine kinase (CK-MB Isoenzyme) Each sample is in lyophilised form and equivalent to about 1 mL of a solution of purified creatine kinase from human heart. Material is kept under dry nitrogen gas in sealed glass ampoules. Catalytic concentration of creatine kinase-2 (CK-MB) in reconstituted material as determined by the IFCC method at 37 °C Analyte Creatine kinase-2 (CK-MB) .....101± 4 U/L ..... 1.68 ± 0.07 µkat/L	vial
ERM-AD452	gamma-Glutamyltransferase Each sample is in lyophilised form and equivalent to about 1 mL of a solution of a partially purified pig kidney γ-glutamyltransferase. The material is kept under nitrogen gas in sealed glass ampoules. Catalytic concentration of γ-glutamyltransferase in reconstituted material as determined by the IFCC method at 37 °C. Analyte γ-Glutamyltransferase..... 114.1 ± 2.4 U/L ..... 1.90 ± 0.04 µkat/L	Amp.
ERM-AD453	Lactate dehydrogenase isoenzyme 1 Each sample is in lyophilised form and equivalent to about 1 mL of a solution of purified lactate dehydrogenase from human erythrocytes. The material is kept under dry nitrogen in sealed glass ampoules. Catalytic concentration of lactate dehydrogenase isoenzyme 1 in reconstituted material as determined by the IFCC method at 37 °C. Analyte Lactate dehydrogenase isoenzyme 1 .....502 ± 7U/L ..... 8.37 ± 0.12 µkat/L	Amp.
BCR-693	Lipase (human pancreatic lipase from pancreatic juice) Each sample is in lyophilised form and equivalent to about 1 mL of solution of purified human pancreatic lipase from human pancreatic juice. The preparation has been stabilised by incorporation in a matrix of Tris 20 mmol/L, pH = 7.6 and BSA 40 g/L. No contamination, as assessed by measurement of their catalytic activity, has been detected for the following enzymes: ALP, ALT, α-Amylase, AST, esterase, GGT and LDH. The material is kept under dry nitrogen in neutral clear glass ampoules. Catalytic concentration ..... 28.9 ± 1.2 µkat /L	Amp.
BCR-694	Lipase (human recombinant pancreatic lipase) Each sample is in lyophilised form and equivalent to about 1 ml of solution of purified recombinant pancreatic lipase from V79-rHPL cell line. The preparation has been stabilised by incorporation in a matrix of Tris 20 mmol/L, pH = 7.6 and BSA 40 g/L. No contamination, as assessed by measurement of their catalytic activity, has been detected for the following enzymes: ALP, ALT, α-Amylase, AST, esterase, GGT and LDH. The material is kept under dry nitrogen in neutral clear glass ampoules. Certified value Catalytic concentration ..... 17.4 ± 1.0 µkat/L	Amp.
BCR-410	Prostatic acid phosphatase from human prostate Each sample is in lyophilised form and equivalent to about 1 mL of a solution of enzyme, stabilised by incorporation in a matrix of human serum albumin. Material is kept under dry nitrogen in sealed glass ampoules. Catalytic concentration of prostatic acid phosphatase in reconstituted material. Analyte Prostatic acid phosphatase .....28 ± 0.7 U/L ..... 0.466 ± 0.012 nkat/L	Amp.

Enzymes in serum

HEC JCERM20327	Lactate dehydrogenase (LDH) in bovine serum albumine (Enzyme ST,ALT,CK,ALP,LD,gamma-GT,AMY Human recombinant enzymes) Lot No. 003 certified value (catalytic concentration)..... 398 ± 5 U/l	unit

Code	Product	Unit

Metabolites and substrates

NIST-927D — Bovine serum albumin (7% solution) — 10 x 2.1 mL

This material is intended primarily for use in the standardization of procedures employed in clinical analyses for total serum protein, for critical evaluation of daily working standards used in these procedures, and as a reference standard for assays of total protein by colorimetric methods. It is a solution (mass fraction 7 %) of known protein concentration and purity. The protein content of this material was determined using the biuret reference method that is recommended for use in standardizing laboratory-prepared protein solutions and "normal" serum pools. In addition to the measurement using the biuret method, NIST made measurements of the bovine serum albumine (BSA) concentration using amino acid analysis. A unit consists of 10 ampoules each containing 2.1 mL of solution.

Certified bovine serum albumine concentration by amino acid analysis
BSA concentration ..... 65.41 g/L ± 0.82 g/L

Reference total protein concentration by the biuret method
Protein concentration ..... 70.10 g/L ± 0.74 g/L

NIST-2389A — Amino acids in 0.1 mol/L hydrochloric acid — 5 x 1.2 mL

This material is a solution of 17 amino acids in a 0.1 mol/L aqueous solution of hydrochloric acid. It is intended primarily for the use in calibration of chromatographic instrumentation for the determination of amino acids. A unit of consists of five 2 mL ampoules each containing approximately 1.2 mL of the solution.

Amino acid	concentration mmol/L	Amino acid	concentration mmol/L
Alanine	2.50 ± 0.07	Lysine	2.41 ± 0.17
Arginine	2.51 ± 0.07	Methionine	2.51 ± 0.07
Aspartic acid	2.50 ± 0.08	Phenylalanine	2.55 ± 0.09
Cystine	1.23 ± 0.06	Proline	2.46 ± 0.11
Glutamic acid	2.50 ± 0.08	Serine	2.44 ± 0.11
Glycine	2.52 ± 0.07	Threonine	2.49 ± 0.07
Histidine	2.52 ± 0.07	Tyrosine	2.54 ± 0.08
Isoleucine	2.44 ± 0.11	Valine	2.51 ± 0.10
Leucine	2.44 ± 0.11		

NIST-916A — Bilirubin — 100 mg

This material consists of a sample of unconjugated bilirubin that is certified as a chemical of known purity. It is intended primarily for use in the calibration and standardization of procedures used for the determination of bilirubin in clinical samples and for routine evaluations of daily working standards used in these procedures. This material can also be used for quality assurance when assigning values to in-house control materials.

Certified value (mass fraction) ..... 98.3 ± 0.3 %

NIST-911C — Cholesterol — 2 g

This material is intended primarily for use in the calibration and standardization of procedures for the determination of cholesterol in clinical samples and for routine evaluations of daily working standards used in these procedures. A unit consists of 2 g of material.

Certified purity (mass fraction) ..... 99.2 ± 0.4 %

NCS ZC76020B — Cholesterol (formerly GBW09203b) — 300 mg

Certified purity ..... 99.7 ± 0.1 %

NMIJ CRM6001-9 — Cholesterol — 1 g

This material is intended for the use in calibration of analytical instruments and validation of analytical techniques and instruments. Each unit contains 1 g of high purity cholesterol filled in amber borosilicate glass vials and an aluminized bag with argon gas.

Certified purity (mass fraction) ..... 99.9 ± 0.1 %

NIST-RM 8444 — Cotinine in human urine — 4 x 5 mL

This standard is intended primarily for use in validating methods for the determination of cotinine in human urine. One set consists of four vials, each containing cotinine in 5 ml human urine, which has been freeze dried. Two vials are “blank” concentration levels, typical for non-smokers without exposure to cigarette smoke, one vial is a “low” concentration level corresponding to non-smokers with passive exposure to side-stream smoke, and one vial is a “high” level, typical of smokers.

Analyte	blank ng/mL	low ng/mL	high ng/mL
Cotinine	0.8	54	488

NIST-914A — Creatinine — 10 g

This material is intended primarily for use in the calibration and standardisation of procedures used for determination of creatinine.

Certified purity (mass fraction) ..... 99.7 ± 0.3 %

ME 70002 — Ethyl-beta-D-6-glucuronide — 2 mg

ME 70010 — Ethyl-beta-D-6-glucuronide — 10 mg

ME 70502 — Ethyl-beta-D-6-glucuronide-D5 — 2 mg

ME 70510 — Ethyl-beta-D-6-glucuronide-D5 — 10 mg

NIST-917C — D-Glucose (dextrose, clinical) — 50 g

NIST-925 — 4-Hydroxy-3-methoxy-DL-mandelic acid (VMA), clinical — 1 g

This material is intended primarily for use in the calibration and standardisation of procedures employed in clinical analysis and for routine critical evaluation of the daily working standards used in these procedures.

Certified purity (mass fraction) ..... 99.4 ± 0.4 %

Code	Product	Unit
NIST-1595	Tripalmitin This material is intended primarily for use in the calibration and standardisation of procedures for the chemical analysis of serum for triglycerides, and for the critical evaluation of routine working or secondary reference materials used in these procedures. Certified purity (mass fraction) ..... 99.5 ± 0.2 %	2 g
NIST-912A	Urea This material is certified as a chemical of known purity. It is intended primarily for use in the calibration and validation of procedures for uric acid determinations employed in clinical analysis. Certified purity (mass fraction) ..... 99.9 ± 0.1 % Moisture ..... 0.02 ± 0.003 % Biuret ..... 0.02 ± 0.02 % Ash ..... 0.001 ± 0.0007 % Insoluble matter ..... 0.0001 ± 0.00005 %	25 g
NCS ZC76009	Urea (formerly GBW09201) This material is a high-purity material intended for use as a primary calibrator for higher order reference measurement procedures. Certified purity..... 99.9 ± 0.2 %	6 g
NIST-913A	Uric acid This material is certified as a chemical of known purity. It is intended primarily for use in the calibration and standardization of procedures for uric acid determinations employed in clinical analysis and for routine critical evaluation of the daily working standards used in these procedures. Certified purity (mass fraction) ..... 99.6 ± 0.1%	10 g

Metabolites and substrates in serum

NIST-1952A	Cholesterol in human serum This material is intended for use in evaluating the accuracy of clinical procedures for the determination of cholesterol in serum, in calibrating instruments and equipment used in these procedures and in validating working or secondary standards. It consists of six vials of freeze-dried serum, two each of three different cholesterol levels. Concentrations are also given in mg/dL/g. Analyte low medium high Cholesterol (mmol·L^{-1}·g^{-1}) ..... 13.89 ..... 21.29 ..... 28.91	set (6)
HEC JCCRM211	Cholesterol in human serum This material is intended for use in evaluating the accuracy of total cholesterol assays in clinical laboratory testing and validating secondary or working reference materials. The material was prepared according to an NCCLS protocol to ensure that, while avoiding lipoprotein degradation, its properties would be the same as those of fresh serum. A single set of JCCRM 211-1 consists of four vials, two for each of the concentration levels (medium and high), each containing 0.5 ml of frozen human serum. Certified value JCCRM 211-1M ..... 5.308 ± 0.020 mmol/L JCCRM 211-1M ..... 6.786 ± 0.026 mmol/L	unit
NIST-968D	Fat soluble cholesterol and vitamins in human serum This material is intended for use in validating methods for determining fat-soluble vitamins, carotenoids, and cholesterol in human serum and plasma. It can also be used for quality assurance when assigning values to in-house control materials for these constituents. A unit of the material consists of two vials of frozen human serum at a single concentration level. Certified values (mass concentrations): Analyte µg/ml Total Retinol ..... 0.311 ± 0.050 γ-Tocopherol ..... 1.39 ± 0.12 α-Tocopherol ..... 5.93 ± 0.55 Total β-Carotene ..... 0.078 ± 0.007 Cholesterol ..... 1335 ± 4	set (2)
NIST-967A	Creatinine in Frozen Human Serum This material is intended primarily for use in evaluating the accuracy of procedures for the determination of creatinine in human serum and also for use in validating working or secondary reference materials. A unit consists of four stoppered ampoules of frozen human serum, two ampoules each at two different creatinine concentration levels. One level corresponds to the normal range of serum creatinine levels, and the second level is intended to correspond to levels found in chronic kidney desease. Each ampoule contains 1.0 mL of human serum. Concentrations Level I ..... 0.0749 ± 0.0016 mmol/L Level II ..... 0.3427 ± 0.0072 mmol/L	set (4)
ERM-DA250	Frozen human serum (Creatinine and electrolytes in frozen human serum - high level) The material is intended for use in the validation and ongoing monitoring of methods of analysis for the determination of creatinine and electrolytes in human blood samples. Each unit consists of 1 ml of human serum in a screw-cap plastic vial. Constituents certified value Constituents certified value Constituents certified value Creatinine ..... 39 ± 3 mg/kg Lithium ..... 6.6 ± 0.4 mg/kg Potassium ..... 277 ± 14 mg/kg Calcium ..... 123 ± 5 mg/kg Magnesium ..... 47 ± 3 mg/kg Sodium ..... 3370 ± 110 mg/kg	1.0 mL

Clinical applications

Code	Product	Unit
ERM-DA251	Frozen human serum (low) (Creatinine and electrolytes in frozen human serum - low level) The material is intended for use in the validation and ongoing monitoring of methods of analysis for the determination of creatinine and electrolytes in human blood samples. Each unit consists of 1 ml of human serum in a screw-cap plastic vial. Constituents — certified value / Constituents — certified value Creatinine 22 ± 2 mg/kg; Magnesium 19 ± 2 mg/kg Calcium 71 ± 3 mg/kg; Potassium 136 ± 7 mg/kg Lithium 4.5 ± 0.3 mg/kg; Sodium 2740 ± 80 mg/kg	1.0 mL
ERM-DA252	Creatinine in frozen human serum (low level) The material is intended for use in the validation and ongoing monitoring of methods of analysis for the determination of creatinine in human blood samples. Each unit consists of 1 ml of human serum in a screw-cap plastic vial. Certified value (mass concentration) 3.1 ± 0.5 mg/kg	1.0 mL
ERM-DA253	Creatinine in frozen human serum (high level) The material is intended for use in the validation and ongoing monitoring of methods of analysis for the determination of creatinine in human blood samples. Each unit consists of 1 ml of human serum in a screw-cap plastic vial. Certified value (mass concentration) 50 ± 2 mg/kg	1.0 mL
BCR-573	Creatinine in human serum (low) Each sample is the lyophilised form of approximately 1 mL portion of serum, with no additives. The mass of the lyophilised material contained in the ampoule is about 0.09 g. Amount-of-substance concentration 68.7 ± 1.4 µmol/L	0.9 g
BCR-574	Creatinine in human serum (medium) Each sample is the lyophilised form of approximately 1 mL portion of serum, spiked with no further additives. The mass of the lyophilised material contained in the ampoule is about 0.09 g. Amount-of-substance concentration 105.0 ± 1.3 µmol/L	0.9 g
BCR-575	Creatinine in human serum (high) Each sample is the lyophilised form of approximately 1 mL portion of serum spiked with exogenous creatine, with no further additives. The mass of the lyophilised material contained in the ampoule is about 0.09 g. Amount-of-substance concentration 404.1 ± 7.1µmol/L	0.9 g
BCR-573I	Set of creatinine interfering substances The set consists of three vials with lyophilised solutions. - 0.025 mg calcium dobesilate / 1.2 cefoxitin - 0.044 mg sodium pyruvate - 0.108 mg bilirubin ditaurate Please note: The material consists of lyophilised preparations of three substances known to interfere with routine creatinine methods. For further information, see certification report for Material BCR-573.	3 vials
ME 41058	Ethylglucuronide, human serum control with reference values (Medidrug ETG 2/09-A S-plus) Lyophilised serum control prepared from human serum for accuracy and precision monitoring of ethyl glucuronide and ethyl sulfate determinations in serum. The reference value ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh. reference value Ethyl glucuronide 0.840 mg/L Ethyl sulfate 0.970 mg/L	10 x 2.5 mL
AC-SE015.010.001	Ethylglucuronide in serum ETG 3/10-A SE, lyophilised for in vitro diagnostic use Analytes — Target value Ethylglucuronide 0,64 mg/L Ethylsulfate 0,91mg/L	10 x 2.5 mL
NIST-965B	Glucose in frozen human serum This material is intended primarily for determination of glucose in human serum. It is also intended for use in validating working or secondary reference materials. A unit of NIST-965a consists of eight flame sealed ampoules of frozen human serum, two ampoules at each of four different concentration levels. Each ampoule contains 2.00 ± 0.04 mL of human serum. Concentration levels — mmol/L Level 1 1.836 ± 0.027 Level 2 4.194 ± 0.059 Level 3 6.575 ± 0.094 Level 4 16.35 ± 0.20	set (8)

Code	Product	Unit
HEC JCCRM521	Glucose, Creatinine, Uric Acid and Urea-N in human serum (abnormally high), H, M, each 2 vials, 1ml) This certified reference material is primarily intended for evaluating the accuracy of routine methods and validating working reference materials. The material consists of 6 plastic vials (two for each of three levels), each containing 1ml serum. Certified mass concentrations (mg/dl): Level 1 / Level 2 / Level 3 Uric acid ..... 5.54 ± 0.04 ..... 8.78 ± 0.06 ..... 12.04 ± 0.08 Creatinine ..... 0.89 ± 0.02 ..... 2.28 ± 0.05 ..... 5.14 ± 0.11 Glucose ..... 93.4 ± 0.9 ..... 152.1 ± 1.4 ..... 248.0 ± 2.2 Urea-N ..... 13.0 ± 0.4 ..... 27.0 ± 0.7 ..... 46.0 ± 1.1	unit
NIST-1955	Homocysteine and folate in frozen human serum This material is intended primarily for use in evaluating the accuracy of clinical procedures for the determination of homocysteine and folate (in various forms) in human serum. It is also intended for use in validating working or secondary reference materials. A unit consists of three bottles of frozen human serum, each of three concentration levels. Each bottle contains 1 mL of human serum. Certified values (amount-of-substance concentration and mass concentration): Concentration levels for Homocysteine µmol/L / µg/mL Level I ..... 3.98 ± 0.18 ..... 0.538 ± 0.024 Level II ..... 8.85 ± 0.60 ..... 1.196 ± 0.082 Level III ..... 17.7 ± 1.1 ..... 2.39 ± 0.15 Concentration levels for 5-Methyltetrahydrofolic acid nmol/L / ng/mL Level I ..... 4.26 ± 0.25 ..... 1.96 ± 0.12 Level II ..... 9.73 ± 0.24 ..... 4.47 ± 0.11 Level III ..... 37.1 ± 1.4 ..... 17.03 ± 0.64 a	unit (3)
NIST-1951B	Lipids in frozen human serum This material is intended primarily for use in evaluating the accuracy of clinical procedures for the determination of total cholesterol, HDL-cholesterol, LDL-cholesterol, and triglycerides (both total glyceride species and triglycerides only) in human serum. It is also intended for use in validating working or secondary reference materials. A unit consists of four bottles of frozen human serum, two bottles each of two different analyte concentration levels. Each bottle contains 1 mL of human serum. Concentrations are also given in mg/dL. Analyte / level I / level II Total cholesterol ..... 4.804 ± 0.014 ..... 6.895 ± 0.022 mmol/L Total glycerides ..... 1.370 ± 0.015 ..... 2.988 ± 0.036 mmol/L Triglycerides only ..... 1.208 ± 0.013 ..... 2.700 ± 0.027 mmol/L	4 x 1 mL
CEN DMR-263A	Metabolites and substrates in frozen human serum (creatinine, cholesterol, glucose, urea, uric acid) This material is intended for the calibration and validation of clinical procedures, and for preparation of secondary reference materials. It can also be used in calibration and validation of glucose procedures based on high performance liquid chromatography with refraction index and electrochemical detection. Each unit consists of one cryogenic vial of 1 mL serum. Certified values Glucose ..... 82.9 mg/dL Cholesterol ..... 159.73 mg/dL Creatinine ..... 0.7512 mg/dL Uric acid ..... 5.21 mg/dL Urea ..... 27.07 mg/dL	unit
SERO100205	Seronorm Lipid (serum control for clinical chemistry) Animal assayed serum for the accuray control of lipid analyses. It is a stable freeze-dried all animal control serum providing analytical data for major lipid components. Each batch is supplied with a data key providing reference and analytical values for each component. The component levels are on the borderline between normal and pathological range. The analytical data are elaborated in collaboration with independent laboratories using reference or well accepted methods. The components are: - Bile acids - Cholesterol, total - HDL-cholesterol - LDL-cholesterol - Phospholipids - Triglycerides - Fatty acid composition of phospholipids and total lipids (palmitic acid, palmitoleic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, dihomogammalinol acid, arachidonic acid, timnodonic acid, docosapentaenoic acid, docosahexaenoic acid, phytanic acid).	12 x 3 mL
HEC JCCRM223	Triglycerides in human serum Certified values (amount-of-substance concentration) in the range 1.04 mmol/l to 2.64 mmol/l with corresponding uncertainties of 0.03 to 0.07 mmol/l.	unit
HEC JCCLS021	Uric acid in frozen human serum This material for is primarily intended for evaluating reference methods for determining uric acid in human serum, and in validating secondary reference materials. Each material consists of a set of six vials (two vials for each of 3 levels) with one ml of serum. Certified concentrations: Medium concentration / High concentration / Abnormally high concentration 4.342 ± 0.010 mg/dl ..... 7.496 ± 0.017 mg/dl ..... 10.71 ± 0.03 mg/dl 0.2583 ± 0.0006 mmol/l ..... 0.4460 ± 0.0010 mmol/l ..... 0.6374 ± 0.0014 mmol/l	set (6)

Code	Product	Unit

Metabolites and substrates in urine

ME 41079 — Ethylglucuronide, human urine control with reference values (Medidrug ETG 1/08-B U-plus) — 10 x 2.5 mL

Lyophilised serum control prepared from human urine for accuracy and precision monitoring of ethyl glucuronide and ethyl sulfate determinations in urine. The reference value ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh.

	reference value
Ethyl glucuronide	0.350 mg/L

ME 41081 — Ethylglucuronide, human urine control with reference values (Medidrug ETG 1/10-B U-plus) — 10 x 2.5 mL

Lyophilised serum control prepared from human urine for accuracy and precision monitoring of ethyl glucuronide and ethyl sulfate determinations in urine. The reference value ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh.

	reference value
Ethyl glucuronide	0.878 mg/L
Ethyl sulfate	0.920 mg/L

AC-UR015.010.001 — Ethylglucuronide in urine ETG 3/10-B UR, lyophilised for in vitro diagnostic use — 10 x 2.5 mL

Analytes	Target value
Ethylglucuronide	1,27 mg/L
Ethylsulfate	0,81mg/L

Non-electrolyte metals in serum

LGC7330 — Selenomethionine enriched with 76Se — 10 mg

Assessed value

^{76}Se Isotopic abundance ... 99.8 +0.2 / -3.1 % (m/m)

Non-electrolyte metals

NIST-937 — Iron metal (clinical) — 50 g

This material is intended for use as an assay standard for iron. It is provided in the form of chips sized between 0.5 mm and 1.8 mm mesh.

Certified purity (mass fraction)..... 99.90 ± 0.02 %

NIST-928 — Lead nitrate (clinical) — 30 g

This material is certified for use as an assay standard for lead.

Certified purity (mass fraction)..... 100.00 ± 0.03 %

Non-electrolyte metals in blood

NIST-955C — Lead in caprine blood — 4 x 2 mL

This material is intended primarily for use in evaluating the accuracy of lead concentration determinations in blood and for use in validating working or secondary reference materials for lead in blood analysis. This material replaced NIST-966. A unit consists of four vials of frozen caprine blood at four concentration levels: a base level and three progressively elevated levels that contain endogenous lead and spiked inorganic arsenic, cadmium, inorganic mercury, methylmercury, and ethylmercury. Certified values are provided for lead. Each vial contains approximately 2 mL of whole blood.

Certified concentration	Lead (µg/dL)	Lead (µmol/L)
Level 1	0.424 ± 0.011	0.02047 ± 0.00053
Level 2	13.950 ± 0.080	0.6733 ± 0.0038
Level 3	27.76 ± 0.16	1.3400 ± 0.0076
Level 4	45.53 ± 0.27	2.198 ± 0.013

The certificate is being updated to reflect additional concentration values for arsenic, cadmium, mercury (total), ethylmercury, inorganic mercury, and methylmercury.

ERM-CE195 — Lead and cadmium in bovine blood, medium level — Amp.

Each sample is in lyophilised form equivalent to about 5.75 mL of bovine blood with additives, kept under nitrogen in rubber stoppered vials. Mass concentration in the reconstituted material

Analytes	
Pb	416 ± 9 µg/L
Cd	5.06 ± 0.15 µg/L

ERM-CE196 — Lead and cadmium in bovine blood, high level — Amp.

Each sample is in lyophilised form equivalent to about 5.75 mL of bovine blood with additives, kept under nitrogen in rubber stoppered vials. Mass concentration in the reconstituted material

Analytes	
Pb	772 ± 11 µg/L
Cd	12.33 ± 0.20 µg/L

Code	Product	Unit

BCR-634 — Lead and cadmium in reconstituted human blood (low) — vial

The material is supplied in lyophilised form in brown glass vials. Sodium-EDTA was used as anticoagulant. No other preservatives were added. The content of a vial is approximately 0.6 g dry matter with residual moisture content less than 2 % and equivalent to 3.0 mL of fresh whole blood. This material was produced from blood from healthy Danish blood donors. Each portion of blood was tested negative for Anti-HIV-1&2, Anti-HCV and Anti-HTLV-I&II. However, as all biological material of human origin the blood should be treated as contagious material.

Analytes	mass concentration
Cd	1.4 ± 0.4 µg/L
Pb	46 ± 5 µg/L

BCR-635 — Lead and cadmium in reconstituted human blood (medium) — vial

The material is supplied in lyophilised form in brown glass vials. Sodium-EDTA was used as anticoagulant. No other preservatives were added. The content of a vial is approximately 0.6 g dry matter with residual moisture content less than 2 % and equivalent to 3.0 mL of fresh whole blood. This material was produced from blood from healthy Danish blood donors. Each portion of blood was tested negative for Anti-HIV-1&2, Anti-HCV and Anti-HTLV-I&II. However, as all biological material of human origin the blood should be treated as contagious material.

Analytes	mass concentration
Cd	6.6 ± 0.6 µg/L
Pb	210 ± 24 µg/L

BCR-636 — Lead and cadmium in reconstituted human blood (high) — vial

The material is supplied in lyophilised form in brown glass vials. Sodium-EDTA was used as anticoagulant. No other preservatives were added. The content of a vial is approximately 0.6 g dry matter with residual moisture content less than 2 % and equivalent to 3.0 mL of fresh whole blood. This material was produced from blood from healthy Danish blood donors. Each portion of blood was tested negative for Anti-HIV-1&2, Anti-HCV and Anti-HTLV-I&II. However, as all biological material of human origin the blood should be treated as contagious material.

Analytes	mass concentration
Cd	11.6 ± 0.6 µg/L
Pb	(0.52 ± 0.05) 10^3 µg/L

Non-electrolyte metals in urine

NIST-2672A — Mercury in urine — set (4)

This material is intended primarily for use as an analytical standard for the determination of mercury in urine. It consists of four bottles of freeze-dried urine containing mercury, two bottles each at low and elevated levels.

Certified values after reconstitution

	low level	elevated level
Hg	(0.002)	0.105 mg/L

NIST-2670A — Toxic elements in freeze dried urine — 4 x 20 mL

This material is primarily intended for use in evaluating the accuracy of clinical methods and for the calibration of apparatus used to determine the concentration of toxic metals and other elements in human urine or similar matrices. It can also be used to validate working or secondary reference materials. It consists of four bottles of freeze-dried urine, two bottles each at the low and high levels.The low level urine was prepared from human urine that was lyophilised after pooling and centrifugation. The high level urine was prepared by spiking an aliquot of the pooled and homogenized low-level urine with selected metals, followed by lyophilisation. Due to the centrifugation (which improved sample homogeneity), neither level represents a fresh urine pool from a normal human population.

Analytes	low	elevated level
Antimony	0.971 ± 0.033	0.824 ± 0.070 µg/L
Cadmium	0.0591 ± 0.0034	4.862 ± 0.084 µg/L
Cesium	1.075 ± 0.031	1.085 ± 0.052 µg/L
Cobalt	0.166 ± 0.040	51.2 ± 3.2 µg/L
Iodine	88.2 ± 1.1	88.2 ± 1.1 µg/L
Lead	0.49 ± 0.16	233.2 ± 9.4 µg/L
Mercury	0.0663 ± 0.0058	95.1 ± 0.98 µg/L
Manganese		99 ± 12 µg/L
Molybdenum		114.1 ± 4.8 µg/L
Platinum		51.5 ± 6.6 µg/L
Selenium		229.5 ± 8.3 µg/L
Thallium	0.0162 ± 0.0045	5.417 ± 0.064 µg/L
Thorium	0.0053 ± 0.0014	0.01606 ± 0.00077 µg/L
Uranium	0.1020 ± 0.0023	4.997 ± 0.071 µg/L

Currently not available

Non-peptide hormones

NIST-921 — Cortisol (hydrocortisone) — 1 g

This material is intended primarily for use in the calibration and standardisation of procedures for cortisol determinations employed in clinical analysis and for routine evaluation of the daily working standards used in these procedures. Certified value (mass fraction):

Analyte	
Cortisol (hydrocortisone)	98.9 ± 0.2 %

Clinical applications

Code	Product	Unit
IRMM-468	Thyroxine (T4) The material can be used as a calibrant by manufacturers and laboratories, e.g. for the preparation of lower order reference materials and for validation studies. It consists of an off-white cristalline powder in an amber glass vial sealed under N_2 atmosphere. Each vial contains about 100 mg of the powder. Certified value (mass fraction).....98.6 ± 0.7 %	vial
IRMM-469	3,3',5 Triiodothyronine (T3) The material can be used as a calibrant by manufacturers and laboratories, e.g. for the preparation of lower order reference materials and for validation studies. It consists of an off-white cristalline powder in an amber glass vial sealed under N_2 atmosphere. Each vial contains about 100 mg of the powder. Certified value (mass fraction).....91.1 ± 0.7 %	vial

Non-peptide hormones in serum

ERM-DA192	Cortisol in human serum (unspiked) Each sample is the lyophilised form of a 1.25 mL portion of serum without additives kept under nitrogen in sealed glass ampoules. Cortisol concentration in the reconstituted material µg/L .....98.8 ± 2.0 nmol/L .....273 ± 6	Amp.
ERM-DA193	Cortisol in human serum (spiked) Each sample is the lyophilised form of a 1.25 mL portion of serum without additives kept under nitrogen in sealed glass ampoules. Cortisol concentration in the reconstituted material µg/L .....277 ± 5 nmol/L .....763 ± 14	Amp.
ERM-DA451	Cortisol reference serum panel of fresh frozen human sera The panel is primarily intended for use in evaluation/verification of in vitro test systems for serum cortisol by method comparison with the ID-GC/MS method (for an appropriate measurement protocol, see full report). The results shall be described by linear regression/bias plot and interpreted in terms of sensitivity, specificity and metrologically correct measurement (trueness). The method comparison will also be used to investigate the suitability of the panel for recalibration of a test system. IRMM/IFCC-451 is a reference serum panel consisting of 34 vials originating from native single-donations that does not contain any additives. It is available in the form of screw capped cryo-vials (34 x 1 mL serum).	34 vials
BCR-576	Estradiol-17-beta in human serum (low level) Each sample is the lyophilised form of a 5 mL portion of serum without additives kept under nitrogen in sealed glass ampoules. Amount-of-substance concentration in the reconstituted material.....0.114 ± 0.005 nmol/L	Amp.
BCR-577	Estradiol-17-beta in human serum (medium level) Each sample is the lyophilised form of a 1 mL portion of serum without additives kept under nitrogen in sealed glass ampoules. Amount-of-substance concentration in the reconstituted material.....0.689 ± 0.032 nmol/L	Amp.
BCR-578	Estradiol-17-beta in human serum (high level) Each sample is the lyophilised form of a 1 mL portion of serum without additives kept under nitrogen in sealed glass ampoules. Amount-of-substance concentration in the reconstituted material.....1.34 ± 0.07 nmol/L	Amp.
ERM-DA347	Progesterone in human serum (low) Each sample is the lyophilised form of a 1 mL portion of serum, containing endogenous progesterone, without additives kept under nitrogen gas in sealed glass ampoules. Progesterone concentration in the reconstituted material: ..... 3.19 ± 0.07 ng/L.....10.13 ± 0.21 nmol/L	Amp.
BCR-348R	Progesterone in human serum (high) This material is intended to be used for trueness assessment and quality control of progesterone measurement procedures using ID-GC-MS and to verify the comparability of results from different laboratories using that technique. It can also be used for calibration or quality control of in vitro diagnostic devices if commutability of this material has been demonstrated using ID-GC-MS reference method for comparison. It consists of 1 mL of human serum lyophilised in an ampoule which is sealed under N2 atmosphere. Each ampoule contains about 80 mg of the lyophilised powder. Mass concentration:.....8.5 ± 0.4 µg/L	Amp.
ERM-DA346	Testosterone in human serum This material is intended for method validation and for monitoring the performance of methods commonly used in medical laboratories. ERM-DA346A was prepared from a single native female human serum pool. The material was sterile filtered and sub-sampled into plastic screw-cap 3 mL vials. Each vial contains a minimum of 0.8 mL. The certified value (mass fraction) is based on isotope dilution mass spectrometry. Certified value..... 0.25 ± 0.04 µg/kg	1.0 mL
ERM-DA345	Testosterone in human serum This material is intended for method validation and for monitoring the performance of methods commonly used in medical laboratories. ERM-DA345A was prepared from a single native female human serum pool, part of which was spiked with testosterone in methanol to produce a material with a level of testosterone within the normal male range. The material was sterile filtered and sub-sampled into plastic screw-cap 3 mL vials. Each vial contains a minimum of 0.8 mL. The certified value (mass fraction) is based on isotope dilution mass spectrometry. Certified value.....5.58 ± 0.20 µg/kg	1.0 mL

Code	Product	Unit

Occupational health and hygiene materials in blood

BCR-634 — Lead and cadmium in reconstituted human blood (low) — vial

The material is supplied in lyophilised form in brown glass vials. Sodium-EDTA was used as anticoagulant. No other preservatives were added. The content of a vial is approximately 0.6 g dry matter with residual moisture content less than 2 % and equivalent to 3.0 mL of fresh whole blood. This material was produced from blood from healthy Danish blood donors. Each portion of blood was tested negative for Anti-HIV-1&2, Anti-HCV and Anti-HTLV-I&II. However, as all biological material of human origin the blood should be treated as contagious material.

Analytes	mass concentration
Cd	1.4 ± 0.4 µg/L
Pb	46 ± 5 µg/L

BCR-635 — Lead and cadmium in reconstituted human blood (medium) — vial

The material is supplied in lyophilised form in brown glass vials. Sodium-EDTA was used as anticoagulant. No other preservatives were added. The content of a vial is approximately 0.6 g dry matter with residual moisture content less than 2 % and equivalent to 3.0 mL of fresh whole blood. This material was produced from blood from healthy Danish blood donors. Each portion of blood was tested negative for Anti-HIV-1&2, Anti-HCV and Anti-HTLV-I&II. However, as all biological material of human origin the blood should be treated as contagious material.

Analytes	mass concentration
Cd	6.6 ± 0.6 µg/L
Pb	210 ± 24 µg/L

BCR-636 — Lead and cadmium in reconstituted human blood (high) — vial

The material is supplied in lyophilised form in brown glass vials. Sodium-EDTA was used as anticoagulant. No other preservatives were added. The content of a vial is approximately 0.6 g dry matter with residual moisture content less than 2 % and equivalent to 3.0 mL of fresh whole blood. This material was produced from blood from healthy Danish blood donors. Each portion of blood was tested negative for Anti-HIV-1&2, Anti-HCV and Anti-HTLV-I&II. However, as all biological material of human origin the blood should be treated as contagious material.

Analytes	mass concentration
Cd	11.6 ± 0.6 µg/L
Pb	(0.52 ± 0.05) 10^3 µg/L

NIST-966 — Toxic metals in blood — unit

This material is intended for use in evaluating the accuracy of lead, cadmium and total mercury concentration determinations in whole blood. It can also be used for validating analytical methods and for providing traceability to working or secondary blood reference materials containing these constituents. It contains frozen whole bovine blood with below mentioned components at two concentration levels.

Analytes	level 1	level 2
Pb	1.459 ± 0.013	25.27± 0.22 µg/dL
Cd	0.032 ± 0.018	5.22 ± 0.16 µg/L
Hg (total)	0.0445 ± 0.0033	31.4 ± 1.7 µg/L

SERO210105 — Trace elements in whole blood, level 1 — 10 x 3 mL

This reference material is produced from blood collected from thoroughly controlled voluntary blood donors of a Scandinavian blood bank. Each unit is separately controlled and found negative for HBS antigen and HIV I, II and hepatitis C antibodies. No preservatives are added to the samples. It contains all normal constituents which ensures the control and test samples to be analysed under the same conditions.

Certified values after reconstitution

Ag 185 ng/L	Hg 1.97 µg/L	S 1100 mg/L
Al 11.2 µg/L	Ho 2.4 ng/L	Sb 2.35 µg/L
As 6.32 µg/L	I 25.7 µg/L	Sc 46 ng/L
Au 7 ng/L	Ir < 0.2 ng/L	Se 104 µg/L
B 400 µg/L	K 1130 mg/L	Si 0.81 mg/L
Ba 542 µg/L	La 94 ng/L	Sm 27 ng/L
Be 0.018 µg/L	Li 1 µg/L	Sn 0.42 µg/L
Bi 0.006 µg/L	Lu 0.8 ng/L	Sr 24 µg/L
Br 632 µg/L	Mg 16 mg/L	Ta 2.2 ng/L
Ca 14.5 mg/L	Mn 20.1 µg/L	Tb 2.2 ng/L
Cd 0.67 µg/L	Mo 0.8 µg/L	Te 0.11 µg/L
Ce 122 ng/L	Na 1467 mg/L	Th 12 ng/L
Cs 3 µg/L	Nb 57 ng/L	Ti 14 µg/L
Co 0.23 µg/L	Nd 96 ng/L	Tl 0.008 µg/L
Cr 0.82 µg/L	Ni 1.41 µg/L	Tm 1.2 ng/L
Cu 645 µg/L	P 216 mg/L	U 117 ng/L
Dy 12 ng/L	Pb 14.8 µg/L	V 1.1 µg/L
Er 9 ng/L	Pd < 10 ng/L	W 0.16 µg/L
Eu 11 ng/L	Pr 24 ng/L	Y 92 ng/L
F not analyzed	Pt 6 ng/L	Yb 9 ng/L
Fe 349 mg/L	Rb 1.47 mg/L	Zn 4810 µg/L
Ga 22 ng/L	Re 0.9 ng/L	Zr 681 ng/L
Gd 12 ng/L	Rh < 20 ng/L	
Hf 9 ng/L	Ru < 50 ng/L	

Code	Product	Unit

SERO210205 — Trace elements in whole blood, level 2 — 10 x 3 mL

This reference material is produced from blood collected from thoroughly controlled voluntary blood donors of a Scandinavian blood bank. Each unit is separately controlled and found negative for HBS antigen and HIV I, II and hepatitis C antibodies. No preservatives are added to the samples. It contains all normal constituents which ensures the control and test samples to be analysed under the same conditions.

Certified values after reconstitution

Ag 197 ng/L	Hg 15.2 µg/L	S 1071 mg/L
Al 71.8 µg/L	Ho 2.6 ng/L	Sb 28.4 µg/L
As 16.3 µg/L	I 81 µg/L	Sc 55 ng/L
Au 7 ng/L	Ir < 0.2 ng/L	Se 264 µg/L
B 356 µg/L	K 1108 mg/L	Si 0.812 mg/L
Ba 535 µg/L	La 103 ng/L	Sm 24 ng/L
Be 5.988 µg/L	Li 1.4 µg/L	Sn 6.1 µg/L
Bi 5.15 µg/L	Lu 1 ng/L	Sr 24 µg/L
Br 672 µg/L	Mg 15.6 mg/L	Ta 3.5 ng/L
Ca 14 mg/L	Mn 32.7 µg/L	Tb 2.1 ng/L
Cd 6.5 µg/L	Mo 6.6 µg/L	Te 0.072 µg/L
Ce 124 ng/L	Na 1443 mg/L	Th 11 ng/L
Cs 2.9 µg/L	Nb 70 ng/L	Ti 18 µg/L
Co 6 µg/L	Nd 99 ng/L	Tl 10.4 µg/L
Cr 12.4 µg/L	Ni 18.5 µg/L	Tm 1.3 ng/L
Cu 1248 µg/L	P 214 mg/L	U 120 ng/L
Dy 13 ng/L	Pb 336 µg/L	V 5.9 µg/L
Er 10 ng/L	Pd < 10 ng/L	W 0.158 µg/L
Eu 11 ng/L	Pr 25 ng/L	Y 123 ng/L
F (*) 100 µg/L	Pt 6 ng/L	Yb 10 ng/L
Fe 343 mg/L	Rb 1.44 mg/L	Zn 8406 µg/L
Ga 30 ng/L	Re 0.8 ng/L	Zr 731 ng/L
Gd 12 ng/L	Rh < 20 ng/L	(*) added amount, not analyzed
Hf 10 ng/L	Ru < 50 ng/L	

SERO210305 — Trace elements in whole blood, level 3 — 10 x 3 mL

This reference material is produced from blood collected from thoroughly controlled voluntary blood donors of a Scandinavian blood bank. Each unit is separately controlled and found negative for HBS antigen and HIV I, II and hepatitis C antibodies. No preservatives are added to the samples. It contains all normal constituents which ensures the control and test samples to be analysed under the same conditions.

Certified values after reconstitution

Ag 245 ng/L	Hg 31.4 µg/L	S 1066 mg/L
Al 112 µg/L	Ho 2.9 ng/L	Sb 87.1 µg/L
As 30.9 µg/L	I 189 µg/L	Sc 47 ng/L
Au 8 ng/L	Ir < 0.2 ng/L	Se 419 µg/L
B 467 µg/L	K 1111 mg/L	Si 1 mg/L
Ba 559 µg/L	La 145 ng/L	Sm 25 ng/L
Be 12.4 µg/L	Li 1.7 µg/L	Sn 12.1 µg/L
Bi 10.5 µg/L	Lu 1 ng/L	Sr 25 µg/L
Br 667 µg/L	Mg 15.6 mg/L	Ta 4.1 ng/L
Ca 14.2 mg/L	Mn 49.7 µg/L	Tb 2.5 ng/L
Cd 12.3 µg/L	Mo 12.9 µg/L	Te 0.065 µg/L
Ce 149 ng/L	Na 1437 mg/L	Th 13 ng/L
Cs 2.9 µg/L	Nb 91 ng/L	Ti 23 µg/L
Co 11.3 µg/L	Nd 106 ng/L	Tl 30.9 µg/L
Cr 37.3 µg/L	Ni 30.6 µg/L	Tm 1.5 ng/L
Cu 2401 µg/L	P 216 mg/L	U 135 ng/L
Dy 14 ng/L	Pb 638 µg/L	V 13 µg/L
Er 10 ng/L	Pd < 10 ng/L	W 0.205 µg/L
Eu 12 ng/L	Pr 29 ng/L	Y 117 ng/L
F (*) 200 µg/L	Pt 7 ng/L	Yb 12 ng/L
Fe 343 mg/L	Rb 1.5 mg/L	Zn 9381µg/L
Ga 28 ng/L	Re 0.9 ng/L	Zr 738 ng/L
Gd 14 ng/L	Rh < 20 ng/L	(*) added amount, not analyzed
Hf 9.5 ng/L	Ru < 50 ng/L	

NIST-955C — Lead in caprine blood — 4 x 2 mL

This material is intended primarily for use in evaluating the accuracy of lead concentration determinations in blood and for use in validating working or secondary reference materials for lead in blood analysis. This material replaced NIST-966. A unit consists of four vials of frozen caprine blood at four concentration levels: a base level and three progressively elevated levels that contain endogenous lead and spiked inorganic arsenic, cadmium, inorganic mercury, methylmercury, and ethylmercury. Certified values are provided for lead. Each vial contains approximately 2 mL of whole blood.

Certified concentration	Lead (µg/dL)	Lead (µmol/L)
Level 1	0.424 ± 0.011	0.02047 ± 0.00053
Level 2	13.950 ± 0.080	0.6733 ± 0.0038
Level 3	27.76 ± 0.16	1.3400 ± 0.0076
Level 4	45.53 ± 0.27	2.198 ± 0.013

The certificate is being updated to reflect additional concentration values for arsenic, cadmium, mercury (total), ethylmercury, inorganic mercury, and methylmercury.

ERM-CE195 — Lead and cadmium in bovine blood, medium level — Amp.

Each sample is in lyophilised form equivalent to about 5.75 mL of bovine blood with additives, kept under nitrogen in rubber stoppered vials. Mass concentration in the reconstituted material

Analytes

Pb 416 ± 9 µg/L
Cd 5.06 ± 0.15 µg/L

Code	Product	Unit
ERM-CE196	Lead and cadmium in bovine blood, high level Each sample is in lyophilised form equivalent to about 5.75 mL of bovine blood with additives, kept under nitrogen in rubber stoppered vials. Mass concentration in the reconstituted material Analytes Pb ..... 772 ± 11 µg/L Cd ..... 12.33 ± 0.20 µg/L	Amp.
NCS ZC84010	Lead and cadmium in freeze-dried bovine blood I (set of NCSZC84010 and 84011)	set
NCS ZC84011	Lead and cadmium in freeze-dried bovine blood II (set of NCSZC84010 and 84011)	set

Occupational health and hygiene materials in serum

NIST-1957	Organic contaminants in non-fortified human serum This material is intended for use in evaluating analytical methods for the determination of selected polychlorinated biphenyl (PCB) congeners, chlorinated pesticides, and polybrominated diphenyl ether (PBDE) congeners in human serum and similar matrices. A unit of NIST-1957 consists of five bottles of freeze-dried non-fortified human serum which should be reconstituted with 10.7 mL of water. Certified values are given for eight PCB congeners (some in combination), three chlorinated pesticides, and four PBDE congeners along with one polybrominated biphenyl congener. In addition, reference values are provided for 23 other PCB Congeners, chlorinated pesticides and PBDE congeners, for seven perflourinated compounds (PFCs), for eleven polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs). Information values are provided for two hydroxylated compounds and for Aroclor 1260. All of the constituents for which certified and reference values are provided in SRM 1957 are naturally present in the serum. Certified values (mass fraction) in ng/kg PCB 118 ..... 18.5 ± 2.7 PCB 138 ..... 36.9 ± 5.4 PCB 153 ..... 57.2 ± 3.3 PCB 170 ..... 16.7 ± 2.6 PCB 180 ..... +193 54.4 ± 1.3 PCB 187 ..... 15.7 ± 0.9 PCB 194 ..... 12.0 ± 0.5 Hexachlorobenzene..... 30.3 ± 4.1 trans-Nonachlor ..... 59.9 ± 0.5 4,4'-DDE..... 940 ± 78 PBDE 47 ..... 272 ± 14 PBDE 99 ..... 77.8 ± 1.7 PBDE 100 ..... 50.5 ± 2.5 PBDE 153 ..... 62.1 ± 3.0 PBB 153..... 15.8 ± 1.0	set (5)
BCR-637	Trace elements in human serum (Al, Se, Zn) The CRM is supplied in frozen form in white plastic vials. The serum was sterile filtered prior to filling and no preservatives were added. The content of a vial is approximately 4.5 mL serum.This serum material was produced from blood from healthy Danish blood donors. Each portion of blood was tested negative for Anti-HIV-1&2, Anti-HCV and Anti-HTLV-I&II. Element mass concentration Al..... 12.5 µg/L Se..... 81 µg/L Zn..... 1.11 mg/L	vial
BCR-638	Trace elements in human serum (Al, Se, Zn) The CRM is supplied in frozen form in white plastic vials. The serum was sterile filtered prior to filling and no preservatives were added. The content of a vial is approximately 4.5 mL serum. This serum material was produced from blood from healthy Danish blood donors. Each portion of blood was tested negative for Anti-HIV-1&2, Anti-HCV and Anti-HTLV-I&II. Element mass concentration Al..... 55 µg/L Se..... 104 µg/L Zn..... 1.43 mg/L	vial
BCR-639	Trace elements in human serum (Al, Se, Zn) The CRM is supplied in frozen form in white plastic vials. The serum was sterile filtered prior to filling and no preservatives were added. The content of a vial is approximately 4.5 mL serum.This serum material was produced from blood from healthy Danish blood donors. Each portion of blood was tested negative for Anti-HIV-1&2, Anti-HCV and Anti-HTLV-I&II. Element mass concentration Al ..... 194 µg/L Se..... 133 µg/L Zn..... 2.36 mg/L	vial

Clinical applications

Code	Product	Unit

SERO201405 — Trace elements in serum, level 1 — 6 x 3 mL

This reference material is produced from serum collected from thoroughly controlled voluntary blood donors of a Scandinavian blood bank. Each unit is separately controlled and found negative for HBS antigen and HIV I, II and hepatitis C antibodies. No preservatives are added to the samples. Contains all normal constituents which ensure the control and test samples to be analysed under the same conditions.

Certified values after reconstitution

Al 33.6 µg/L	Hg 0.62 µg/L	Sc 7.6 ng/L
Ag 0.16 µg/L	Ho 1.9 ng/L	Se 107 µg/L
As 0.47 µg/L	I 84 µg/L	Si 0.74 mg/L
Au 540 µg/L	Ir 1.2 ng/L	Sm 7.7 ng/L
B 154 µg/L	K 126 mg/L	Sn 0.52 µg/L
Ba 126 µg/L	La 39.5 ng/L	Sr 26.3 µg/L
Be 1.8 ng/L	Li 5741 µg/L	Ta 3.1 ng/L
Bi 3.7 ng	Lu 0.7 ng/L	Te 29 ng/L
Br 488 µg/L	Mn 15 µg/L	Tb 1.3 ng/L
Ca 94.2 mg/L	Mg 20.1 mg/L	Th 2.9 ng/L
Cd 0.126 µg/L	Mo 0.7 µg/L	Ti 11.2 µg/L
Ce 38.7 ng/L	Na 2998 mg/L	Tl 23 ng/L
Cr 1.5 µg/L	Nb 40 ng/L	Tm 0.9 ng/L
Cs 18.6 ng/L	Nd 22.8 ng/L	U 48 ng/L
Co 1.2 µg/L	Ni 5.8 µg/L	V 0.96 µg/L
Cu 1691 µg/L	P 70 mg/L	W 91 ng/L
Dy 3.5 ng/L	Pb 1.02 µg/L	Y 19 ng/L
Er 3.5 ng/L	Pr 7.4 ng/L	Yb 2.5 ng/L
F (*) 75 µg/L	Pt 6.9 ng/L	Zn 1738 µg/L
Fe 1.39 mg/L	Rb 5.25 µg/L	Zr 278 ng/L
Ga 8.9 ng/L	Re 1.7 ng/L	(*) added amount, not analyzed
Gd 5.2 ng/L	S 1448 mg/L	
Hf 5.7 ng/L	Sb 80 µg/L	

SERO203105 — Trace elements in serum, level 2 — 6 x 3 mL

This reference material is produced from serum collected from thoroughly controlled voluntary blood donors of a Scandinavian blood bank. Each unit is separately controlled and found negative for HBS antigen and HIV I, II and hepatitis C antibodies. No preservatives are added to the samples. Contains all normal constituents which ensure the control and test samples to be analysed under the same conditions.

Certified values after reconstitution

Al 111 µg/L	Ge < 400 ng/L	Ru < 15 ng/L
Ag 343 ng/L	Hf 33 ng/L	S 1330 mg/L
Ar 343 ng/L	Hg 1.86 µg/L	Sb 21 µg/l
As < 1 µg/L	Ho 9 ng/L	Sc 57 ng/L
Au 1956 µg/L	I 54 µg/L	Se 136 µg/L
B 41 µg/L	Ir 1.2 ng/L	Si 2.1 mg/L
Ba 271 µg/L	K 236 mg/L	Sm 45 ng/L
Be 18 ng/L	La 315 ng/L	Sn 2.86 µg/L
Bi 21 ng	Li 10.6 mg/L	Sr 130 µg/L
Br 656 µg/L	Lu 3.4 ng/L	Ta 3.2 ng/L
Ca 117 mg/L	Mn 19.1 µg/L	Tb 5.4 ng/L
Cd 317 mg/L	Mg 28.9 mg/L	Te 19 ng/L
Ce 285 ng/L	Mo 1.31 µg/L	Th 45 ng/L
Cr 5.2 µg/L	Na 3783 mg/L	Ti 3.0 µg/L
Cs 22 ng/L	Nb 42 ng/L	Tl 34 ng/L
Co 3.2 µg/L	Nd 249 ng/L	Tm 3.1 ng/L
Cu 2.6 mg/L	Ni 10.7 µg/L	U 0.98 µg/L
Dy 30 ng/L	P 42 mg/L	V 1.12 µg/L
Er 20 ng/L	Pb 3 µg/L	W 84 ng/L
Eu 12 ng/L	Pd < 10 ng/L	Y 243 ng/L
F (added amount) 200 µg/L	Pr 69 ng/L	Yb 21 ng/L
Fe 1.91 mg/L	Pt 17 ng/L	Zn 0.92 mg/L
Ga 46 ng/L	Rb 7.2 µg/L	Zr 2.4 µg/L
Gd 41 ng/L	Re 6.3 ng/L	

ERM-DA120 — Frozen human serum - Trace metals (Cu, Se, Zn) — 1 ml

This reference materials is intended for use in the validation of new methods monitoring the performance of methods commonly used in laboratories to determine the important trace elements copper, selenium and zinc in human serum samples. The material is clinically relevant since it closely matches the lower level of the normal range for serum selenium in the population. The material has been certified using isotope dilution inductively - coupled plasma mass spectrometry (ID-IRPMS).

Certified values

Cu	1130 µg/kg
Se	64.1 µg/kg
Zn	658 µg/kg

Occupational health and hygiene materials in urine

NIST-RM 8444 — Cotinine in human urine — 4 x 5 mL

This standard is intended primarily for use in validating methods for the determination of cotinine in human urine. One set consists of four vials, each containing cotinine in 5 ml human urine, which has been freeze dried. Two vials are “blank” concentration levels, typical for non-smokers without exposure to cigarette smoke, one vial is a “low” concentration level corresponding to non-smokers with passive exposure to side-stream smoke, and one vial is a “high” level, typical of smokers.

Analyte	blank ng/mL	low ng/mL	high ng/mL
Cotinine	0.8	54	488

Code	Product	Unit

NIST-2672A — Mercury in urine — set (4)

This material is intended primarily for use as an analytical standard for the determination of mercury in urine. It consists of four bottles of freeze-dried urine containing mercury, two bottles each at low and elevated levels.

Certified values after reconstitution

	low level	elevated level
Hg	(0.002)	0.105 mg/L

NIST-2670A — Toxic elements in freeze dried urine — 4 x 20 mL

This material is primarily intended for use in evaluating the accuracy of clinical methods and for the calibration of apparatus used to determine the concentration of toxic metals and other elements in human urine or similar matrices. It can also be used to validate working or secondary reference materials. It consists of four bottles of freeze-dried urine, two bottles each at the low and high levels.The low level urine was prepared from human urine that was lyophilised after pooling and centrifugation. The high level urine was prepared by spiking an aliquot of the pooled and homogenized low-level urine with selected metals, followed by lyophilisation. Due to the centrifugation (which improved sample homogeneity), neither level represents a fresh urine pool from a normal human population.

Analytes	low	elevated level
Antimony	0.971 ± 0.033	0.824 ± 0.070 µg/L
Cadmium	0.0591 ± 0.0034	4.862 ± 0.084 µg/L
Cesium	1.075 ± 0.031	1.085 ± 0.052 µg/L
Cobalt	0.166 ± 0.040	51.2 ± 3.2 µg/L
Iodine	88.2 ± 1.1	88.2 ± 1.1 µg/L
Lead	0.49 ± 0.16	233.2 ± 9.4 µg/L
Mercury	0.0663 ± 0.0058	95.1 ± 0.98 µg/L
Manganese		99 ± 12 µg/L
Molybdenum		114.1 ± 4.8 µg/L
Platinum		51.5 ± 6.6 µg/L
Selenium		229.5 ± 8.3 µg/L
Thallium	0.0162 ± 0.0045	5.417 ± 0.064 µg/L
Thorium	0.0053 ± 0.0014	0.01606 ± 0.00077 µg/L
Uranium	0.1020 ± 0.0023	4.997 ± 0.071 µg/L

Currently not available

SERO201205 — Trace elements in urine, level 2 — 10 x 5 mL

This reference material is produced from human urine from thoroughly controlled voluntary Norwegian donors. Each unit is controlled by official authorities and found negative for presence of HBS antigen and HIV I, II and hepatitis C antibodies. No preservatives are added to the samples. It contains all normal constituents which ensure the control and test samples to be analysed under the same conditions.

Certified values after reconstitution

Analyte					
Ag	26 ng/L	I	304 µg/L	Sm	4.3 ng/L
Al	100 µg/L	Ir	0.16 ng/L	Sn	54.6 µg/L
As	142 µg/L	K	1903 mg/L	Sr	110 µg/L
Au	24 ng/L	La	31 ng/L	Ta	9 ng/L
B	869 µg/L	Li	10.2 µg/L	Tb	1.2 ng/L
Ba	51 µg/L	Lu	0.9 ng/L	Te	25.3 µg/L
Be	4.9 µg/L	Mg	71.mg/L	Th	2.5 ng/L
Bi	20.1 µg/L	Mn	12.3 µg/L	Ti	17.8 µg/L
Br	2 mg/L	Mo	49.3 µg/L	Tl	9.26 µg/L
Ca	107 mg/L	Na	2307 mg/L	Tm	0.3 ng/L
Cd	4.6 µg/L	Nb	57 ng/L	U	65.5 ng/L
Ce	77 ng/L	Nd	16.2 ng/L	V	25.2 µg/L
Cl	127 mmol/L	Ni	50.4 µg/L	W	0.17 µg/L
Co	10 µg/L	P	702 mg/L	Y	15 ng/L
Cu	72 µg/L	Pb	40.3 µg/L	Yb	1.1 ng/L
Cr	19.7 µg/L	Pd	<10 ng/L	Zn	1168 µg/L
Cs	6.79 µg/L	Pr	9.5 ng/L	Zr	81 ng/L
Dy	1.9 ng/L	Pt	8.1 ng/L	Creatinine	8663 µmol/L
Er	2.2 ng/L	Rb	1.17 mg/L	1-Hydroxypyrene	55 µg/L*
Eu	1.9 ng/L	Re	78 ng/L	Formic acid	10.8 mg/L*
F	4 mg/L*	Rh	<50 ng/L	Phenol	300 mg/L*
Fe	12.3 µg/L	Ru	<200 ng/L	Mandelic acid	490 µg/L*
Ga	37 ng/L	S	543 mg/L	Tetrachloroethylene	1000 µg/L*
Gd	4.5 ng/L	Sb	99.9 µg/L	TCA	350 µmol/L*
Hf	1 ng/L	Sc	103 ng/L	(*) added amount, not analyzed	
Hg	40.7 µg/L	Se	58.6 µg/L		
Ho	4.6 ng/L	Si	5.2 mg/L		

Occupational health and hygiene materials in other matrices

NIST-1400 — Trace elements in bone ash — 50 g

This standard is intended primarily for use in evaluating analytical methods for the determination of selected major, minor and trace elements in bone and in material of a similar matrix. It consists of bone ash that was blended to high degree of homogeneity.

Certified values

Ca	38.18 ± 0.13 %	Mg	0.684 ± 0.013 %	Sr	249 ± 7 µg/g
Fe	660 ± 27 µg/g	P	17.91 ± 0.19 %	Zn	181 ± 3 µg/g
K	186 ± 8 µg/g	Pb	9.07 ± 0.12 µg/g		

Clinical applications

Code	Product	Unit
NIST-1486	Trace elements in bone meal	50 g

This standard is intended primarily for use in evaluating analytical methods for the determination of selected major, minor and trace elements in bone and in material of similar matrix. It consists of steamed bone meal that was sieved and blended to a high degree of homogeneity.

Certified values

Ca ..... 26.58 ± 0.24 wt%	Fe ..... 99 ± 8 µg/g	Sr ..... 264 ± 7 µg/g
Mg ..... 0.466 ± 0.017 wt%	K ..... 412 ± 4 µg/g	Zn ..... 147 ± 16 µg/g
P ..... 12.30 ± 0.19 wt%	Pb ..... 1.335 ± 0.014 µg/g	

BCR-665 — Asbestos fibres in human lung — 100 mg

The sample consists of at least 100 mg of homogenised and sterilised (gamma irradiated at 25 kGy) human lung tissue.

Type of fibre	number of fibres *
Amosite + crocidolite	49
Anthophyllite	1.8

* of more than 1 µm in length in million per g dry tissue

BCR-666 — Asbestos fibres in lung tissue — 100 mg

The sample consists of at least 100 mg of homogenised and sterilised (gamma irradiated at 25 kGy) human lung tissue.

Type of fibre	number of fibres *
Amosite + crocidolite	2.3
Anthophyllite	5.1

*of more than 1 µm in length in million per g dry tissue

NCSZC81002B — Trace elements in human hair — 7 g

Analytes	µg/g	Analytes	µg/g	Analytes	µg/g
Ag	0.037 ± 0.002	Cu	33.6 ± 2.3	Ni	(5.77)
Al	23.2 ± 2.0	Fe	160 ± 16	P	174 ± 43
As	0.198 ± 0.023	Hg	1.06 ± 0.28	S	(4.62 in %)
Ba	11.1 ± 1.3	I	0.96 ± 0.20	Pb	3.83 ± 0.18
Br	(0.59)	K	(14.4)	Sb	0.12 ± 0.02
Ca	1537 ± 68	La	(0.029)	Se	0.59 ± 0.04
Cl	(48.2)	Mg	284 ± 14	Sr	8.17 ± 0.69
Cd	0.072 ± 0.010	Mn	3.83 ± 0.39	V	(0.089)
Co	0.153 ± 0.015	Mo	1.06 ± 0.12	Zn	191 ± 16
Cr	8.74 ± 0.97	Na	445 ± 40		

Proteins

BCR-486 — Alphafoetoprotein (AFP), human purified — Amp.

Each sample is in the lyophilised form and it contains purified AFP without additives. The material is kept under nitrogen gas in sealed glass ampoules. The protein mass per ampoule is equivalent to 100 ± 9 µg when the material is reconstituted. Carbohydrate mass of the molecule is not included.

Protein mass per ampoule ..... 100 ± 9 µg

BCR-393 — Apolipoprotein AI, human — Amp.

Each sample is in the lyophilised form of a 1.5 mL portion of Apo AI solution without additives. The material is kept under nitrogen gas in sealed glass ampoules.

Mass concentration in the reconstituted material ..... 1.06 ± 0.05 g/L

HEC JDS2 — HbA1c in haemoglobin in buffer — unit

JDS HbA1c Lot 2 is primarily intended for use in the calibration and standardization of procedures for measurement of Haemoglobin A1c in clinical specimens. It can also be used for validating working or secondary reference materials. The material consists of a lysed solution (carbonate buffer) of erythrocytes originating from human whole blood. The material is free from plasma components and without stabilisers. A single set of JDS HbA1c Lot 2 consists of five vials (0.1 mL) with concentrations levels 4-13%. Certified values:

Level	HbA1c (%)
1	4.04±0.08
2	5.38±0.05
3	7.32±0.07
4	9.88±0.10
5	12.63±0.13

BCR-273 — Single cell protein — 10 g

The material consists of about 10 g single cell protein powder in a sealed argon filled ampoule.

Certified values

Ca ..... 11.97 g/kg	K ..... 2.22 g/kg	P ..... 26.8 g/kg
Fe ..... 0.156 mg/kg	N ..... 121.6 g/kg	

Indicative values for Mg, N (Kjeldahl), Na, S

BCR-613 — Prostate specific antigen (PSA) — Amp.

Each sample is in lyophilised form and it contains purified PSA without additives. The material is kept under argon gas in sealed glass ampoules. Carbohydrate mass of the molecule not included. Prostate specific antigen in the reconstituted material

Mass concentration ..... 71 ± 7 µg

Code	Product	Unit
BCR-457	Thyroglobulin (Tg), human Each sample is in lyophylised form and equivalent to about 100 µl of purified Tg without additives. The material is kept under nitrogen in sealed glass ampoules. Mass concentration in the reconstituted material..... 0.324 ± 0.018 g/L	Amp.

Proteins in blood

IRMM/IFCC-467	Haemoglobin HbA0 in whole blood isolate The intended use of this reference material is the calibration of the IFCC reference measurement procedure and those analogous methods targeting the N-terminal hexapeptide with a stable glycation. A unit of IRMM/IFCC-467 consists of a glass vial with deep frozen HbA0-containing buffered solution (50 mmol/L MES, 10 mmol/L KCN, 2 mmol/L EDTA, pH 6.2). It was prepared from whole blood obtained from healthy volunteers. The certified value, the amount-of-substance fraction of HbA_0 (defined as defined as the non-glycated haemoglobin), is traceable to the SI. An indicative value for total haemoglobin mass fraction (119.7 ± 3.7 mg/g) is also provided. Certified value $HbA_0/(HbA_0 + HbA_{1c})$ ..... > 976 mmol/mol	vial
BCR-522	Haemiglobincyanide (HiCN) in bovine blood lysate Each sample is in the form of bovine blood lysate and a mass concentration of about 800.3 mg/L haemiglobincyanide with a volume of 10 mL. The material is kept in sealed brown neutral borosilicate glass ampoules. Molar mass and molar extinction coefficient of bovine haemoglobin and human haemoglobin have been shown to be equivalent. Absorbance at 540 nm HiCN ..... 0.5457 ± 0.0009 Concentration HiCN ..... 800.3 ±1.3 mg/L HiCN (Fe)..... 49.61 ± 0.08 µmol/L	Amp.

Proteins in serum

Seronorm Immunoprotein
(serum controls for clinical chemistry)

These materials are intended for use as control materials for clinical chemical work. They are provided at two relevant diagnostic levels and consist of freeze-dried human serum which should be reconstituted with water. The materials are suitable for analysis with electrophoresis. No preservatives or stabilisers are added. The materials are stable for three years at 2 - 8 °C in unopened vials. The content of opened vials is stable for seven days at 2 - 8 °C. The materials are characterised for the following proteins:

Alfa1-acid-glycoprotein	C3c	Ferritin	Prealbumin
Alfa1-antitrypsin	C4	Haptoglobin	Protein, total
Alfa2-macroglobulin	CCP	IgA	RF
Albumin	CDT (only in L-1)	IgE	Transferrin
Apolipoprotein A1	Ceruloplasmin	IgG	
ASL/ASO	CRP	IgM	
β_2 -microglobulin	Digitoxin	Myoglobin	

SERO202805	Seronorm Immunoprotein Level 1 (serum control for clinical chemistry)	6 x 1 mL
SERO202905	Seronorm Immunoprotein Level 2 (serum control for clinical chemistry)	6 x 1 mL
SERO200905	Seronorm protein (serum control for clinical chemistry) The material is intended for accuracy control of the most frequently analysed serum proteins. It is a stable freeze-dried human serum where both ß- and pre ß-lipoproteins have been removed. Most values are traceable to ERM-DA470 and each batch is supplied with a data key providing analytical values for each protein. The levels of each protein are targeted to improve analytical quality where it is of greatest importance for clinical decision, just outside the reference intervals. By an inversion of Albumin, the Total Protein is almost identical in Seronorm™ Protein. Assayed or reference values are provided for the following proteins: albumin α1-antitrypsin β2-microglobulin* C1q* C3c C4 ceruloplasmin CRP* ferritin haptoglobin IgA IgG IgE IgM α1-acid-glycoprotein (orosomucoid) α2-macroglobulin total protein transferrin transthyretin (prealbumin)	6 x 1 mL
NIST-2921	Human cardiac Troponin complex This material is primarily intended for use in calibrating clinical procedures and devices for the determination of cardiac troponin I (cTnI) in human serum. It can also be used for value-assignment of calibrators and control materials. A unit of consists of five vials, each containing approximately 115 µL of a dilute solution of human cardiac troponin complex. cTnI ..... 31.2 mg/L ± 1.4 mg/L	5 x 115 µL

Clinical applications

Code	Product	Unit
ERM-DA470K/IFCC	Proteins in human serum This material is primarily intended to be used for the calibration of immunoassay-based in-vitro diagnostic devices or control products for the certified protein. Each sample is the lyophilised form of a 1.0 mL portion of serum with additives (4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid (HEPES), sodium azide, benzamidine hydrochloride, sodium chloride and aprotinin). The material is kept under nitrogen gas in threaded glass bottles. The material has to be reconstituted with distilled water. The serum was produced from blood collected according to a procedure ensuring healthy donors, and low lipid content. The serum was processed in batches, pooled, spiked with B2M and CRP, lyophilised in the vials, and stored at - 70°C. Nephelometry, turbidimetry or spectrophotometry in different commercial platform/reagent combinations were used to measure protein concentrations. Certified values (mass concentration in the reconstituted material): Certified values g/L α2 macroglobulin (A2M) ..... 1.43 ± 0.06 α1 acid glycoprotein (AAG)..... 0.617 ± 0.013 α1 antitrypsin (AAT)..... 1.12 ± 0.03 albumin (ALB)..... 37.2 ± 1.2 complement 3c (C3c)..... 1.00 ± 0.04 complement 4 (C4) ..... 0.162 ± 0.007 haptoglobin (HPT)..... 0.889 ± 0.021 immunoglobulin A (IgA) ..... 1.80 ± 0.05 immunoglobulin G (IgG) ..... 9.17 ± 0.18 immunoglobulin M (IgM)..... 0.723 ± 0.027 transferrin (TRF) ..... 2.36 ± 0.08 transthyretin (TTR)..... 0.220 ± 0.018	Amp.
ERM-DA471K/IFCC	Cystatin C in human serum Each sample consists of lyophilised human serum spiked with cystatin C. It contains the following additives: 4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid (HEPES), sodium azide, benzamidine chloride and aprotinin. The material is kept under nitrogen gas in siliconised glass vials. Mass concentration measured in the reconstituted material Certified value..... 5.48 ± 0.15 mg/L	vial
ERM-DA472/IFCC	C-reactive protein (CRP) in human serum The material is primarily intended to be used to calibrate serum-based protein standards and control materials of organisations which offer such preparations for the quantification of CRP by immunoassay. Each sample consists of at least 1 mL processed human serum spiked with CRP. It contains the following additives: (4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid (HEPES), sodium azide, bezamidine chloride and aprotinin). The material is kept under argon gas in duran glass ampoules. When the material is used as a calibrant in a particular assay the commutability should be verified for the assay concerned. The certified value was established using the ERM-DA470 material in combination with a value transfer procedure. Certified value (mass concentration)..... 41.8 ± 2.5 mg/l	1 mL

Proteins in other matrices

BCR-405	Glycated haemoglobin (HbAlc) in human haemolysate (RM) Each sample is in lyophilised form and equivalent to about 0.5 mL of a solution of haemolysate of human erythrocytes without preservatives. The material is kept under carbon monoxide in sealed glass ampoules. HbA_{1C} in reconstituted material .... 62.9 ± 1.8 g/kg %	Amp.

Veterinary materials

BCR-386	Diethylstilboestrol (DES) in bovine urine, blank Diethylstilboestrol concentration in the reconstituted material .....< 0.1 µg/L The material consists of lyophilised bull urine obtained from animals which have never been treated with stilbenes. It is supplied in vials with a content equivalent to about 2.0 mL urine, sealed under nitrogen.	vial
BCR-389	Diethylstilboestrol (DES) in bovine urine, positive Diethylstilboestrol concentration in the reconstituted material..... 12.8 ± 2.5 µg/L The material consists of lyophilised bull urine mixed with friesian steer urine biologically incurred with diethylstilbestrol. It is supplied in vials with a content equivalent to about 2.0 mL urine, sealed under nitrogen.	vial
BCR-387	Dienoestrol (DE) in bovine urine, blank Dienoestrol concentration in the reconstituted material……. < 0.1 µg/L The material consists of lyophilised calf urine obtained from animals which have never been treated with stilbenes. It is supplied in vials with a content equivalent to about 2.0 mL urine, sealed under nitrogen.	vial
BCR-390	Dienoestrol (DE) in bovine urine, positive The material consists of lyophilised calf urine mixed with friesian steer urine biologically incurred with dienoestrol. It is supplied in vials with a content equivalent to about 2.0 mL urine, sealed under nitrogen. Dienoestrol concentration in the reconstituted material .....34 ± 7 µg/L.	vial
BCR-388	Hexoestrol (HEX) in bovine urine, blank Hexoestrol concentration in the reconstituted material..... < 0.1 µg/L The material consists of lyophilised cow urine obtained from animals which have never been treated with stilbenes. It is supplied in vials with a content equivalent to about 2.0 mL urine, sealed under nitrogen.	vial
BCR-391	Hexoestrol (HEX) in bovine urine, positive The material consists of lyophilised cow urine mixed with friesian steer urine biologically incurred with hexoestrol. It is supplied in vials with a content equivalent to about 2.0 mL urine, sealed under nitrogen. Hexoestrol concentration in the reconstituted material..... 13.3 ± 3.1 µg/L.	vial
NMIAD926	5(10)-Estrene-3beta,17alfa-diol	1 mg

Code	Product	Unit

Vitamins and micronutrients

NIST-970 — Ascorbic acid in frozen human serum — set (4)

This material is intended primarily for use in validating methods for determine ascorbic acid in human serum and similar matrices. It can also be used for quality assurance when assigning values to in-house control materials. A unit consists of four ampoules of frozen human serum, two ampoules each of level I (high normal) and level II (low normal). Each ampoule contains approximately 2.2 mL of solution, a 1:1 mixture of human serum and 100 g/L (10 % mass concentration) aqueous metaphosphoric acid (MPA). The MPA is present to stabilize and preserve the ascorbic acid.

Certified concentration values for total ascorbic acid (TAA) (ascorbic acid + dehydroascorbic acid).

Levels	value	95 % confidence
level I, µmol/L of solution	8.41	7.75 to 9.07
level II, µmol/L of solution	28.05	27.56 to 28.54

NIST-2972 — 25-Hydroxyvitamin D2 and D3 calibration solutions — 10 x 1.2 mL

This material consists of two separate solutions of the vitamin D metabolites 25-hydroxyvitamin D2 and 25-hydroxyvitamin D3 in ethanol. It is intended primarily for use in calibration of instruments and techniques used for the determination of these metabolites. A unit consists of ten 2 mL ampoules, five of which contain approximately 1.2 mL of the 25-hydroxyvitamin D2 solution and five of which contain approximately 1.2 mL of the 25-hydroxyvitamin D3 solution.

Certified values	mass fraction ng/g	concentration nmol/L
25-hydroxyvitamin D2	302.9 ± 4.9	578.3 ± 18.0
25-hydroxyvitamin D3	425.0 ± 6.6	835.6 ± 25.8

NIST-968D — Fat soluble cholesterol and vitamins in human serum — set (2)

This material is intended for use in validating methods for determining fat-soluble vitamins, carotenoids, and cholesterol in human serum and plasma. It can also be used for quality assurance when assigning values to in-house control materials for these constituents. A unit of the material consists of two vials of frozen human serum at a single concentration level. Certified values (mass concentrations):

Analyte	µg/ml
Total Retinol	0.311 ± 0.050
γ-Tocopherol	1.39 ± 0.12
α-Tocopherol	5.93 ± 0.55
Total β-Carotene	0.078 ± 0.007
Cholesterol	1335 ± 4

NIST-972 — Vitamin D in human serum — 4 x 1.0 mL

This material is intended for use as an accuracy control in the evaluation of methods for determining the concentration of vitamin D metabolites in human serum. The material can also be used as a quality assurance tool for assigning values to in-house control materials for these constituents. A unit of the material consists of four vials (Levels 1-4) of frozen serum with different concentration levels of 25-hydroxyvitamin D [25(OH)D]. Certified values are given as mass factions (below), and as mass concentrations and amount-of-substance concentrations (see certificate). Non-certified values are provided for some of the metabolites.

Certified value	(ng/g)
Level 1	
25-hydroxyvitamin D3	23.2 ± 0.8
Level 2	
25-hydroxyvitamin D2	1.67 ± 0.08
25-hydroxyvitamin D3	12.0 ± 0.6
Level 3	
25-hydroxyvitamin D2	25.8 ± 1.9
25-hydroxyvitamin D3	18.1 ± 1.1
Level 4	
25-hydroxyvitamin D2	2.35 ± 0.21
25-hydroxyvitamin D3	32.3 ± 0.8
3-epi-25-hydroxyvitamin D3	36.9 ± 1.1

CERH-090	1alpha, 25-Dihydroxyvitamin D2 (5 µg/ml) in Ethanol	1 mL
CERH-089	1alpha, 25-Dihydroxyvitamin D3 (5 µg/ml) in Ethanol	1 mL
CERH-073	25-Hydroxyvitamin D2 (0.05 mg/ml) in Ethanol	1 mL
CERH-087	25-Hydroxyvitamin D2 (5 µg/ml) in Ethanol	1 mL
CERH-083	25-HydroxyvVitamin D3 (1.0 mg/ml) in Ethanol	1 mL
CERH-086	25-Hydroxyvitamin D3 (5 µg/ml) in Ethanol	1 mL
CERH-074	D6-25-Hydroxyvitamin D3 (26,26,26,27,27,27-D6) (0.05 mg/mL) in Ethanol	1 mL
TRC-C125700	Calcifediol (25-Hydroyvitamin D3)	10 mg
TRC-H995820	25-Hydroxyvitamin D2	25 mg

Clinical applications

Code	Product	Unit
TRC-C144500	Calcitriol 1,25-Dihydroxyvitamin D3	2.5 mg
CDX-00003035-001	Calcitriol	1 mg
CDX-00003035-500	Calcitriol	0.5 mg
TRC-C125702	Calcifediol-D6	0.5 mg
TRC-C144502	Calcitriol-d6	10 mg

Various control materials

SERO203005 — Seronorm Human, high (serum control for clinical chemistry) — 10 x 5 mL

Freeze dried human serum control covering over 40 of the most frequently analysed components at levels of clinical interest. The human serum from which this product has derived is from thoroughly controlled voluntary, unpaid donors of Scandinavian blood centres. Each unit is tested negative to HB_s antigen, HCV - HIV-I - HIV-II antibodies by approved tests.

Analytes:

ALAT	CK-MB	IgM	T3, free
Albumin	Copper	IgG	T3, total
ALP	Creatinine	Iron	T4, free
Amylase, pancreas	CRP	Lactate	T4, total
Amylase, total	Digoxin	LDH	Testosterone
ASAT	Estradiol	Lipase	Theophylline
Bile Acid	Ferritin	Lithium	TIBC
Bilirubin,direct	Folate	Magnesium	Transferrin
Bilirubin, total	GGT	Osmolality	Triglycerides
Calcium	GLDH	Phenylalanin	TSH
Chloride	Glucose	Phosphorus	UIBC
Cholesterol, HDL/LDL	HBDH	Potassium	Urea
Cholesterol, total	hCG, total	Progesterone	Uric acid
Cholinesterase	Homocysteine	Protein, total	Vitamin B_{12}
CK	IgA	Sodium	Zinc

Seronorm Immunoassay (serum controls for clinical chemistry)

Liquid human serum control. Immunoassay control combining hormones, cardiac, and tumour markers and covering over 40 of the most frequently analysed components at levels of clinical interest. The human based matrix has been produced with focus on compatibility with patient samples. No preservatives or stabilisers are added
Human serum, from which this product has derived, is from thoroughly controlled voluntary unpaid donors of Scandinavian Blood Centres.
Each unit is tested negative for Hb_santigen, HCV - HIV-I - HIV-II antibodies by approved tests.
Three levels of clinical significance - each level available separately.

Freeze-dried (assayed values) or liquid control (approx values) available.

Analytes:

17-OH-Progesterone	C-peptide	IgE	T3 free
AFP	Cortisol	Insulin	T3 total
Aldosterone	DHEA-Sulphate	LH	T4 free
Androstendione	Digoxin	Metylmalonic acid	T4 total
Anti-TPO	Estradiol	Myoglobin	TBG
β2-microglobulin	Estriol,free	NT-pro-BNP	Testosterone
β-hCG, total	Ferritin	Progesterone	Theophylline
CA 125	Folate	Prolactin	Thyreoglobulin
CA 15-3	FSH	PTH (intact)	Troponin I
CA 19-9	hCG,total	PSA, free	Troponin T
CEA	hGH	PSA, total	TSH
CK-MB	Homocysteine	SHBG	Vitamin B_{12}

SERO207005	Seronorm Immunoassay Liquid L-1 (serum control for clinical chemistry)	12 x 3 mL
SERO207205	Seronorm Immunoassay Liquid L-3 (serum control for clinical chemistry)	12 x 3 mL
SERO206005	Seronorm Immunoassay Lyo L-1 (serum control for clinical chemistry)	12 x 3 mL
SERO206105	Seronorm Immunoassay Lyo L-2 (serum control for clinical chemistry)	12 x 3 mL
SERO206205	Seronorm Immunoassay Lyo L-3 (serum control for clinical chemistry)	12 x 3 mL
SERO203405	Seronorm Immunoassay L-3, low (serum control for clinical chemistry)	12 x 3 mL

Code	Product	Unit

SERO210105 Trace elements in whole blood, level 1 — 10 x 3 mL

This reference material is produced from blood collected from thoroughly controlled voluntary blood donors of a Scandinavian blood bank. Each unit is separately controlled and found negative for HBS antigen and HIV I, II and hepatitis C antibodies. No preservatives are added to the samples. It contains all normal constituents which ensures the control and test samples to be analysed under the same conditions.

Certified values after reconstitution

Ag 185 ng/L	Hg 1.97 µg/L	S 1100 mg/L
Al 11.2 µg/L	Ho 2.4 ng/L	Sb 2.35 µg/L
As 6.32 µg/L	I 25.7 µg/L	Sc 46 ng/L
Au 7 ng/L	Ir < 0.2 ng/L	Se 104 µg/L
B 400 µg/L	K 1130 mg/L	Si 0.81 mg/L
Ba 542 µg/L	La 94 ng/L	Sm 27 ng/L
Be 0.018 µg/L	Li 1 µg/L	Sn 0.42 µg/L
Bi 0.006 µg/L	Lu 0.8 ng/L	Sr 24 µg/L
Br 632 µg/L	Mg 16 mg/L	Ta 2.2 ng/L
Ca 14.5 mg/L	Mn 20.1 µg/L	Tb 2.2 ng/L
Cd 0.67 µg/L	Mo 0.8 µg/L	Te 0.11 µg/L
Ce 122 ng/L	Na 1467 mg/L	Th 12 ng/L
Cs 3 µg/L	Nb 57 ng/L	Ti 14 µg/L
Co 0.23 µg/L	Nd 96 ng/L	Tl 0.008 µg/L
Cr 0.82 µg/L	Ni 1.41 µg/L	Tm 1.2 ng/L
Cu 645 µg/L	P 216 mg/L	U 117 ng/L
Dy 12 ng/L	Pb 14.8 µg/L	V 1.1 µg/L
Er 9 ng/L	Pd < 10 ng/L	W 0.16 µg/L
Eu 11 ng/L	Pr 24 ng/L	Y 92 ng/L
F not analyzed	Pt 6 ng/L	Yb 9 ng/L
Fe 349 mg/L	Rb 1.47 mg/L	Zn 4810 µg/L
Ga 22 ng/L	Re 0.9 ng/L	Zr 681 ng/L
Gd 12 ng/L	Rh < 20 ng/L	
Hf 9 ng/L	Ru < 50 ng/L	

SERO210205 Trace elements in whole blood, level 2 — 10 x 3 mL

This reference material is produced from blood collected from thoroughly controlled voluntary blood donors of a Scandinavian blood bank. Each unit is separately controlled and found negative for HBS antigen and HIV I, II and hepatitis C antibodies. No preservatives are added to the samples. It contains all normal constituents which ensures the control and test samples to be analysed under the same conditions.

Certified values after reconstitution

Ag 197 ng/L	Hg 15.2 µg/L	S 1071 mg/L
Al 71.8 µg/L	Ho 2.6 ng/L	Sb 28.4 µg/L
As 16.3 µg/L	I 81 µg/L	Sc 55 ng/L
Au 7 ng/L	Ir < 0.2 ng/L	Se 264 µg/L
B 356 µg/L	K 1108 mg/L	Si 0.812 mg/L
Ba 535 µg/L	La 103 ng/L	Sm 24 ng/L
Be 5.988 µg/L	Li 1.4 µg/L	Sn 6.1 µg/L
Bi 5.15 µg/L	Lu 1 ng/L	Sr 24 µg/L
Br 672 µg/L	Mg 15.6 mg/L	Ta 3.5 ng/L
Ca 14 mg/L	Mn 32.7 µg/L	Tb 2.1 ng/L
Cd 6.5 µg/L	Mo 6.6 µg/L	Te 0.072 µg/L
Ce 124 ng/L	Na 1443 mg/L	Th 11 ng/L
Cs 2.9 µg/L	Nb 70 ng/L	Ti 18 µg/L
Co 6 µg/L	Nd 99 ng/L	Tl 10.4 µg/L
Cr 12.4 µg/L	Ni 18.5 µg/L	Tm 1.3 ng/L
Cu 1248 µg/L	P 214 mg/L	U 120 ng/L
Dy 13 ng/L	Pb 336 µg/L	V 5.9 µg/L
Er 10 ng/L	Pd < 10 ng/L	W 0.158 µg/L
Eu 11 ng/L	Pr 25 ng/L	Y 123 ng/L
F (*) 100 µg/L	Pt 6 ng/L	Yb 10 ng/L
Fe 343 mg/L	Rb 1.44 mg/L	Zn 8406 µg/L
Ga 30 ng/L	Re 0.8 ng/L	Zr 731 ng/L
Gd 12 ng/L	Rh < 20 ng/L	(*) added amount, not analyzed
Hf 10 ng/L	Ru < 50 ng/L	

Code	Product	Unit

SERO210305 — Trace elements in whole blood, level 3 — 10 x 3 mL

This reference material is produced from blood collected from thoroughly controlled voluntary blood donors of a Scandinavian blood bank. Each unit is separately controlled and found negative for HBS antigen and HIV I, II and hepatitis C antibodies. No preservatives are added to the samples. It contains all normal constituents which ensures the control and test samples to be analysed under the same conditions.

Certified values after reconstitution

Ag ... 245 ng/L	Hg ... 31.4 µg/L	S ... 1066 mg/L
Al ... 112 µg/L	Ho ... 2.9 ng/L	Sb ... 87.1 µg/L
As ... 30.9 µg/L	I ... 189 µg/L	Sc ... 47 ng/L
Au ... 8 ng/L	Ir ... < 0.2 ng/L	Se ... 419 µg/L
B ... 467 µg/L	K ... 1111 mg/L	Si ... 1 mg/L
Ba ... 559 µg/L	La ... 145 ng/L	Sm ... 25 ng/L
Be ... 12.4 µg/L	Li ... 1.7 µg/L	Sn ... 12.1 µg/L
Bi ... 10.5 µg/L	Lu ... 1 ng/L	Sr ... 25 µg/L
Br ... 667 µg/L	Mg ... 15.6 mg/L	Ta ... 4.1 ng/L
Ca ... 14.2 mg/L	Mn ... 49.7 µg/L	Tb ... 2.5 ng/L
Cd ... 12.3 µg/L	Mo ... 12.9 µg/L	Te ... 0.065 µg/L
Ce ... 149 ng/L	Na ... 1437 mg/L	Th ... 13 ng/L
Cs ... 2.9 µg/L	Nb ... 91 ng/L	Ti ... 23 µg/L
Co ... 11.3 µg/L	Nd ... 106 ng/L	Tl ... 30.9 µg/L
Cr ... 37.3 µg/L	Ni ... 30.6 µg/L	Tm ... 1.5 ng/L
Cu ... 2401 µg/L	P ... 216 mg/L	U ... 135 ng/L
Dy ... 14 ng/L	Pb ... 638 µg/L	V ... 13 µg/L
Er ... 10 ng/L	Pd ... < 10 ng/L	W ... 0.205 µg/L
Eu ... 12 ng/L	Pr ... 29 ng/L	Y ... 117 ng/L
F (*) ... 200 µg/L	Pt ... 7 ng/L	Yb ... 12 ng/L
Fe ... 343 mg/L	Rb ... 1.5 mg/L	Zn ... 9381µg/L
Ga ... 28 ng/L	Re ... 0.9 ng/L	Zr ... 738 ng/L
Gd ... 14 ng/L	Rh ... < 20 ng/L	(*) added amount, not analyzed
Hf ... 9.5 ng/L	Ru ... < 50 ng/L	

SERO201405 — Trace elements in serum, level 1 — 6 x 3 mL

This reference material is produced from serum collected from thoroughly controlled voluntary blood donors of a Scandinavian blood bank. Each unit is separately controlled and found negative for HBS antigen and HIV I, II and hepatitis C antibodies. No preservatives are added to the samples. Contains all normal constituents which ensure the control and test samples to be analysed under the same conditions.

Certified values after reconstitution

Al ... 33.6 µg/L	Hg ... 0.62 µg/L	Sc ... 7.6 ng/L
Ag ... 0.16 µg/L	Ho ... 1.9 ng/L	Se ... 107 µg/L
As ... 0.47 µg/L	I ... 84 µg/L	Si ... 0.74 mg/L
Au ... 540 µg/L	Ir ... 1.2 ng/L	Sm ... 7.7 ng/L
B ... 154 µg/L	K ... 126 mg/L	Sn ... 0.52 µg/L
Ba ... 126 µg/L	La ... 39.5 ng/L	Sr ... 26.3 µg/L
Be ... 1.8 ng/L	Li ... 5741 µg/L	Ta ... 3.1 ng/L
Bi ... 3.7 ng	Lu ... 0.7 ng/L	Te ... 29 ng/L
Br ... 488 µg/L	Mn ... 15 µg/L	Tb ... 1.3 ng/L
Ca ... 94.2 mg/L	Mg ... 20.1 mg/L	Th ... 2.9 ng/L
Cd ... 0.126 µg/L	Mo ... 0.7 µg/L	Ti ... 11.2 µg/L
Ce ... 38.7 ng/L	Na ... 2998 mg/L	Tl ... 23 ng/L
Cr ... 1.5 µg/L	Nb ... 40 ng/L	Tm ... 0.9 ng/L
Cs ... 18.6 ng/L	Nd ... 22.8 ng/L	U ... 48 ng/L
Co ... 1.2 µg/L	Ni ... 5.8 µg/L	V ... 0.96 µg/L
Cu ... 1691 µg/L	P ... 70 mg/L	W ... 91 ng/L
Dy ... 3.5 ng/L	Pb ... 1.02 µg/L	Y ... 19 ng/L
Er ... 3.5 ng/L	Pr ... 7.4 ng/L	Yb ... 2.5 ng/L
F (*) ... 75 µg/L	Pt ... 6.9 ng/L	Zn ... 1738 µg/L
Fe ... 1.39 mg/L	Rb ... 5.25 µg/L	Zr ... 278 ng/L
Ga ... 8.9 ng/L	Re ... 1.7 ng/L	(*) added amount, not analyzed
Gd ... 5.2 ng/L	S ... 1448 mg/L	
Hf ... 5.7 ng/L	Sb ... 80 µg/L	

Code	Product	Unit

SERO203105 — Trace elements in serum, level 2 — 6 x 3 mL

This reference material is produced from serum collected from thoroughly controlled voluntary blood donors of a Scandinavian blood bank. Each unit is separately controlled and found negative for HBS antigen and HIV I, II and hepatitis C antibodies. No preservatives are added to the samples. Contains all normal constituents which ensure the control and test samples to be analysed under the same conditions.

Certified values after reconstitution

Al	111 µg/L	Ge	< 400 ng/L	Ru	< 15 ng/L
Ag	343 ng/L	Hf	33 ng/L	S	1330 mg/L
Ar	343 ng/L	Hg	1.86 µg/L	Sb	21 µg/l
As	< 1 µg/L	Ho	9 ng/L	Sc	57 ng/L
Au	1956 µg/L	I	54 µg/L	Se	136 µg/L
B	41 µg/L	Ir	1.2 ng/L	Si	2.1 mg/L
Ba	271 µg/L	K	236 mg/L	Sm	45 ng/L
Be	18 ng/L	La	315 ng/L	Sn	2.86 µg/L
Bi	21 ng	Li	10.6 mg/L	Sr	130 µg/L
Br	656 µg/L	Lu	3.4 ng/L	Ta	3.2 ng/L
Ca	117 mg/L	Mn	19.1 µg/L	Tb	5.4 ng/L
Cd	317 ng/L	Mg	28.9 mg/L	Te	19 ng/L
Ce	285 ng/L	Mo	1.31 µg/L	Th	45 ng/L
Cr	5.2 µg/L	Na	3783 mg/L	Ti	3.0 µg/L
Cs	22 ng/L	Nb	42 ng/L	Tl	34 ng/L
Co	3.2 µg/L	Nd	249 ng/L	Tm	3.1 ng/L
Cu	2.6 mg/L	Ni	10.7 µg/L	U	0.98 µg/L
Dy	30 ng/L	P	42 mg/L	V	1.12 µg/L
Er	20 ng/L	Pb	3 µg/L	W	84 ng/L
Eu	12 ng/L	Pd	< 10 ng/L	Y	243 ng/L
F (added amount)	200 µg/L	Pr	69 ng/L	Yb	21 ng/L
Fe	1.91 mg/L	Pt	17 ng/L	Zn	0.92 mg/L
Ga	46 ng/L	Rb	7.2 µg/L	Zr	2.4 µg/L
Gd	41 ng/L	Re	6.3 ng/L		

SERO201205 — Trace elements in urine, level 2 — 10 x 5 mL

This reference material is produced from human urine from thoroughly controlled voluntary Norwegian donors. Each unit is controlled by official authorities and found negative for presence of HBS antigen and HIV I, II and hepatitis C antibodies. No preservatives are added to the samples. It contains all normal constituents which ensure the control and test samples to be analysed under the same conditions.

Certified values after reconstitution

Analyte

Ag	26 ng/L	I	304 µg/L	Sm	4.3 ng/L
Al	100 µg/L	Ir	0.16 ng/L	Sn	54.6 µg/L
As	142 µg/L	K	1903 mg/L	Sr	110 µg/L
Au	24 ng/L	La	31 ng/L	Ta	9 ng/L
B	869 µg/L	Li	10.2 µg/L	Tb	1.2 ng/L
Ba	51 µg/L	Lu	0.9 ng/L	Te	25.3 µg/L
Be	4.9 µg/L	Mg	71.mg/L	Th	2.5 ng/L
Bi	20.1 µg/L	Mn	12.3 µg/L	Ti	17.8 µg/L
Br	2 mg/L	Mo	49.3 µg/L	Tl	9.26 µg/L
Ca	107 mg/L	Na	2307 mg/L	Tm	0.3 ng/L
Cd	4.6 µg/L	Nb	57 ng/L	U	65.5 ng/L
Ce	77 ng/L	Nd	16.2 ng/L	V	25.2 µg/L
Cl	127 mmol/L	Ni	50.4 µg/L	W	0.17 µg/L
Co	10 µg/L	P	702 mg/L	Y	15 ng/L
Cu	72 µg/L	Pb	40.3 µg/L	Yb	1.1 ng/L
Cr	19.7 µg/L	Pd	<10 ng/L	Zn	1168 µg/L
Cs	6.79 µg/L	Pr	9.5 ng/L	Zr	81 ng/L
Dy	1.9 ng/L	Pt	8.1 ng/L	Creatinine	8663 µmol/L
Er	2.2 ng/L	Rb	1.17 mg/L	1-Hydroxypyrene	55 µg/L*
Eu	1.9 ng/L	Re	78 ng/L	Formic acid	10.8 mg/L*
F	4 mg/L*	Rh	<50 ng/L	Phenol	300 mg/L*
Fe	12.3 µg/L	Ru	<200 ng/L	Mandelic acid	490 µg/L*
Ga	37 ng/L	S	543 mg/L	Tetrachloroethylene	1000 µg/L*
Gd	4.5 ng/L	Sb	99.9 µg/L	TCA	350 µmol/L*
Hf	1 ng/L	Sc	103 ng/L	(*) added amount, not analyzed	
Hg	40.7 µg/L	Se	58.6 µg/L		
Ho	4.6 ng/L	Si	5.2 mg/L		

Blood cell size reference material

BCR-165 — Latex spheres, nominal 2 µ — vial

Average particle diameter ..... 2.223 ± 0.013 µm

Each vial contains 2 mL of an aqueous suspension of latex spheres at a mass concentration of about 0.2 g/L
About 0.5% of the particles are agglomerated doublets..

BCR-166 — Latex spheres, nominal 4.8 µ — vial

Each vial contains 2 mL of an aqueous suspension of latex spheres at a mass concentration of about 0.2 g/L.
About 0.5% of the particles are agglomerated doublets.

Average particle diameter ..... 4.821 ± 0.019 µm

BCR-167 — Latex spheres, nominal 9.6 µ — vial

Each vial contains 2 mL of an aqueous suspension of latex spheres at a mass concentration of about 1.4 g/L.
About 0.5% of the particles are agglomerated doublets.

Average particle diameter ..... 9.475 ± 0.018 µm

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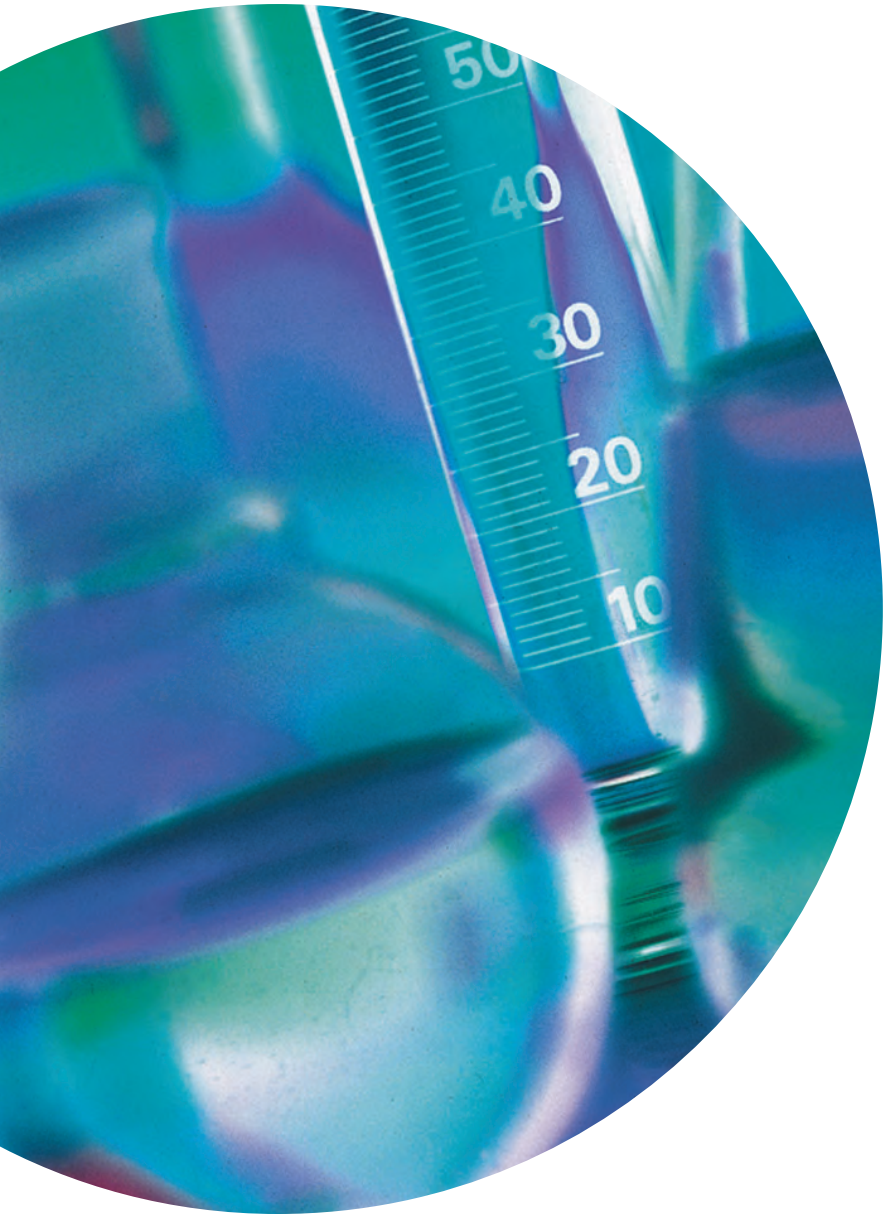

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Reference Materials and Proficiency Testing Schemes

LGC Standards

Excellence through measurement

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- **Therapeutic drugs and metabolites**
- **Drugs of abuse**
- **'Legal highs' and 'research chemicals'**
- **Matrix materials: blank, incurred and spiked**

Heathcontrol Proficiency Testing Schemes

- **Therapeutic Drug Monitoring** including antiepileptics (traditional and new), immunosuppressants (ASI scheme), antibiotics, psychoactives, methotrexate and others
- **Toxicology** including ethanol paracetamol, salicylates, carboxyhaemoglobin, case studies and quantitative exercises
- **Drugs of Abuse** in urine and oral fluid

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Forensic applications – Alcohol

Ethanol reference materials

LGC Standards has assembled an unrivalled offering of alcohol reference materials and related products; from primary reference standards to matrix matched materials. Correct use of these materials gives laboratories confidence in the analytical data they produce and report.

Primary reference materials

These materials are directly traceable to the SI and have a low underlying uncertainty value. They are intended for the validation and calibration of analytical methodologies and verification of existing processes.

Code	Product	Unit
ERM-AC409	Aqueous ethanol - 20mg / 100 ml Ethanol mass concentration ..... 19.9 mg / 100 mL	50 mL
ERM-AC510	Aqueous Ethanol - 50mg/100mL Ethanol mass concentration ..... 49.6 mg / 100 mL	25 mL
ERM-AC511	Aqueous Ethanol - 67mg/100mL Ethanol mass concentration ..... 66.9 mg / 100 mL	25 mL
ERM-AC401	Aqueous ethanol 80mg/dL 25ml Ethanol mass concentration ..... 79.6 mg / 100mL	25 mL
ERM-AC402	Aqueous ethanol - 107 mg / 100ml Ethanol mass concentration ..... 106.5 mg / 100 mL	25 mL
ERM-AC403	Aqueous ethanol - 200 mg / 100 ml Ethanol mass concentration ..... 199.6 mg / 100mg	25 mL
ERM-AC404	Ethanol/water - 5% Ethanol Certified value Ethanol ..... 4.96 mL/100 mL at 20°C Density ..... 990.05 kg/m^3 at 20°C	50 mL
ERM-AC405	Ethanol/water - 15% Ethanol Certified value Ethanol ..... 14.99 mL/100mL at 20^{0}C Density ..... 977.94 kg/m^3 at 20^{0}C	50 mL
ERM-AC406	Ethanol/water - 40% Ethanol Certified value Ethanol ..... 40.04 mL/100 mL at 20°C Density ..... 946.91 kg/m^3 at 20°C	50 mL
ERM-AC407	Ethanol/water - 70% Ethanol Certified value Ethanol ..... 69.98 mL/100mL at 20^{0}C Density ..... 884.55 kg/m^3 at 20^{0}C ABV:alcohol by volume	50 mL
NIST-2891	Ethanol-water solution (nominal 0.02 % mass fraction) This reference material is a solution of ethanol in water at a nominal level of 0.02 % mass fraction. The material is intended primarily for use in the calibration of instruments and techniques used for the determination of ethanol in blood. A unit consists of five 2 mL ampoules, each containing approximately 1.2 mL of solution. Certified value Ethanol ..... 0.01951 ± 0.00018 %	unit (5)
NIST-2892	Ethanol-water solution (nominal 0.04 % mass fraction) This reference material is a solution of ethanol in water at a nominal level of 0.04 % mass fraction. The material is intended primarily for use in the calibration of instruments and techniques used for the determination of ethanol in blood. A unit consists of five 2 mL ampoules, each containing approximately 1.2 mL of solution. Certified value Ethanol ..... 0.03900 ± 0.00046 %	unit (5)
NIST-2893	Ethanol-water solution (nominal 0.08 % mass fraction) This reference material is a solution of ethanol in water at a nominal level of 0.08 % mass fraction. The material is intended primarily for use in the calibration of instruments and techniques used for the determination of ethanol in blood. A unit consists of five 2 mL ampoules, each containing approximately 1.2 mL of solution. Certified value Ethanol ..... 0.08023 ± 0.00074 %	unit (5)

Forensic applications – Alcohol

Code	Product	Unit
NIST-2894	Ethanol-water solution (nominal 0.1 % mass fraction) This reference material is a solution of ethanol in water at a nominal level of 0.1 % mass fraction. The material is intended primarily for use in the calibration of instruments and techniques used for the determination of ethanol in blood. A unit consists of five 2 mL ampoules, each containing approximately 1.2 mL of solution. Certified value Ethanol .....0.10084 ± 0.00083 %	unit (5)
NIST-2895	Ethanol-water solution (nominal 0.2 % mass fraction) This reference material is a solution of ethanol in water at a nominal level of 0.2 % mass fraction. This material is intended primarily for use in the calibration of instruments and techniques used for the determination of ethanol in blood. A unit consists of five 2 mL ampoules, each containing approximately 1.2 mL of solution. Certified value Ethanol.....0.1701 ± 0.0014 %	unit (5)
NIST-2896	Ethanol-water solution (nominal 0.3 % mass fraction) This reference material is a solution of ethanol in water at a nominal level of 0.3 % mass fraction.The material is intended primarily for use in the calibration of instruments and techniques used for the determination of ethanol in blood. A unit consists of five 2 mL ampoules, each containing approximately 1.2 mL of solution. Certified value Ethanol.....0.2980 ± 0.0030 %	unit (5)
NIST-2897	Ethanol-water solution (nominal 2 % mass fraction) This reference material is a solution of ethanol in water at a nominal level of 2 % mass fraction. The material is intended primarily for use in the calibration of instruments and techniques used for the determination of ethanol in breath. A unit consists of five 2 mL ampoules, each containing approximately 1.2 mL of solution. Certified value Ethanol.....1.554 ± 0.016 %	unit (5)
NIST-2898	Ethanol-water solution (nominal 6 % mass fraction) This reference material is a solution of ethanol in water at a nominal level of 6 % mass fraction. The material is intended primarily for use in the calibration of instruments and techniques used for the determination of ethanol in breath. A unit consists of five 2 mL ampoules, each containing approximately 1.2 mL of solution Certified value Ethanol.....6.040 ± 0.043 %	unit (5)
NIST-2899	Ethanol-water solution (nominal 25 % mass fraction) .This reference material is a solution of ethanol in water at a nominal level of 25 % mass fraction. The material is intended primarily for use in the calibration of instruments and techniques used for the determination of ethanol in breath. A unit consists of five 2 mL ampoules, each containing approximately 1.2 mL of solution. Certified value Ethanol.....25.21 ± 0.22 %	unit (5)
NIST-1847	Ethanol-water solutions (breath-alcohol testing: three levels) This reference material is a set of three levels of ethanol in water. The material is intended primarily for use in the calibration of instruments and techniques used for the determination of ethanol in breath. A unit consists of six ampoules, two ampoules each of the nominal levels (mass fraction) of 2 %, 6 %, and 25 %, each containing approximately 10 mL of solution. Nominal and certified levels (mass fraction) 2 %.....1.554 ± 0.016 % 6 %.....6.040 ± 0.043 % 25 %.....25.21 ± 0.22 %	unit (6)

Secondary reference materials

These secondary reference materials are traceable to the SI through the use of Primary Reference Materials in their preparation. They are suitable for the development and validation of new analytical methodologies, for verification of existing processes and for routine use as control materials.

CERE-056	Ethanol-20 20 mg/dL - 1.2 mL water / ampoule	10 x 1.2 mL
CERE-040	Ethanol-10 10 mg/dL - 1.2 mL water / ampoule	10 x 1.2 mL
CERE-042	Ethanol-15 15 mg/dL - 5 mL water / ampoule	5 x 5 mL
CERE-043	Ethanol-20 20 mg/dL - 5 mL water / ampoule	5 x 5 mL
CERE-035	Ethanol-25 25 mg/dL - 1.2 mL water / ampoule	10 x 1.2 mL

Code	Product	Unit
CERE-045	Ethanol-40 40 mg/dL - 1.2 mL water / ampoule	10 x 1.2 mL
CERE-029	Ethanol-50 50 mg/dL - 1.2 mL water / ampoule	10 x 1.2 mL
CERE-030	Ethanol-80 80 mg/dL - 1.2 mL water / ampoule	10 x 1.2 mL
CERE-037	Ethanol-80 80 mg/dL - 5 mL water / ampoule	5 x 5 mL
CERE-031	Ethanol-100 100 mg/dL - 1.2 mL water / ampoule	10 x 1.2 mL
CERE-038	Ethanol-100 100 mg/dL - 5 mL water / ampoule	5 x 5 mL
CERE-041	Ethanol-150 150 mg/dL - 1.2 mL water / ampoule	10 x 1.2 mL
CERE-032	Ethanol-200 200 mg/dL - 1.2 mL water / ampoule	10 x 1.2 mL
CERE-039	Ethanol-200 200 mg/dL - 5 mL water / ampoule	5 x 5 mL
CERE-033	Ethanol-300 300 mg/dL - 1.2 mL water / ampoule	10 x 1.2 mL
CERE-036	Ethanol-400 400 mg/dL - 1.2 mL water / ampoule	10 x 1.2 mL
CERE-044	Ethanol-400 400 mg/dL - 5 mL water / ampoule	5 x 5 mL
CERE-053	Ethanol-500 500 mg/dL - 1.2 mL water / ampoule	10 x 1.2 mL
CERE-034	Ethanol calibration kit 2 ampoules of each of the individual standards. Ethanol at stated concentration (mg/dL), 1.2 mL/ampoule 10 ampoules per kit Ethanol-50 mg/dL ..... CERE-029 Ethanol-80 mg/dL ..... CERE-030 Ethanol-100 mg/dL ..... CERE-031 Ethanol-200 mg/dL ..... CERE-032 Ethanol-300 mg/dL CERE-033	10 x 1.2 mL
CERA-076	Multi-component alcohol mix 100 µg/mL 4 components in water, 100 µg/mL of each component: acetone, isopropanol, ethanol, methanol	1.2 mL
CERA-057	Multi-component alcohol mix 500 µg/mL 4 components in water, 500 µg/mL of each component: acetone, isopropanol, ethanol, methanol	1.2 mL
CERA-056	Multi-component alcohol mix 1000 µg/mL 4 components in water, 1000 µg/mL of each component: acetone, isopropanol, ethanol, methanol	1.2 mL
CERA-061	Multi-component alcohol mix 4000 µg/mL 4 components in water, 4000 µg/mL of each component: acetone, isopropanol, ethanol, methanol	1.2 mL
CERA-054	Multi-component alcohol calibration kit Prepared as congener alcohols in water. It contains three ampoules each of three different concentration levels. Analytes — level 1 µg/mL — level 2 µg/mL — level 3 µg/mL Acetone ..... 500 ..... 1000 ..... 4000 Methanol ..... 500 ..... 1000 ..... 4000 Ethanol ..... 500 ..... 1000 ..... 4000 Isopropanol ..... 500 ..... 1000 4000	3 x 1.2 mL

Working reference materials

ACQ SCIENCE and Medichem have produced a range of aqueous and matrix-matched materials for the analysis of ethanol in serum and blood. These materials have been characterized through collaborative exercises and trials, and are ideal for routine use as control materials to allow effective monitoring of an assay's performance.

ME 20010	Aqueous ethanol standard (0.1 g/L) (Medidrug Ethanol W)	10 x 1.1 mL

Forensic applications – Alcohol

Code	Product	Unit
ME 20011	Aqueous ethanol standard (0.1 g/L) (Medidrug Ethanol W)	100 x 1.1 mL
ME 20013	Aqueous ethanol standard (0.1 g/L) (Medidrug Ethanol W)	10 x 3 mL
ME 20020	Aqueous ethanol standard (0.2 g/L) (Medidrug Ethanol W)	10 x 1.1 mL
ME 20021	Aqueous ethanol standard (0.2 g/L) (Medidrug Ethanol W)	100 x 1.1 mL
ME 20023	Aqueous ethanol standard (0.2 g/L) (Medidrug Ethanol W)	10 x 3 mL
ME 20030	Aqueous ethanol standard (0.3 g/L) (Medidrug Ethanol W)	10 x 1.1 mL
ME 20031	Aqueous ethanol standard (0.3 g/L) (Medidrug Ethanol W)	100 x 1.1 mL
ME 20033	Aqueous ethanol standard (0.3 g/L) (Medidrug Ethanol W)	10 x 3 mL
ME 20051	Aqueous ethanol standard (0.5 g/L) (Medidrug Ethanol W)	100 x 1.1 mL
ME 20050	Aqueous ethanol standard (0.5 g/L) (Medidrug Ethanol W)	10 x 1.1 mL
ME 20053	Aqueous ethanol standard (0.5 g/L) (Medidrug Ethanol W)	10 x 3 mL
ME 20081	Aqueous ethanol standard (0.8 g/L) (Medidrug Ethanol W)	100 x 1.1 mL
ME 20080	Aqueous ethanol standard (0.8 g/L) (Medidrug Ethanol W)	10 x 1.1 mL
ME 20083	Aqueous ethanol standard (0.8 g/L) (Medidrug Ethanol W)	10 x 3 mL
ME 20101	Aqueous ethanol standard (1.0 g/L) (Medidrug Ethanol W)	100 x 1.1 mL
ME 20100	Aqueous ethanol standard (1.0 g/L) (Medidrug Ethanol W)	10 x 1.1 mL
ME 20103	Aqueous ethanol standard (1.0 g/L) (Medidrug Ethanol W)	10 x 3 mL
ME 20111	Aqueous ethanol standard (1.1 g/L) (Medidrug Ethanol W)	100 x 1.1 mL
ME 20110	Aqueous ethanol standard (1.1 g/L) (Medidrug Ethanol W)	10 x 1.1 mL
ME 20113	Aqueous ethanol standard (1.1 g/L) (Medidrug Ethanol W)	10 x 3 mL
ME 20131	Aqueous ethanol standard (1.3 g/L) (Medidrug Ethanol W)	100 x 1.1 mL
ME 20130	Aqueous ethanol standard (1.3 g/L) (Medidrug Ethanol W)	10 x 1.1 mL
ME 20133	Aqueous ethanol standard (1.3 g/L) (Medidrug Ethanol W)	10 x 3 mL
ME 20151	Aqueous ethanol standard (1.5 g/L) (Medidrug Ethanol W)	100 x 1.1 mL
ME 20150	Aqueous ethanol standard (1.5 g/L) (Medidrug Ethanol W)	10 x 1.1 mL
ME 20153	Aqueous ethanol standard (1.5 g/L) (Medidrug Ethanol W)	10 x 3 mL
ME 20201	Aqueous ethanol standard (2.0 g/L) (Medidrug Ethanol W)	100 x 1.1 mL
ME 20200	Aqueous ethanol standard (2.0 g/L) (Medidrug Ethanol W)	10 x 1.1 mL
ME 20203	Aqueous ethanol standard (2.0 g/L) (Medidrug Ethanol W)	10 x 3 mL
ME 20301	Aqueous ethanol standard (3.0 g/L) (Medidrug Ethanol W)	100 x 1.1 mL

Code	Product	Unit
ME 20300	Aqueous ethanol standard (3.0 g/L) (Medidrug Ethanol W)	10 x 1.1 mL
ME 20303	Aqueous ethanol standard (3.0 g/L) (Medidrug Ethanol W)	10 x 3 mL
ME 20401	Aqueous ethanol standard (4.0 g/L) (Medidrug Ethanol W)	100 x 1.1 mL
ME 20400	Aqueous ethanol standard (4.0 g/L) (Medidrug Ethanol W)	10 x 1.1 mL
ME 20403	Aqueous ethanol standard (4.0 g/L) (Medidrug Ethanol W)	10 x 3 mL
ME 20500	Aqueous ethanol standard (5.0 g/L) (Medidrug Ethanol W)	10 x 1.1 mL
ME 20501	Aqueous ethanol standard (5.0 g/L) (Medidrug Ethanol W)	100 x 1.1 mL
ME 20503	Aqueous ethanol standard (5.0 g/L) (Medidrug Ethanol W)	10 x 3 mL
AC-AQ01-015	Aqueous ethanol control EtOH AQ (0.1 g/L)	10 x 1.5 mL
AC-AQ01-030	Aqueous ethanol control EtOH AQ (0.1 g/L)	10 x 3.0 ml
AC-AQ02-015	Aqueous ethanol control EtOH AQ (0.2 g/L)	10 x 1.5 mL
AC-AQ02-030	Aqueous ethanol control EtOH AQ (0.2 g/L)	10 x 3.0 ml
AC-AQ03-015	Aqueous ethanol control EtOH AQ (0.3 g/L)	10 x 1.5 mL
AC-AQ03-030	Aqueous ethanol control EtOH AQ (0.3 g/L)	10 x 3.0 ml
AC-AQ05-015	Aqueous ethanol control EtOH AQ (0.5 g/L)	10 x 1.5 mL
AC-AQ05-030	Aqueous ethanol control EtOH AQ (0.5 g/L)	10 x 3.0 ml
AC-AQ08-015	Aqueous ethanol control EtOH AQ (0.8 g/L)	10 x 1.5 mL
AC-AQ08-030	Aqueous ethanol control EtOH AQ (0.8 g/L)	10 x 3.0 ml
AC-AQ10-015	Aqueous ethanol control EtOH AQ (1.0 g/L)	10 x 1.5 mL
AC-AQ10-030	Aqueous ethanol control EtOH AQ (1.0 g/L)	10 x 3.0 ml
AC-AQ11-015	Aqueous ethanol control EtOH AQ (1.1 g/L)	10 x 1.5 mL
AC-AQ11-030	Aqueous ethanol control EtOH AQ (1.1 g/L)	10 x 3.0 ml
AC-AQ13-015	Aqueous ethanol control EtOH AQ (1.3 g/L)	10 x 1.5 mL
AC-AQ13-030	Aqueous ethanol control EtOH AQ (1.3 g/L)	10 x 3.0 ml
AC-AQ15-015	Aqueous ethanol control EtOH AQ (1.5 g/L)	10 x 1.5 mL
AC-AQ15-030	Aqueous ethanol control EtOH AQ (1.5 g/L)	10 x 3.0 ml
AC-AQ20-015	Aqueous ethanol control EtOH AQ (2.0 g/L)	10 x 1.5 mL
AC-AQ20-030	Aqueous ethanol control EtOH AQ (2.0 g/L)	10 x 3.0 ml
AC-AQ30-015	Aqueous ethanol control EtOH AQ (3.0 g/L)	10 x 1.5 mL
AC-AQ30-030	Aqueous ethanol control EtOH AQ (3.0 g/L)	10 x 3.0 ml
AC-AQ40-015	Aqueous ethanol control EtOH AQ (4.0 g/L)	10 x 1.5 mL
AC-AQ40-030	Aqueous ethanol control EtOH AQ (4.0 g/L)	10 x 3.0 ml
AC-AQ50-015	Aqueous ethanol control EtOH AQ (5.0 g/L)	10 x 1.5 mL
AC-AQ50-030	Aqueous ethanol control EtOH AQ (5.0 g/L)	10 x 3.0 ml

Alcohol congeners in water

ME 91311	Aqueous congener alcohols control, level 1	10 x 1.2 mL

Aqueous congener alcohols control (Medidrug BGS W) for quality control of quantitative determinations of congener alcohols by GC. The concentration values have been determined by independent laboratories of forensic medicine.

Analytes

Acetone	0.5 mg/L	2-Methyl-1-butanol	0.1 mg/L
Methanol	1.0 mg/L	3-Methyl-1-butanol	0.1 mg/L
1-Butanol	0.1 mg/L	1-Propanol	0.1 mg/L
2-Butanol	0.1 mg/L	2-Propanol	0.1 mg/L
2-Butanon	0.1 mg/L	Ethanol	1.5 g/L
Isobutanol	0.1 mg/L		

Forensic applications – Alcohol

Code	Product	Unit
ME 91321	Aqueous congener alcohols control, level 2 Aqueous congener alcohols control (Medidrug BGS W) for quality control of quantitative determinations of congener alcohols by GC. The concentration values have been determined by independent laboratories of forensic medicine. Analytes Acetone 1.0 mg/L; Methanol 2.0 mg/L; 1-Butanol 0.2 mg/L; 2-Butanol 0.2 mg/L; 2-Butanon 0.2 mg/L; Isobutanol 0.2 mg/L; 2-Methyl-1-butanol 0.2 mg/L; 3-Methyl-1-butanol 0.2 mg/L; 1-Propanol 0.2 mg/L; 2-Propanol 0.2 mg/L; Ethanol 1.5 g/L	10 x 1.2 mL
ME 91331	Aqueous congener alcohols control, level 3 Aqueous congener alcohols control (Medidrug BGS W) for quality control of quantitative determinations of congener alcohols by GC. The concentration values have been determined by independent laboratories of forensic medicine. Analytes Acetone 1.5 mg/L; Methanol 3.0 mg/L; 1-Butanol 0.3 mg/L; 2-Butanol 0.3 mg/L; 2-Butanon 0.3 mg/L; Isobutanol 0.3 mg/L; 2-Methyl-1-butanol 0.3 mg/L; 3-Methyl-1-butanol 0.3 mg/L; 1-Propanol 0.33mg/L; 2-Propanol 0.4 mg/L; Ethanol 1.5 g/L	10 x 1.2 mL
ME 91341	Aqueous congener alcohols control, level 4 Aqueous congener alcohols control (Medidrug BGS W) for quality control of quantitative determinations of congener alcohols by GC. The concentration values have been determined by independent laboratories of forensic medicine. Analytes Acetone 2.0 mg/L; Methanol 4.0 mg/L; 1-Butanol 0.4 mg/L; 2-Butanol 0.4 mg/L; 2-Butanon 0.4 mg/L; Isobutanol 0.4 mg/L; 2-Methyl-1-butanol 0.4 mg/L; 3-Methyl-1-butanol 0.4 mg/L; 1-Propanol 0.4 mg/L; 2-Propanol 0.4 mg/L; Ethanol 1.5 g/L	10 x 1.2 mL
ME 91351	Aqueous congener alcohols control, level 5 Aquous congener alcohols control (Medidrug BGS W) for quality control of quantitative determinations of congener alcohols by GC. The concentration values have been determined by independent laboratories of forensic medicine. Analytes Acetone 2.5 mg/L; Methanol 5.0 mg/L; 1-Butanol 0.5 mg/L; 2-Butanol 0.5 mg/L; 2-Butanon 0.5 mg/L; Isobutanol 0.5 mg/L; 2-Methyl-1-butanol 0.5 mg/L; 3-Methyl-1-butanol 0.5 mg/L; 1-Propanol 0.5 mg/L; 2-Propanol 0.5 mg/L; Ethanol 1.5 g/L	10 x 1.2 mL
ME 91361	Aqueous congener alcohols control, level 6 Aqeuous congener alcohols control (Medidrug BGS W) for quality control of quantitative determinations of congener alcohols by GC. The concentration values have been determined by independent laboratories of forensic medicine. Analytes Acetone 5.0 mg/L; Methanol 10.0 mg/L; 1-Butanol 1.0 mg/L; 2-Butanol 1.0 mg/L; 2-Butanon 1.0 mg/L; Isobutanol 1.0 mg/L; 2-Methyl-1-butanol 1.0 mg/L; 3-Methyl-1-butanol 1.0 mg/L; 1-Propanol 1.0 mg/L; 2-Propanol 1.0 mg/L; Ethanol 1.5 g/L	10 x 1.2 mL
ME 91371	Aqueous congener alcohols control, level 7 Aqeuous congener alsochols control (Medidrug BGS W) for quality control of quantitative determinations of congener alcohols by GC. The concentration values have been determined by independent laboratories of forensic medicine. Analytes Acetone 10.0 mg/L; Methanol 20.0 mg/L; 1-Butanol 2.0 mg/L; 2-Butanol 2.0 mg/L; 2-Butanon 2.0 mg/L; Isobutanol 2.0 mg/L; 2-Methyl-1-butanol 2.0 mg/L; 3-Methyl-1-butanol 2.0 mg/L; 1-Propanol 2.0 mg/L; 2-Propanol 2.0 mg/L; Ethanol 1.5 g/L	10 x 1.2 mL

Ethanol in serum

ME 11010	Ethanol in human serum with reference values (0.1 g/L) (Medidrug Ethanol S-plus)	10 x 1.1 mL
ME 11012	Ethanol in human serum with reference values (0.1 g/L) (Medidrug Ethanol S-plus)	10 x 1.5 mL
ME 11013	Ethanol in human serum with reference values (0.1 g/L) (Medidrug Ethanol S-plus)	10 x 3 mL

Code	Product	Unit
ME 11020	Ethanol in human serum with reference values (0.2 g/L) (Medidrug Ethanol S-plus)	10 x 1.1 mL
ME 11022	Ethanol in human serum with reference values (0.2 g/L) (Medidrug Ethanol S-plus)	10 x 1.5 mL
ME 11023	Ethanol in human serum with reference values (0.2 g/L) (Medidrug Ethanol S-plus)	10 x 3 mL
ME 11030	Ethanol in human serum with reference values (0.3 g/L) (Medidrug Ethanol S-plus)	10 x 1.1 mL
ME 11032	Ethanol in human serum with reference values (0.3 g/L) (Medidrug Ethanol S-plus)	10 x 1.5 mL
ME 11033	Ethanol in human serum with reference values (0.3 g/L) (Medidrug Ethanol S-plus)	10 x 3 mL
ME 11050	Ethanol in human serum with reference values (0.5 g/L) (Medidrug Ethanol S-plus)	10 x 1.1 mL
ME 11052	Ethanol in human serum with reference values (0.5 g/L) (Medidrug Ethanol S-plus)	10 x 1.5 mL
ME 11053	Ethanol in human serum with reference values (0.5 g/L) (Medidrug Ethanol S-plus)	10 x 3 mL
ME 11080	Ethanol in human serum with reference values (0.8 g/L) (Medidrug Ethanol S-plus)	10 x 1.1 mL
ME 11082	Ethanol in human serum with reference values (0.8 g/L) (Medidrug Ethanol S-plus)	10 x 1.5 mL
ME 11083	Ethanol in human serum with reference values (0.8 g/L) (Medidrug Ethanol S-plus)	10 x 3 mL
ME 11100	Ethanol in human serum with reference values (1.0 g/L) (Medidrug Ethanol S-plus)	10 x 1.1 mL
ME 11102	Ethanol in human serum with reference values (1.0 g/L) (Medidrug Ethanol S-plus)	10 x 1.5 mL
ME 11103	Ethanol in human serum with reference values (1.0 g/L) (Medidrug Ethanol S-plus)	10 x 3 mL
ME 11110	Ethanol in human serum with reference values (1.1 g/L) (Medidrug Ethanol S-plus)	10 x 1.1 mL
ME 11112	Ethanol in human serum with reference values (1.1 g/L) (Medidrug Ethanol S-plus)	10 x 1.5 mL
ME 11113	Ethanol in human serum with reference values (1.1 g/L) (Medidrug Ethanol S-plus)	10 x 3 mL
ME 11130	Ethanol in human serum with reference values (1.3 g/L) (Medidrug Ethanol S-plus)	10 x 1.1 mL
ME 11132	Ethanol in human serum with reference values (1.3 g/L) (Medidrug Ethanol S-plus)	10 x 1.5 mL
ME 11133	Ethanol in human serum with reference values (1.3 g/L) (Medidrug Ethanol S-plus)	10 x 3 mL
ME 11150	Ethanol in human serum with reference values (1.5 g/L) (Medidrug Ethanol S-plus)	10 x 1.1 mL
ME 11152	Ethanol in human serum with reference values (1.5 g/L) (Medidrug Ethanol S-plus)	10 x 1.5 mL
ME 11153	Ethanol in human serum with reference values (1.5 g/L) (Medidrug Ethanol S-plus)	10 x 3 mL
ME 11200	Ethanol in human serum with reference values (2.0 g/L) (Medidrug Ethanol S-plus)	10 x 1.1 mL
ME 11202	Ethanol in human serum with reference values (2.0 g/L) (Medidrug Ethanol S-plus)	10 x 1.5 mL
ME 11203	Ethanol in human serum with reference values (2.0 g/L) (Medidrug Ethanol S-plus)	10 x 3 mL
ME 11300	Ethanol in human serum with reference values (3.0 g/L) (Medidrug Ethanol S-plus)	10 x 1.1 mL
ME 11302	Ethanol in human serum with reference values (3.0 g/L) (Medidrug Ethanol S-plus)	10 x 1.5 mL
ME 11303	Ethanol in human serum with reference values (3.0 g/L) (Medidrug Ethanol S-plus)	10 x 3 mL

Forensic applications – Alcohol

Code	Product	Unit
ME 11400	Ethanol in human serum with reference values (4.0 g/L) (Medidrug Ethanol S-plus)	10 x 1.1 mL
ME 11402	Ethanol in human serum with reference values (4.0 g/L) (Medidrug Ethanol S-plus)	10 x 1.5 mL
ME 11403	Ethanol in human serum with reference values (4.0 g/L) (Medidrug Ethanol S-plus)	10 x 3 mL
ME 11500	Ethanol in human serum with reference values (5.0 g/L) (Medidrug Ethanol S-plus)	10 x 1.1 mL
ME 11502	Ethanol in human serum with reference values (5.0 g/L) (Medidrug Ethanol S-plus)	10 x 1.5 mL
ME 11503	Ethanol in human serum with reference values (5.0 g/L) (Medidrug Ethanol S-plus)	10 x 3 mL
ME 12012	Ethanol in human serum, precision control, X1 (0.5 - 0.6 g/L) (Medidrug Ethanol S-X)	10 x 1.5 mL
ME 12013	Ethanol in human serum, precision control, X1 (0.5 - 0.6 g/L) (Medidrug Ethanol S-X)	10 x 3 mL
ME 12022	Ethanol in human serum, precision control, X2 (0.8 - 1.1 g/L) (Medidrug Ethanol S-X)	10 x 1.5 mL
ME 12023	Ethanol in human serum, precision control, X2 (0.8 - 1.1 g/L) (Medidrug Ethanol S-X)	10 x 3 mL
ME 12032	Ethanol in human serum, precision control, X3 (2.0 - 3.0 g/L) (Medidrug Ethanol S-X)	10 x 1.5 mL
ME 12033	Ethanol in human serum, precision control, X3 (2.0 - 3.0 g/L) (Medidrug Ethanol S-X)	10 x 3 mL
AC-SE01-015	Ethanol in serum control EtOH SE (0.1 g/L)	10 x 1.5 mL
AC-SE01-030	Ethanol in serum control EtOH SE (0.1 g/L)	10 x 3 mL
AC-SE02-015	Ethanol in serum control EtOH SE (0.2 g/L)	10 x 1.5 mL
AC-SE02-030	Ethanol in serum control EtOH SE (0.2 g/L)	10 x 3 mL
AC-SE03-015	Ethanol in serum control EtOH SE (0.3 g/L)	10 x 1.5 mL
AC-SE03-030	Ethanol in serum control EtOH SE (0.3 g/L)	10 x 3 mL
AC-SE05-015	Ethanol in serum control EtOH SE (0.5 g/L)	10 x 1.5 mL
AC-SE05-030	Ethanol in serum control EtOH SE (0.5 g/L)	10 x 3 mL
AC-SE08-015	Ethanol in serum control EtOH SE (0.8 g/L)	10 x 1.5 mL
AC-SE08-030	Ethanol in serum control EtOH SE (0.8 g/L)	10 x 3 mL
AC-SE10-015	Ethanol in serum control EtOH SE (1.0 g/L)	10 x 1.5 mL
AC-SE10-030	Ethanol in serum control EtOH SE (1.0 g/L)	10 x 3 mL
AC-SE11-015	Ethanol in serum control EtOH SE (1.1 g/L)	10 x 1.5 mL
AC-SE11-030	Ethanol in serum control EtOH SE (1.1 g/L)	10 x 3 mL
AC-SE13-015	Ethanol in serum control EtOH SE (1.3 g/L)	10 x 1.5 mL
AC-SE13-030	Ethanol in serum control EtOH SE (1.3 g/L)	10 x 3 mL
AC-SE15-015	Ethanol in serum control EtOH SE (1.5 g/L)	10 x 1.5 mL
AC-SE15-030	Ethanol in serum control EtOH SE (1.5 g/L)	10 x 3 mL
AC-SE20-015	Ethanol in serum control EtOH SE (2.0 g/L)	10 x 1.5 mL
AC-SE20-030	Ethanol in serum control EtOH SE (2.0 g/L)	10 x 3 mL
AC-SE30-015	Ethanol in serum control EtOH SE (3.0 g/L)	10 x 1.5 mL
AC-SE30-030	Ethanol in serum control EtOH SE (3.0 g/L)	10 x 3 mL
AC-SE40-015	Ethanol in serum control EtOH SE (4.0 g/L)	10 x 1.5 mL
AC-SE40-030	Ethanol in serum control EtOH SE (4.0 g/L)	10 x 3 mL
AC-SE50-015	Ethanol in serum control EtOH SE (5.0 g/L)	10 x 1.5 mL
AC-SE50-030	Ethanol in serum control EtOH SE (5.0 g/L)	10 x 3 mL

Code	Product	Unit

Alcohol congeners in serum

ME 91111 — Congener alcohols in human serum, level 1 — 10 x 1.2 mL

Aqueous congener alcohols control (Medidrug BGS W) for quality control of quantitative determinations of congener alcohols by GC. The concentration values have been determined by independent laboratories of forensic medicine.

Analytes

Acetone	0.5 mg/L	2-Methyl-1-butanol	0.1 mg/L
Methanol	1 mg/L	3-Methyl-1-butanol	0.1 mg/L
1-Butanol	0.1 mg/L	1-Propanol	0.1 mg/L
2-Butanol	0.1 mg/L	2-Propanol	0.1 mg/L
2-Butanon	0.1 mg/L	Ethanol	1.5 g/L
Isobutanol	0.1 mg/L		

ME 91121 — Congener alcohols in human serum, level 2 — 10 x 1.2 mL

Aqueous congener alcohols control (Medidrug BGS W) for quality control of quantitative determinations of congener alcohols by GC. The concentration values have been determined by independent laboratories of forensic medicine.

Analytes

Acetone	1 mg/L	2-Methyl-1-butanol	0.2 mg/L
Methanol	2 mg/L	3-Methyl-1-butanol	0.2 mg/L
1-Butanol	0.2 mg/L	1-Propanol	0.2 mg/L
2-Butanol	0.2 mg/L	2-Propanol	0.2 mg/L
2-Butanon	0.2 mg/L	Ethanol	1.5 g/L
Isobutanol	0.2 mg/L		

ME 91131 — Congener alcohols in human serum, level 3 — 10 x 1.2 mL

Aqueous congener alcohols control (Medidrug BGS W) for quality control of quantitative determinations of congener alcohols by GC. The concentration values have been determined by independent laboratories of forensic medicine.

Analytes

Acetone	1.5 mg/L	2-Methyl-1-butanol	0.3 mg/L
Methanol	3 mg/L	3-Methyl-1-butanol	0.3 mg/L
1-Butanol	0.3 mg/L	1-Propanol	0.3 mg/L
2-Butanol	0.3 mg/L	2-Propanol	0.3 mg/L
2-Butanon	0.3 mg/L	Ethanol	1.5 g/L
Isobutanol	0.3 mg/L		

ME 91141 — Congener alcohols in human serum, level 4 — 10 x 1.2 mL

Serum control (Medidrug BGS S) for quality control of quantitative determinations of congener alcohols by GC. The concentration values have been determined by independent laboratories of forensic medicine.

Analytes

Acetone	2.0 mg/L	2-Methyl-1-butanol	0.4 mg/L
Methanol	4.0 mg/L	3-Methyl-1-butanol	0.4 mg/L
1-Butanol	0.4 mg/L	1-Propanol	0.4 mg/L
2-Butanol	0.4 mg/L	2-Propanol	0.4 mg/L
2-Butanon	0.4 mg/L	Ethanol	1.5 g/L
Isobutanol	0.4 mg/L		

ME 91151 — Congener alcohols in human serum, level 5 — 10 x 1.2 mL

Serum control (Medidrug BGS S) for quality control of quantitative determinations of congener alcohols by GC. The concentration values have been determined by independent laboratories of forensic medicine.

Analytes

Acetone	2.5 mg/L	2-Methyl-1-butanol	0.5 mg/L
Methanol	5.0 mg/L	3-Methyl-1-butanol	0.5 mg/L
1-Butanol	0.5 mg/L	1-Propanol	0.5 mg/L
2-Butanol	0.5 mg/L	2-Propanol	0.5 mg/L
2-Butanon	0.5 mg/L	Ethanol	1.5 g/L
Isobutanol	0.5 mg/L		

ME 91161 — Congener alcohols in human serum, level 6 — 10 x 1.2 mL

Serum control (Medidrug BGS S) for quality control of quantitative determinations of congener alcohols by GC. The concentration values have been determined by independent laboratories of forensic medicine.

Analytes

Acetone	5.0 mg/L	2-Methyl-1-butanol	1.0 mg/L
Methanol	10.0 mg/L	3-Methyl-1-butanol	1.0 mg/L
1-Butanol	1.0 mg/L	1-Propanol	1.0 mg/L
2-Butanol	1.0 mg/L	2-Propanol	1.0 mg/L
2-Butanon	1.0 mg/L	Ethanol	1.5 g/L
Isobutanol	1.0 mg/L		

ME 91171 — Congener alcohols in human serum, level 7 — 10 x 1.2 mL

Serum control (Medidrug BGS S) for quality control of quantitative determinations of congener alcohols by GC. The concentration values have been determined by independent laboratories of forensic medicine.

Analytes

Acetone	10.0 mg/L	2-Methyl-1-butanol	2.0 mg/L
Methanol	20.0 mg/L	3-Methyl-1-butanol	2.0 mg/L
1-Butanol	2.0 mg/L	1-Propanol	2.0 mg/L
2-Butanol	2.0 mg/L	2-Propanol	2.0 mg/L
2-Butanon	2.0 mg/L	Ethanol	1.5 g/L
Isobutanol	2.0 mg/L		

Code	Product	Unit
Ethanol in blood		
ME 61050	Ethanol in human whole blood, 0.5 g/L (Medidrug Ethanol VB-plus)	10 x 1.1ml
ME 61052	Ethanol in human whole blood, 0.5 g/L (Medidrug Ethanol VB-plus)	10 x 1,5 ml
ME 61053	Ethanol in human whole blood, 0.5 g/L (Medidrug Ethanol VB-plus)	10 x 3 mL
ME 61080	Ethanol in human whole blood, 0.8 g/L (Medidrug Ethanol VB-plus)	10 x 1.1 mL
ME 61082	Ethanol in human whole blood, 0.8 g/L (Medidrug Ethanol VB-plus)	10 x 1.5 mL
ME 61083	Ethanol in human whole blood, 0.8 g/L (Medidrug Ethanol VB-plus)	10 x 3 mL
ME 61110	Ethanol in human whole blood, 1.1 g/L (Medidrug Ethanol VB-plus)	10 x 1.1 mL
ME 61112	Ethanol in human whole blood, 1.1 g/L (Medidrug Ethanol VB-plus)	10 x 1.5 mL
ME 61113	Ethanol in human whole blood, 1.1 g/L (Medidrug Ethanol VB-plus)	10 x 3 mL
AC-WH03-015	Ethanol in whole blood control EtOH WH (0.3 g/L)	10 x 1.5 mL
AC-WH03-030	Ethanol in whole blood control EtOH WH (0.3 g/L)	10 x 3 mL
AC-WH05-015	Ethanol in whole blood control EtOH WH (0.5 g/L)	10 x 1.5 mL
AC-WH05-030	Ethanol in whole blood control EtOH WH (0.5 g/L)	10 x 3 mL
AC-WH08-015	Ethanol in whole blood control EtOH WH (0.8 g/L)	10 x 1.5 mL
AC-WH08-030	Ethanol in whole blood control EtOH WH (0.8 g/L)	10 x 3 mL
AC-WH11-015	Ethanol in whole blood control EtOH WH (1.1 g/L)	10 x 1.5 mL
AC-WH11-030	Ethanol in whole blood control EtOH WH (1.1 g/L)	10 x 3 mL
AC-WH20-015	Ethanol in whole blood control EtOH WH (2.0 g/L)	10 x 1.5 mL
AC-WH20-030	Ethanol in whole blood control EtOH WH (2.0 g/L)	10 x 3 mL

Markers for identification of ethanol use

Code	Product	Unit
ME 70002	Ethyl-beta-D-6-glucuronide	2 mg
ME 70010	Ethyl-beta-D-6-glucuronide	10 mg
CERE-016	Ethyl beta-D-glucuronide (0.1 mg/mL) in Methanol	1 mL
ME 70502	Ethyl-beta-D-6-glucuronide-D5	2 mg
ME 70510	Ethyl-beta-D-6-glucuronide-D5	10 mg
CERE-048	Ethyl beta-D-glucuronide-D5 (0.1 mg/mL) in Methanol	1 mL
LA 30-1400-1	Ethyl myristate	1 g
LA 30-1801-1	Ethyl oleate	1 g
LA 30-1600-1	Ethyl palmitate	1 g
LA 30-1800-1	Ethyl stearate	1 g
TRC-E925182	Ethyl myristate-ethyl-D5	10 mg
TRC-E925327	Ethyl oleate-ethyl-D5	10 mg
TRC-E925482	Ethyl palmitate-ethyl-D5	10 mg
TRC-E925952	Ethyl stearate-ethyl-D5	10 mg
ATH0902-10	Ethyl sulfate, sodium salt	10 mg
ATH0902D-10	Ethyl sulfate-D5, sodium salt	10 mg
REC-21080	Serum control for CDT (carbohydrate deficient transferin) lyophilised - level I	10 x 1 mL
REC-21081	Serum control for CDT (carbohydrate deficient transferiin) lyophilised - level II	10 x 1 mL

Code	Product	Unit
REC-21082	Serum control for CDT (carbohydrate deficient transferiin) lyophilised - level I and II	2 x 5 x 1ml
REC-21014	CDT (carbohydrate deficient transferrin) - test solution	15 mL
ME 41057	Ethylglucuronide in human serum (Medidrug ETG 1/06-A S-plus) Lyophilised serum control prepared from human serum for accuracy and precision monitoring of ethylglucuronide determinations in serum. The reference value ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh. reference value Ethylglucuronide ..... 3.64 mg/L	10 x 2.5 mL
ME 41058	Ethylglucuronide, human serum control with reference values (Medidrug ETG 2/09-A S-plus) Lyophilised serum control prepared from human serum for accuracy and precision monitoring of ethyl glucuronide and ethyl sulfate determinations in serum. The reference value ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh. reference value Ethyl glucuronide ..... 0.840 mg/L Ethyl sulfate ..... 0.970 mg/L	10 x 2.5 mL
AC-SE015.010.001	Ethylglucuronide in serum ETG 3/10-A SE, lyophilised for in vitro diagnostic use Analytes — Target value Ethylglucuronide ..... 0,64 mg/L Ethylsulfate 0,91mg/L	10 x 2.5 mL
ME 41079	Ethylglucuronide, human urine control with reference values (Medidrug ETG 1/08-B U-plus) Lyophilised serum control prepared from human urine for accuracy and precision monitoring of ethyl glucuronide and ethyl sulfate determinations in urine. The reference value ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh. reference value Ethyl glucuronide ..... 0.350 mg/L	10 x 2.5 mL
ME 41080	Ethylglucuronide, human urine control with reference values (Medidrug ETG 2/09-B U-plus) Lyophilised serum control prepared from human urine for accuracy and precision monitoring of ethyl glucuronide and ethyl sulfate determinations in urine. The reference value ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh. reference value Ethyl glucuronide ..... 3.020 mg/L Ethyl sulfate ..... 1.750 mg/L	10 x 2.5 mL
ME 41081	Ethylglucuronide, human urine control with reference values (Medidrug ETG 1/10-B U-plus) Lyophilised serum control prepared from human urine for accuracy and precision monitoring of ethyl glucuronide and ethyl sulfate determinations in urine. The reference value ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh. reference value Ethyl glucuronide ..... 0.878 mg/L Ethyl sulfate ..... 0.920 mg/L	10 x 2.5 mL
AC-UR015.010.001	Ethylglucuronide in urine ETG 3/10-B UR, lyophilised for in vitro diagnostic use Analytes — Target value Ethylglucuronide ..... 1,27 mg/L Ethylsulfate 0,81mg/L	10 x 2.5 mL

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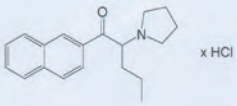
3041/SS/0811

Setting standards in analytical science

CERTIFICATE

Forensic Reference Substance

Naphyrone Hydrochloride



Molecular Formula:	$C_{19}H_{23}NO \cdot HCl$
Molecular Weight:	317.85
CAS Number:	[850352-11-3]

Catalogue Number:	LGCFOR1275.06
Lot Number:	5168
Long Term Storage:	2 to 8 °C, dark
Appearance:	off-white solid
Melting Point:	231 °C
Assay 'as is':	98.8 %

Date of shipment: **2011-07-07**

This certificate is valid for one year from the date of shipment provided the substance is stored under the recommended conditions.

analysis • consultancy • validation • research

5 pages

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Tel +49 3371 68 16 80 Fax +49 3371 68 16 85 Web www.lgc.co.uk

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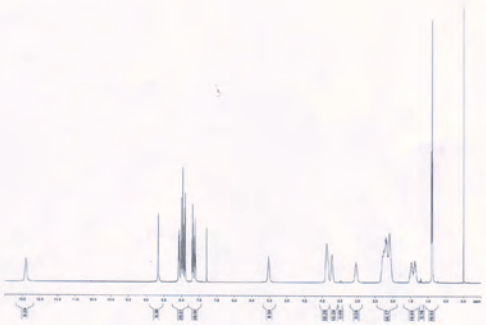
I. Identity

The identity of the reference substance was established by following analyses.

Ia. ^{1}H-NMR Spectrum

Conditions: 400 MHz, $CDCl_3$

The structure is confirmed with the signals of the spectrum and their interpretation.



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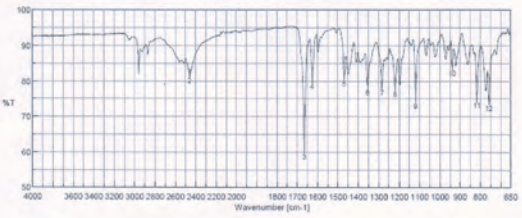
Ib. IR Spectrum

Method: Attenuated Total Reflection Fourier Transform Infrared (ATR-FTIR) Spectroscopy



The signals of the IR spectrum and their interpretation are consistent with the structural formula.

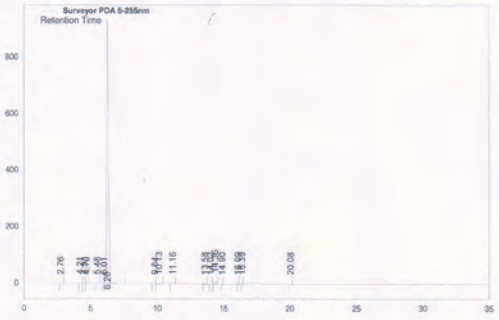
II. Purity

The purity of the reference substance was analysed by high performance liquid chromatography (HPLC).

HPLC Conditions:

Column:	Conditions:	Detector:	Injector:
Hypersil Gold (C18)	1.0 ml/min, 40 °C	DAD	Auto
5 µm, 150 x 4.6 mm	0-10 min Water/Acetonitrile 70/30 10-15 min Water/Acetonitrile to 30/70 15-20 min Water/Acetonitrile 30/70 20-25 min Water/Acetonitrile to 70/30 25-35 min Water/Acetonitrile 70/30 (v/v); 0.1 % H_3PO_4	255 nm	1.5 µl; 0.19 mg/ml in Water/Acetonitrile 50/50 (v/v)

Setting standards in analytical science



Area Percent Report - Sorted by Signal

Pk #	Retention Time	Area	Area %
1	2.76	596	0.01
2	4.21	4219	0.05
3	4.53	892	0.01
4	4.70	963	0.01
5	5.48	784	0.01
6	6.01	1377	0.02
7	6.26	8810155	99.07
8	9.84	1343	0.02
9	10.13	10683	0.12
10	11.16	2832	0.03
11	13.58	2323	0.03
12	14.02	572	0.01
13	14.36	52211	0.59
14	14.90	1030	0.01
15	16.09	630	0.01
16	16.39	988	0.01
17	20.08	922	0.01
Totals		8892520	100.00

For the calculation the system peaks were ignored. The content of the analyte was determined as ratio of the peak area of the analyte and the cumulative areas of the purities, added up to 100 %.

Setting standards in analytical science

Results:

Average	99.07 %
Number of results	n=6
Standard deviation	0.01 %

III. Water Content

Method: Karl Fischer titration

Results:

Average	0.27 %
Number of results	n=3
Standard deviation	0.02 %

IV. Residual Solvents

Method: ^{1}H-NMR

Result: 0.05 % Diethyl ether

V. Final Result

Total impurities (HPLC)	0.93 %
Water content	0.27 %
Residual solvents	0.05 %
Assay (100 % method)	98.75 %

The assay is assessed to be 98.8 % 'as is'

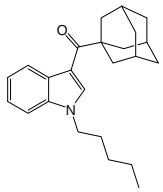
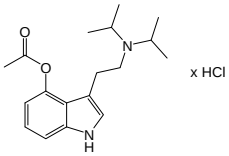
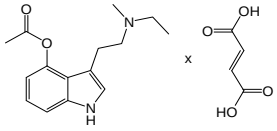
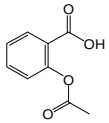
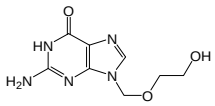
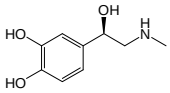
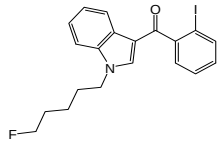
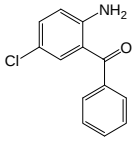
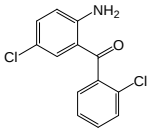
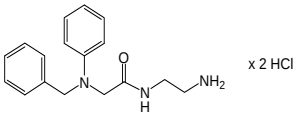
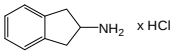
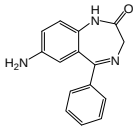
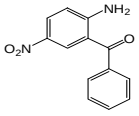
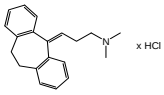
The assay 'as is' is equivalent to the assay based of the not anhydrous and not dried substance respectively.

Release Date: 2010-11-29

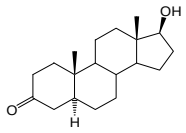
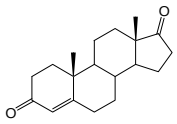
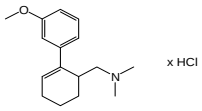
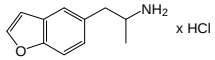
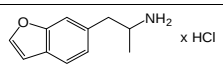
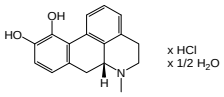
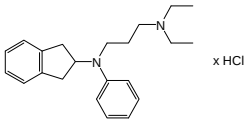
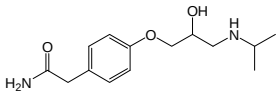
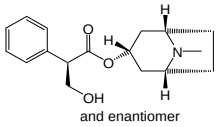
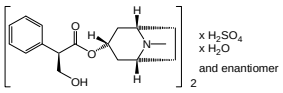
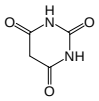
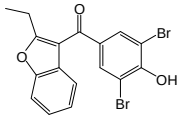
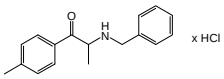
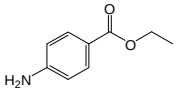
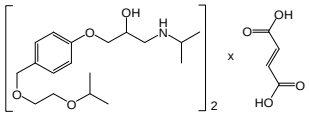
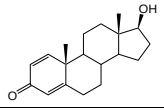
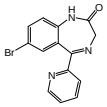
LGC GmbH

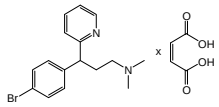
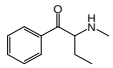
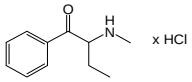
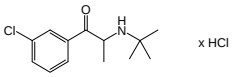
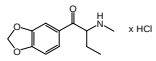
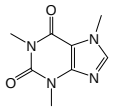
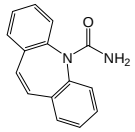
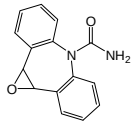
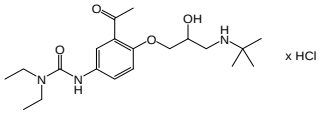
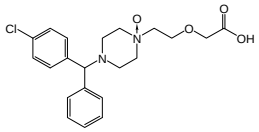
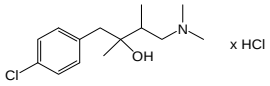
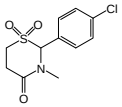
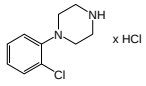
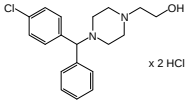
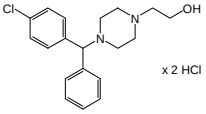
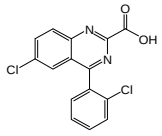
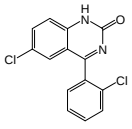
Dr. Sabine Schröder
Product Release

Powder materials produced by LGC Standards

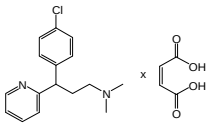
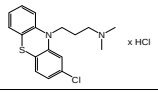
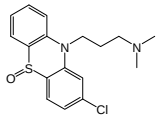
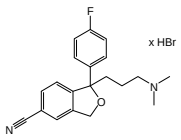
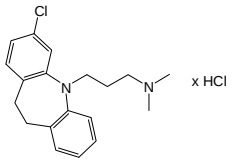
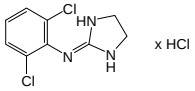
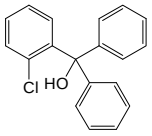
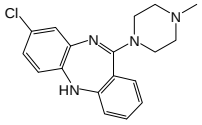
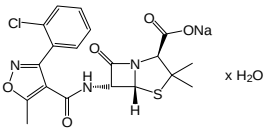
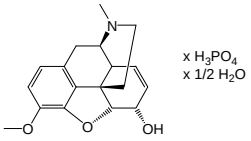
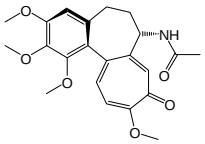
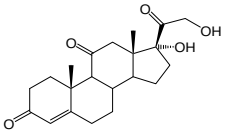
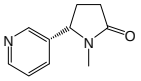
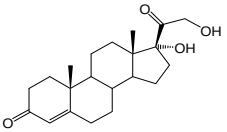
Code	Product		Unit
LGCFOR1275.71	AB-001 (Adamantyl(1-pentylindol-3-yl)methanone)		10 mg
LGCFOR1275.28	4-Acetoxy-N,N-diisopropyltryptamine Hydrochloride (4-AcO-DIPT HCl, 4-Acetoxy-DIPT HCl, Ipracetin HCl)		10 mg
LGCFOR1275.29	4-Acetoxy-N-methyl-N-ethyltryptamine Fumarate (4-AcO-MET Fumarate, 4-Acetoxy-MET Fumarate)		10 mg
LGCFOR0133.00	Acetylsalicylic Acid		10 mg
LGCFOR0061.00	Aciclovir		10 mg
LGCFOR0614.02	L-Adrenaline		10 mg
LGCFOR1275.17	AM-694 (1-(5-Fluoropentyl)-3-(2-iodobenzoyl)indole)		10 mg
LGCFOR0028.03	2-Amino-5-chlorobenzophenone		10 mg
LGCFOR0071.01	2-Amino-2',5-dichlorobenzophenone		10 mg
LGCFOR0171.01	N-(2-Aminoethyl)-2-(benzylphenylamino)acetamide Dihydrochloride		10 mg
LGCFOR1275.50	2-Aminoindane Hydrochloride (2-AI HCl)		10 mg
LGCFOR0078.07	7-Aminonitrazepam		10 mg
LGCFOR0078.01	2-Amino-5-nitrobenzophenone		10 mg
LGCFOR0062.00	Amitriptyline HCl		10 mg

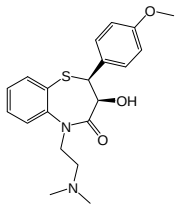
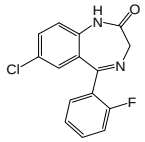
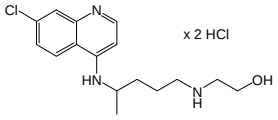
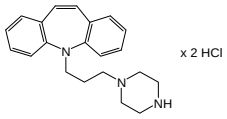
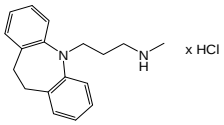
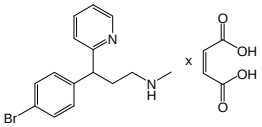
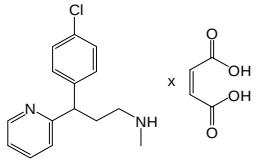
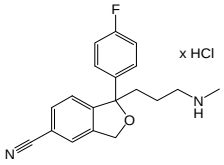
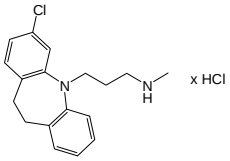
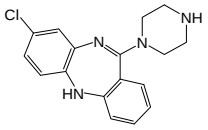
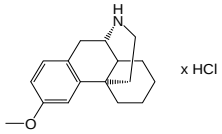
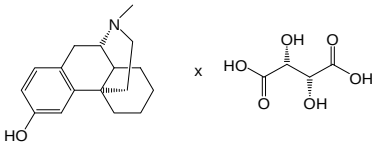
Powder materials produced by LGC Standards

Code	Product		Unit
LGCFOR0565.00	Androstanolone (5alpha-Dihydrotestosterone, Stanolone)		10 mg
LGCFOR0323.01	Androstenedione		10 mg
LGCFOR0007.04	2-Anhydrotramadol Hydrochloride (2-(3-Methoxyphenyl)-N,N-dimethyl-2-cyclohexene-1-methanamine Hydrochloride)		10 mg
LGCFOR1275.24	5-APB HCl (1-Benzofuran-5-ylpropan-2-amine Hydrochloride, 5-(2-Aminopropyl)benzofuran Hydrochloride)		10 mg
LGCFOR1275.23	6-APB HCl (1-Benzofuran-6-ylpropan-2-amine Hydrochloride, 6-(2-Aminopropyl)benzofuran Hydrochloride)		10 mg
LGCFOR0562.00	Apomorphine HCl		10 mg
LGCFOR0467.00	Aprindine Hydrochloride		10 mg
LGCFOR0013.00	Atenolol		10 mg
LGCFOR0289.18	Atropine		10 mg
LGCFOR0289.00	Atropine sulphate		10 mg
LGCFOR0265.03	Barbituric Acid		10 mg
LGCFOR0456.00	Benzbromarone		10 mg
LGCFOR1275.36	Benzedrone Hydrochloride (4-Methyl-N-benzylcathinone Hydrochloride)		10 mg
LGCFOR0490.02	Benzhydrol (Diphenylmethanol)		10 mg
LGCFOR0094.00	Benzocaine		10 mg
LGCFOR0460.08	Bisoprolol Fumarate		10 mg
LGCFOR0864.00	Boldenone		10 mg
LGCFOR0064.00	Bromazepam		10 mg

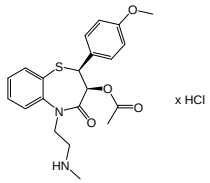
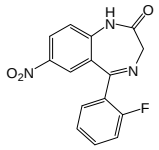
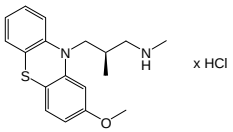
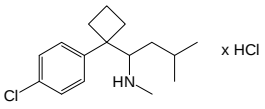
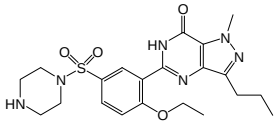
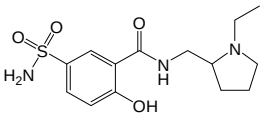
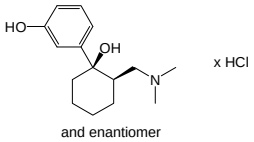
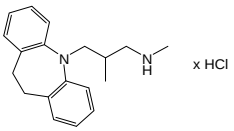
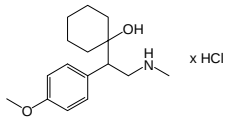
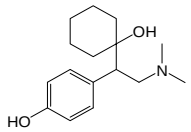
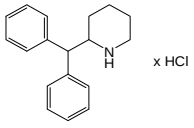
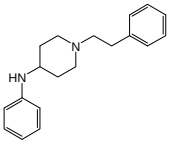
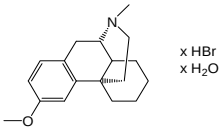
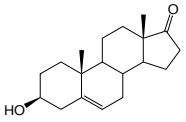
Code	Product		Unit
LGCFOR0060.00	Brompheniramine maleate		100 mg
LGCFOR1275.19	Buphedrone		10 mg
LGCFOR1275.32	Buphedrone Hydrochloride		10 mg
LGCFOR0745.00	Bupropion HCl		10 mg
LGCFOR1275.03	Butylone Hydrochloride		10 mg
LGCFOR0494.00	Caffeine		10 mg
LGCFOR0076.00	Carbamazepine		10 mg
LGCFOR0076.01	Carbamazepine 10,11-Epoxide		10 mg
LGCFOR0128.00	Celiprolol Hydrochloride		10 mg
LGCFOR0380.13	Cetirizine N-Oxide		10 mg
LGCFOR0038.00	Clobutinol Hydrochloride		10 mg
LGCFOR0017.00	Chlormezanone		10 mg
LGCFOR1275.16	ortho-Chlorophenylpiperazine Hydrochloride (oCPP HCl)		10 mg
LGCFOR0380.01	1-[(4-Chlorophenyl)phenylmethyl]piperazine		10 mg
LGCFOR0380.11	4-[(4-Chlorophenyl)phenylmethyl]-1-piperazineethanol Dihydrochloride		10 mg
LGCFOR0071.04	6-Chloro-4-(2-chlorophenyl)-2-quinazolinecarboxylic Acid		10 mg
LGCFOR0071.09	6-Chloro-4-(2-chlorophenyl)-2(1H)-quinazolinone		10 mg

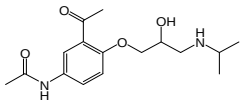
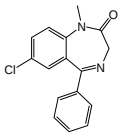
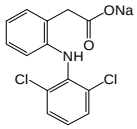
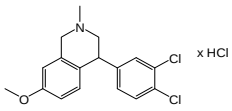
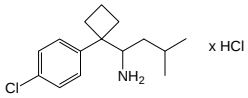
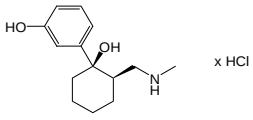
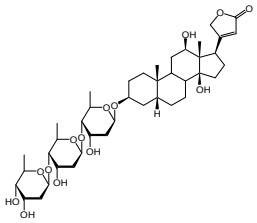
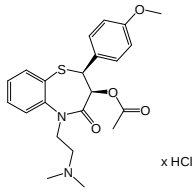
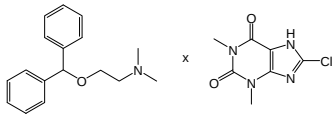
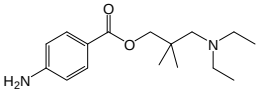
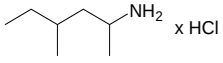
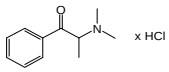
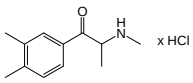
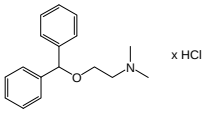
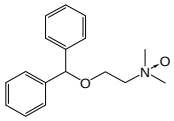
Powder materials produced by LGC Standards

Code	Product		Unit
LGCFOR0090.00	Chlorphenamine Maleate		10 mg
LGCFOR0420.00	Chlorpromazine Hydrochloride		10 mg
LGCFOR0420.01	Chlorpromazine Sulphoxide		10 mg
LGCFOR0242.00	Citalopram HBr		10 mg
LGCFOR0545.00	Clomipramine HCl		10 mg
LGCFOR0983.00	Clonidine Hydrochloride		10 mg
LGCFOR0015.01	(2-Chlorophenyl)diphenylmethanol		10 mg
LGCFOR0480.00	Clozapine		10 mg
LGCFOR0682.00	Cloxacillin Sodium Monohydrate		10 mg
LGCFOR0442.00	Codeine phosphate hemihydrate		10 mg
LGCFOR1083.00	Colchicine		10 mg
LGCFOR0214.00	Cortisone		10 mg
LGCFOR0517.03	Cotinine		10 mg
LGCFOR0185.08	11-Deoxycortisol (17,21-Dihydroxypregn-4-ene-3,20-dione)		10 mg

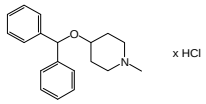
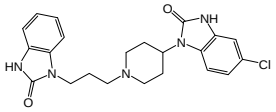
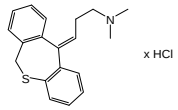
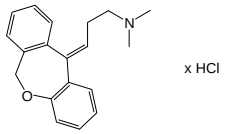
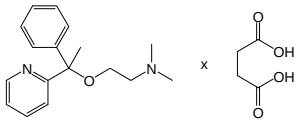
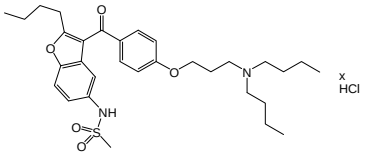
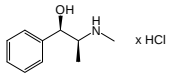
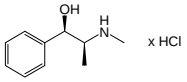
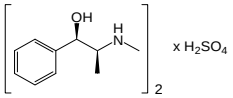
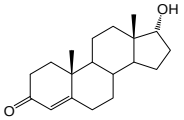
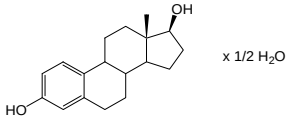
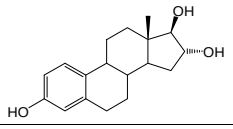
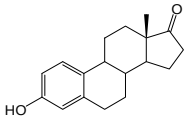
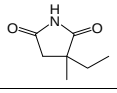
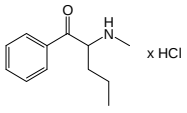
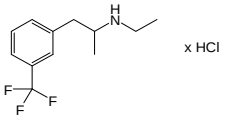
Code	Product		Unit
LGCFOR0068.05	Desacetyldiltiazem		10 mg
LGCFOR0070.02	Desalkylflurazepam (7-Chloro-5-(2-fluorophenyl)-1,3-dihydro-2H-1,4-benzodiazepin-2-one)		10 mg
LGCFOR0764.02	Desethylhydroxychloroquine Dihydrochloride		10 mg
LGCFOR0422.01	Deshydroxyethylopipramol Dihydrochloride (5-(3-Piperazin-1-yl-propyl)-5H-dibenzo[b,f]azepine Dihydrochloride)		10 mg
LGCFOR0589.00	Desipramine Hydrochloride		10 mg
LGCFOR0060.16	Desmethylbrompheniramine Maleate		10 mg
LGCFOR0090.13	Desmethylchlorphenamine Maleate		10 mg
LGCFOR0242.09	Desmethylcitalopram Hydrochloride		10 mg
LGCFOR0545.08	Desmethylclomipramine HCl		10 mg
LGCFOR0480.03	Desmethylclozapine (Norclozapine)		10 mg
LGCFOR0033.10	N-Desmethyldextromethorphan Hydrochloride (ent-3-Methoxymorphinan Hydrochloride)		10 mg
LGCFOR0033.09	O-Desmethyldextromethorphan Hydrochloride (ent-17-Methylmorphinan-3-ol (L)-Tartrate)		10 mg

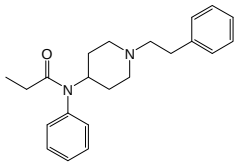
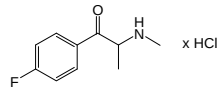
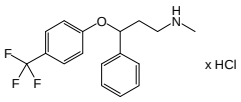
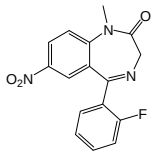
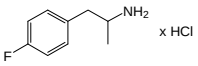
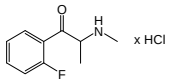
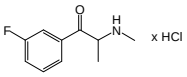
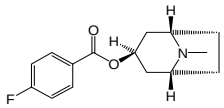
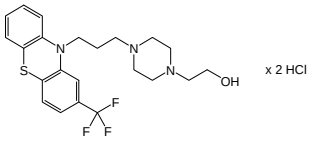
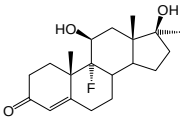
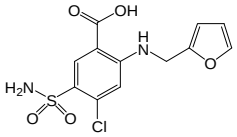
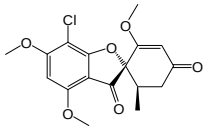
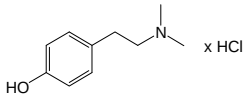
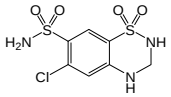
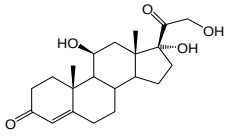
Powder materials produced by LGC Standards

Code	Product		Unit
LGCFOR0068.03	N-Desmethyldiltiazem HCl		10 mg
LGCFOR0069.02	Desmethylflunitrazepam		10 mg
LGCFOR0019.07	N-Desmethyllevomepromazine Hydrochloride		10 mg
LGCFOR0991.02	Desmethylsibutramine Hydrochloride		10 mg
LGCFOR0254.08	Desmethylsildenafil (1-[[3-(4,7-Dihydro-1-methyl-7-oxo-3-propyl-1H-pyrazolo[4,3-d]pyrimidin-5-yl)-4-ethoxyphenyl]sulfonyl]piperazine)		10 mg
LGCFOR0051.07	O-Desmethylsulpiride		10 mg
LGCFOR0007.06	O-Desmethyltramadol HCl	 and enantiomer	10 mg
LGCFOR0240.02	Desmethyltrimipramine HCl		10 mg
LGCFOR0393.04	N-Desmethylvenlafaxine Hydrochloride		10 mg
LGCFOR0393.01	O-Desmethylvenlafaxine		10 mg
LGCFOR1275.22	Desoxypipradrol Hydrochloride (2-DPMP HCl)		10 mg
LGCFOR0528.04	N-Phenyl-1-(2-phenylethyl)piperidin-4-amine		10 mg
LGCFOR0033.00	Dextromethorphan HBr		10 mg
LGCFOR0651.00	Prasterone (DHEA, Dehydroepiandrosterone)		10 mg

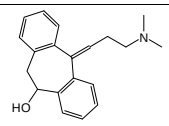
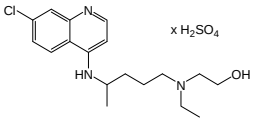
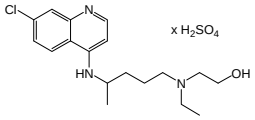
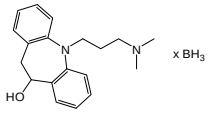
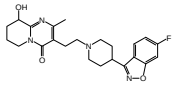
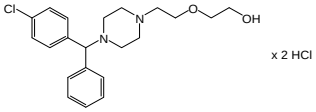
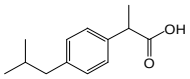
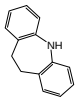
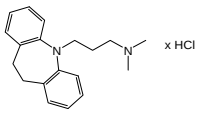
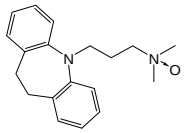
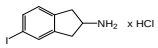
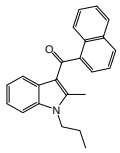
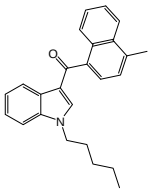
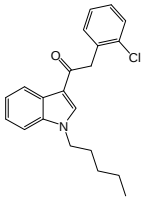
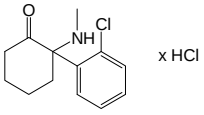
Code	Product		Unit
LGCFOR0435.02	Diacetolol Hydrochloride		10 mg
LGCFOR0023.00	Diazepam [Controlled Substance]		10 mg
LGCFOR0006.00	Diclofenac Sodium		10 mg
LGCFOR1275.18	Diclofensine Hydrochloride	 x HCl	10 mg
LGCFOR0991.03	Didesmethylsibutramine Hydrochloride	 x HCl	10 mg
LGCFOR0007.08	N,O-Didesmethyltramadol Hydrochloride	 x HCl and enantiomer	10 mg
LGCFOR0212.00	Digoxin		10 mg
LGCFOR0068.00	Diltiazem HCl	 x HCl	10 mg
LGCFOR0599.00	Dimenhydrinate		10 mg
LGCFOR1275.08	Dimethocaine Hydrochloride		10 mg
LGCFOR1275.12	Dimethylamylamine Hydrochloride (4-Methyl-2-hexanamine Hydrochloride, DMAA HCl)	 x HCl	10 mg
LGCFOR1275.30	Dimethylcathinone Hydrochloride (N,N-Dimethylcathinone Hydrochloride, Metamfepramone Hydrochloride)	 x HCl	10 mg
LGCFOR1275.42	3,4-Dimethylmethcathinone Hydrochloride (3,4-DMMC HCl)	 x HCl	10 mg
LGCFOR0490.00	Diphenhydramine HCl	 x HCl	10 mg
LGCFOR0490.01	Diphenhydramine N-Oxide		10 mg

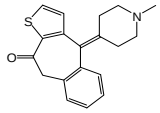
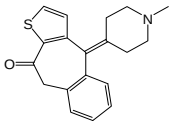
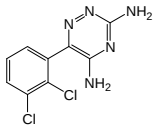
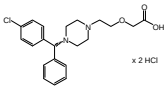
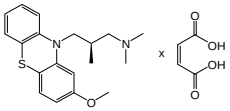
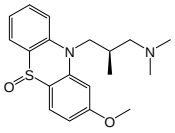
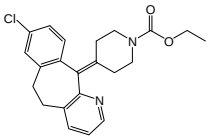
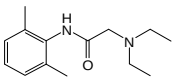
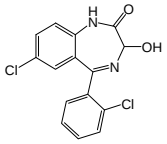
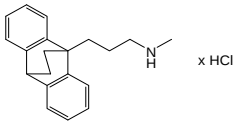
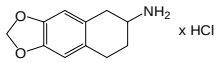
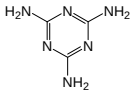
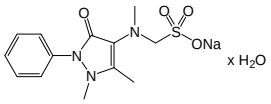
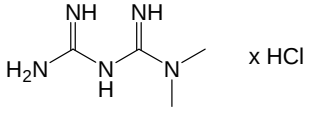
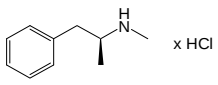
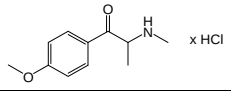
Powder materials produced by LGC Standards

Code	Product		Unit
LGCFOR0557.00	Diphenylpyraline HCl		10 mg
LGCFOR0107.00	Domperidone		10 mg
LGCFOR0510.00	Dosulepin HCl (Dothiepin)		10 mg
LGCFOR0032.00	Doxepin Hydrochloride		10 mg
LGCFOR0101.00	Doxylamine Hydrogen Succinate		10 mg
LGCFOR1294.00	Dronedarone Hydrochloride		10 mg
LGCFOR1122.00	Duloxetine Hydrochloride		10 mg
LGCFOR0652.00	Ephedrine Hydrochloride DRUG PRECURSOR		10 mg
LGCFOR1147.00	Ephedrine Sulphate		10 mg
LGCFOR0323.03	Epitestosterone		10 mg
LGCFOR0300.00	Estradiol Hemihydrate		10 mg
LGCFOR0130.00	Estriol		10 mg
LGCFOR0282.00	Estrone		10 mg
LGCFOR0750.00	Ethosuximide		10 mg
LGCFOR1275.63	beta-Ethylmethcathinone Hydrochloride		10 mg
LGCFOR0608.00	Fenfluramine Hydrochloride		10 mg

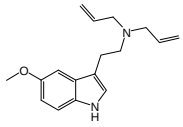
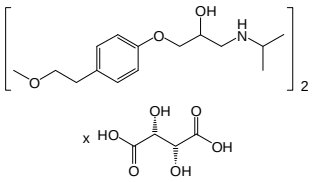
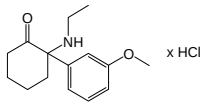
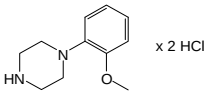
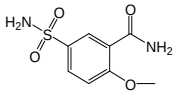
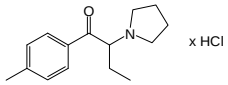
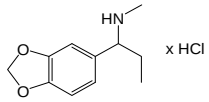
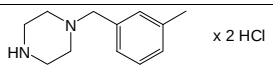
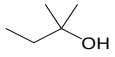
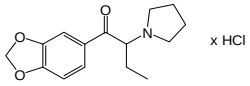
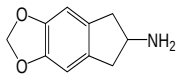
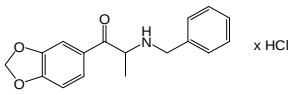
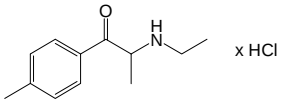
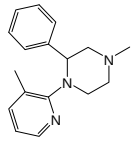
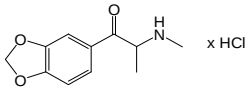
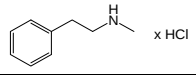
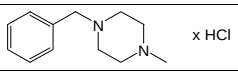
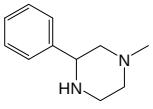
Code	Product		Unit
LGCFOR0528.00	Fentanyl		10 mg
LGCFOR1275.33	Flephedrone Hydrochloride (4-Fluoromethcathinone Hydrochloride)		10 mg
LGCFOR0256.00	Fluoxetine HCl		10 mg
LGCFOR0069.00	Flunitrazepam		10 mg
LGCFOR0741.02	4-Fluoroamphetamine HCl		10 mg
LGCFOR1275.64	2-Fluoromethcathinone Hydrochloride (1-(2-Fluorophenyl)-2-(methylamino)propan-1-one Hydrochloride)		10 mg
LGCFOR1275.43	3-Fluoromethcathinone Hydrochloride (1-(3-Fluorophenyl)-2-(methylamino)propan-1-one Hydrochloride)		10 mg
LGCFOR1275.13	4-Fluorotropacocaine (3-Pseudotropyl 4-Fluorobenzoate, 3beta-(p-Fluorobenzoyloxy)tropane)		10 mg
LGCFOR0114.00	Fluphenazine Dihydrochloride		10 mg
LGCFOR0959.00	Fluoxymesterone		10 mg
LGCFOR0014.00	Furosemide		10 mg
LGCFOR0582.00	Griseofulvin		10 mg
LGCFOR1275.51	Gammabutyrolactone (GBL)		10 mg
LGCFOR1275.49	Hordenine Hydrochloride (4-Hydroxy-N,N-dimethylphenethylamine Hydrochloride)		10 mg
LGCFOR0011.00	Hydrochlorothiazide		10 mg
LGCFOR0185.00	Hydrocortisone (Cortisol)		10 mg

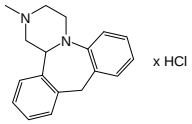
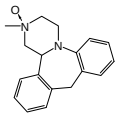
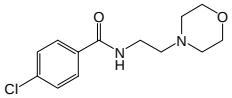
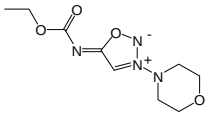
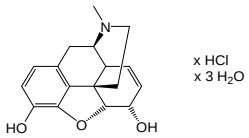
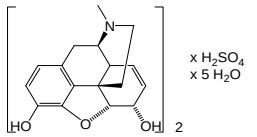
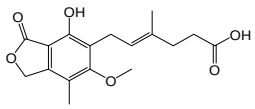
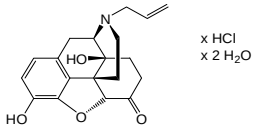
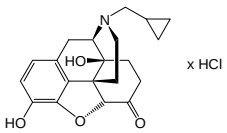
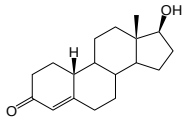
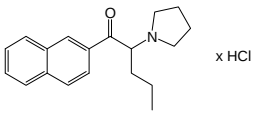
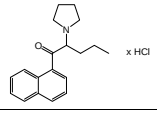
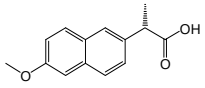
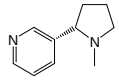
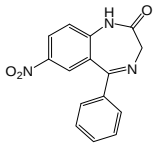
Powder materials produced by LGC Standards

Code	Product		Unit
LGCFOR0062.05	10-Hydroxyamitriptyline		10 mg
LGCFOR0764.00	Hydroxychloroquine sulphate		10 mg
LGCFOR0076.10	10-Hydroxy-10,11-dihydrocarbamazepine		10 mg
LGCFOR0077.04	10-Hydroxyimipramine BH3-Aduct		10 mg
LGCFOR0491.03	9-Hydroxyrisperidone		10 mg
LGCFOR0852.00	Hydroxyzine Hydrochloride		10 mg
LGCFOR0002.00	Ibuprofen		10 mg
LGCFOR0076.06	Iminodibenzyl (10,11-Dihydro-5H-dibenzo[b,f]azepine)		10 mg
LGCFOR0077.00	Imipramine Hydrochloride		10 mg
LGCFOR0077.12	Imipramine N-Oxide		10 mg
LGCFOR1275.78	5-Iodo-2-aminoindane (5-IAI) Hydrochloride		10 mg
LGCFOR1275.72	JWH-015 ((2-Methyl-1-propylindol-3-yl)(naphthalen-1-yl)methanone)		10 mg
LGCFOR1275.66	JWH-122 ((4-Methylnaphthalen-1-yl)(1-pentylindol-3-yl)methanone)		10 mg
LGCFOR1275.70	JWH-203 (2-(2-Chlorophenyl)-1-(1-pentylindol-3-yl)ethanone)		10 mg
LGCFOR0144.00	Ketamine HCl		10 mg

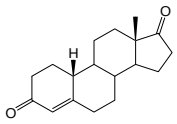
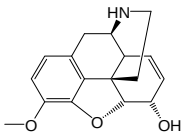
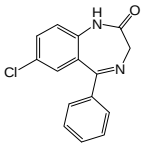
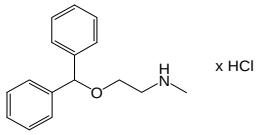
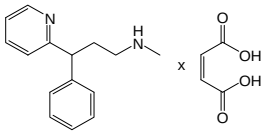
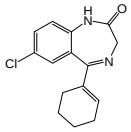
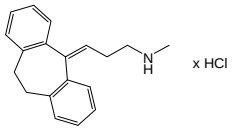
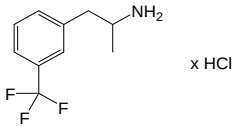
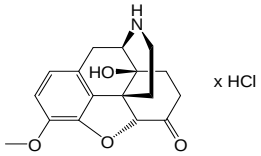
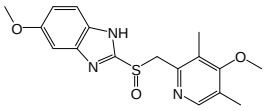
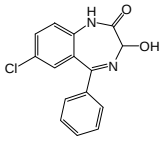
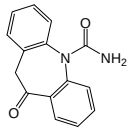
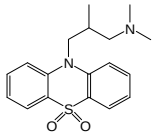
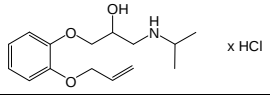
Code	Product		Unit
LGCFOR0180.04	Ketotifen		10 mg
LGCFOR0180.00	Ketotifen Hydrogen Fumarate		10 mg
LGCFOR0922.00	Lamotrigine		10 mg
LGCFOR1035.00	Levocetirizine Dihydrochloride		10 mg
LGCFOR0019.00	Levomepromazine Maleate		10 mg
LGCFOR0019.01	Levomepromazine Sulphoxide		10 mg
LGCFOR0257.00	Loratadine		10 mg
LGCFOR0102.00	Lidocaine		10 mg
LGCFOR0071.00	Lorazepam		10 mg
LGCFOR0820.00	Maprotiline Hydrochloride		10 mg
LGCFOR1275.80	MDAT HCl (6,7-Methylenedioxy-2-aminotetralin Hydrochloride)		10 mg
LGCFOR0056.04	Melamine		10 mg
LGCFOR0052.00	Metamizole Sodium Monohydrate		10 mg
LGCFOR0056.00	Metformin Hydrochloride		10 mg
LGCFOR0964.00	Methamphetamine HCl		10 mg
LGCFOR1275.04	Methedrone Hydrochloride		10 mg

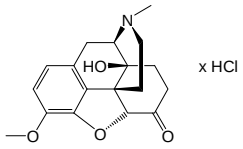
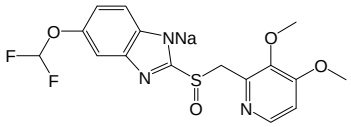
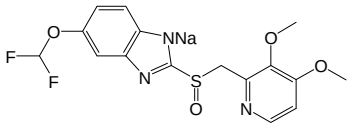
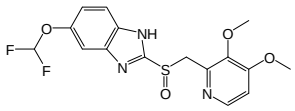
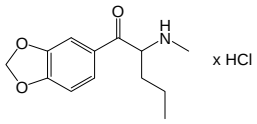
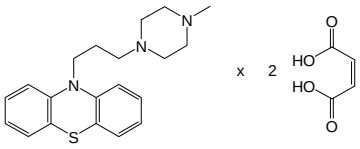
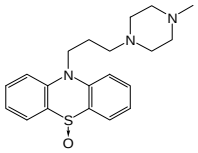
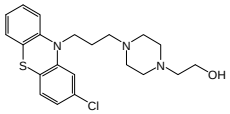
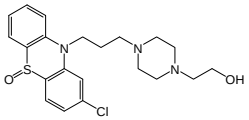
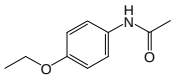
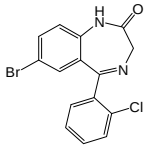
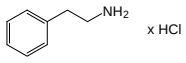
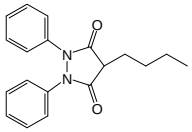
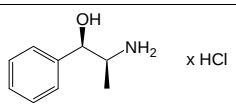
Powder materials produced by LGC Standards

Code	Product		Unit
LGCFOR1275.07	5-MeO-DALT (5-Methoxy-N,N-diallyltryptamine)		10 mg
LGCFOR0027.00	Metoprolol Tartrate		10 mg
LGCFOR1275.65	Methoxetamine Hydrochloride		10 mg
LGCFOR1247.02	1-(2-Methoxyphenyl)piperazine Dihydrochloride		10 mg
LGCFOR0051.05	2-Methoxy-5-sulphamoylbenzamide		10 mg
LGCFOR1275.62	4'-Methyl-alpha-pyrrolidinobutiophenone Hydrochloride (MPBP HCl)		10 mg
LGCFOR1275.41	1-Methylamino-1-(3,4-methylenedioxyphenyl)propane Hydrochloride		10 mg
LGCFOR0586.07	N-(3-Methylbenzyl)piperazine DiHCl		10 mg
LGCFOR1275.44	2-Methyl-2-butanol		10 mg
LGCFOR1275.61	3',4'-Methylenedioxy-alpha-pyrrolidinobutiophenone Hydrochloride (MDPBP HCl)		10 mg
LGCFOR1275.05	5,6-Methylenedioxy-2-aminoindane (MDAI)		10 mg
LGCFOR1275.60	3,4-Methylenedioxy-N-benzylcathinone Hydrochloride		10 mg
LGCFOR1275.20	Methylethcathinone Hydrochloride (4-Methyl-N-ethylcathinone Hydrochloride, 4-MEC HCl)		10 mg
LGCFOR1005.01	4-Methyl-1-(3-methylpyridin-2-yl)-2-phenylpiperazine		10 mg
LGCFOR1275.01	Methylone Hydrochloride		10 mg
LGCFOR1275.54	N-Methyl-2-phenylethylamine Hydrochloride (N-Methyl-PEA HCl)		10 mg
LGCFOR1280.01	1-Methyl-4-(phenylmethyl)piperazine HCl		10 mg
LGCFOR1005.07	1-Methyl-3-phenylpiperazine		10 mg

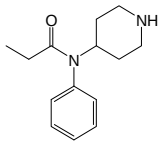
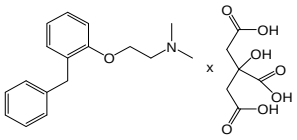
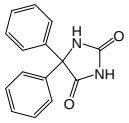
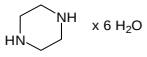
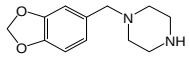
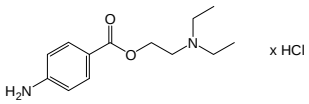
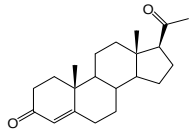
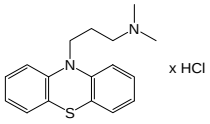
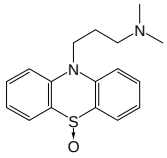
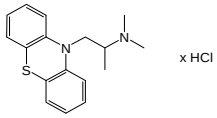
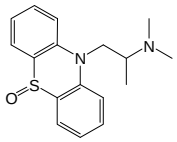
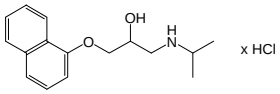
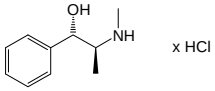
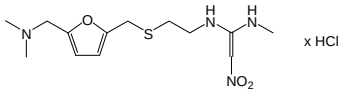
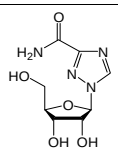
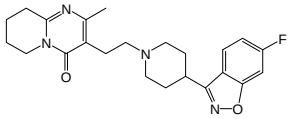
Code	Product		Unit
LGCFOR0147.00	Mianserin HCl		10 mg
LGCFOR0147.06	Mianserin N-Oxide		10 mg
LGCFOR0250.00	Moclobemide		10 mg
LGCFOR0267.00	Molsidomine		10 mg
LGCFOR0037.00	Morphine HCl trihydrate [Controlled Substance]		10 mg
LGCFOR0280.00	Morphine hemisulphate pentahemihydrate [Controlled Substance]		10 mg
LGCFOR1001.06	Mycophenolic Acid		10 mg
LGCFOR0272.00	Naloxone Hydrochloride Dihydrate		10 mg
LGCFOR0233.00	Naltrexone Hydrochloride		10 mg
LGCFOR0660.00	Nandrolone		10 mg
LGCFOR1275.06	Naphyrone Hydrochloride (1-Naphthalen-2-yl-2-pyrrolidin-1-ylpentan-1-one Hydrochloride)		10 mg
LGCFOR1275.35	1-Naphyrone Hydrochloride (1-Naphthalen-1-yl-2-pyrrolidin-1-ylpentan-1-one Hydrochloride)		10 mg
LGCFOR0152.00	Naproxen		10 mg
LGCFOR0517.00	Nicotine		10 mg
LGCFOR0078.00	Nitrazepam [Controlled Substance]		10 mg

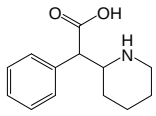
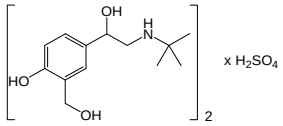
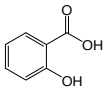
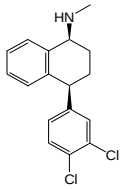
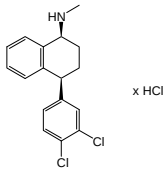
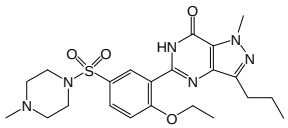
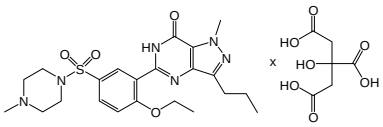
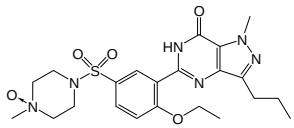
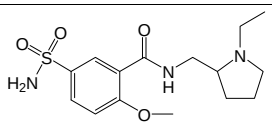
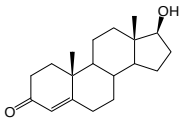
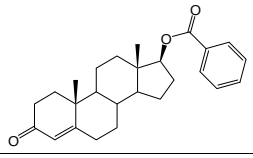
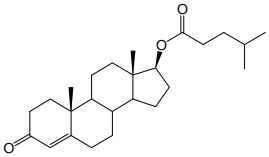
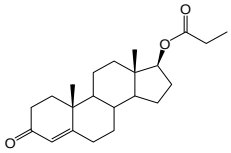
Powder materials produced by LGC Standards

Code	Product		Unit
LGCFOR0660.01	Norandrostenedione (19-Norandrost-4-ene-3,17-dione)		10 mg
LGCFOR0004.05	Norcodeine [Controlled Substance]		10 mg
LGCFOR0023.02	Nordazepam [Controlled Substance]		10 mg
LGCFOR0490.03	Nordiphenhydramine Hydrochloride		10 mg
LGCFOR0059.06	Norpheniramine Maleate		10 mg
LGCFOR0091.03	Nortetrazepam		10 mg
LGCFOR0079.00	Nortriptyline Hydrochloride		10 mg
LGCFOR0608.01	Norfenfluramine Hydrochloride		10 mg
LGCFOR0672.03	Noroxycodone Hydrochloride		10 mg
LGCFOR0095.00	Omeprazole		10 mg
LGCFOR0080.00	Oxazepam		10 mg
LGCFOR0076.17	Oxcarbazepine		10 mg
LGCFOR0957.00	Oxomemazine		10 mg
LGCFOR0129.00	Oxprenolol Hydrochloride		10 mg

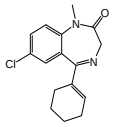
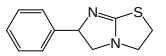
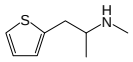
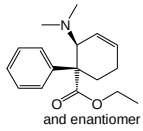
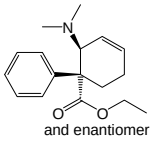
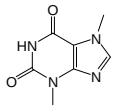
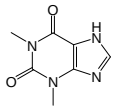
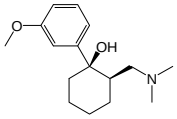
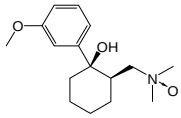
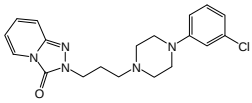
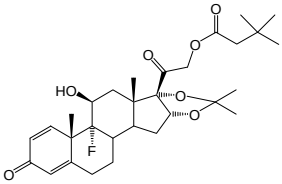
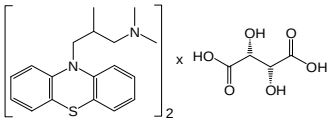
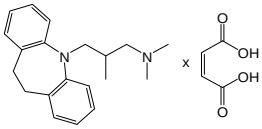
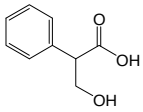
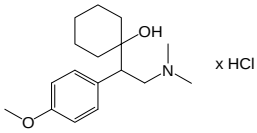
Code	Product		Unit
LGCFOR0672.00	Oxycodone HCl		10 mg
LGCFOR0099.01	Pantoprazole		10 mg
LGCFOR0099.00	Pantoprazole sodium		10 mg
LGCFOR0042.00	Paracetamol		10 mg
LGCFOR1275.57	Pentylone Hydrochloride		10 mg
LGCFOR0815.00	Perazine dimaleate		10 mg
LGCFOR0157.01	Perazine Sulphoxide		10 mg
LGCFOR0826.00	Perphenazine		10 mg
LGCFOR0826.01	Perphenazine Sulphoxide		10 mg
LGCFOR0551.00	Phenacetin		10 mg
LGCFOR0828.00	Phenazepam		10 mg
LGCFOR1275.47	2-Phenylethylamine Hydrochloride (Phenethylamine Hydrochloride, PEA HCl)		10 mg
LGCFOR0548.00	Phenylbutazone		10 mg
LGCFOR0656.00	Phenylpropanolamine Hydrochloride (D,L-Norephedrine Hydrochloride)	 and enantiomer	10 mg

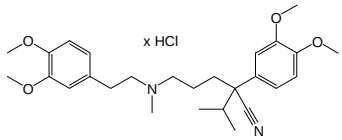
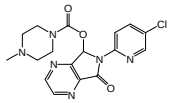
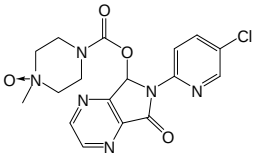
Powder materials produced by LGC Standards

Code	Product		Unit
LGCFOR0528.08	N-Phenyl-N-(piperidin-4-yl)propanamide		10 mg
LGCFOR0770.00	Phenyltoloxamine Citrate		10 mg
LGCFOR0630.00	Phenytoin		10 mg
LGCFOR0539.07	Piperazine Hexahydrate		10 mg
LGCFOR1275.46	1-Piperonylpiperazine		10 mg
LGCFOR0596.00	Procaine Hydrochloride		10 mg
LGCFOR0222.00	Progesterone		10 mg
LGCFOR0290.00	Promazine HCl		10 mg
LGCFOR0290.01	Promazine Sulphoxide		10 mg
LGCFOR0412.00	Promethazine HCl		10 mg
LGCFOR0412.04	Promethazine Sulphoxide		10 mg
LGCFOR0043.00	Propranolol Hydrochloride		10 mg
LGCFOR2115.00	(+)-Pseudoephedrine HCl (DRUG PRECURSOR)		10 mg
LGCFOR0086.00	Ranitidine Hydrochloride		10 mg
LGCFOR0542.00	Ribavirin		10 mg
LGCFOR0491.00	Risperidone		10 mg

Code	Product		Unit
LGCFOR1031.04	Ritalinic Acid		10 mg
LGCFOR0381.00	Salbutamol Sulphate		10 mg
LGCFOR0045.00	Salicylic Acid		10 mg
LGCFOR0317.00	Sertraline		10 mg
LGCFOR0317.01	Sertraline HCl		10 mg
LGCFOR0254.09	Sildenafil		10 mg
LGCFOR0254.00	Sildenafil citrate		10 mg
LGCFOR0254.04	Sildenafil N-Oxide		10 mg
LGCFOR0051.00	Sulpiride		10 mg
LGCFOR0323.00	Testosterone		10 mg
LGCFOR0493.00	Testosterone Benzoate		10 mg
LGCFOR0863.00	Testosterone Isocaproate		10 mg
LGCFOR0897.00	Testosterone Propionate		10 mg

Powder materials produced by LGC Standards

Code	Product		Unit
LGCFOR0091.00	Tetrazepam		10 mg
LGCFOR0703.00	Tetramisole Hydrochloride	 x HCl	10 mg
LGCFOR1275.59	1-(Thiophen-2-yl)-2-methylaminopropane Hydrochloride (Methiopropamine Hydrochloride, MPA HCl)	 x HCl	10 mg
LGCFOR0134.05	Tilidine	 and enantiomer	10 mg
LGCFOR0134.00	Tilidine HCl hemihydrate	 x HCl x 1/2 H_2O and enantiomer	10 mg
LGCFOR0577.00	Theobromine		10 mg
LGCFOR0176.00	Theophylline		10 mg
LGCFOR0007.00	Tramadol HCl	 x HCl and enantiomer	10 mg
LGCFOR0007.11	Tramadol N-Oxide	 and enantiomer	10 mg
LGCFOR0421.00	Trazodone HCl	 x HCl	10 mg
LGCFOR0306.00	Triamcinolone Hexacetonide		10 mg
LGCFOR0958.00	Trimeprazine Tartrate		10 mg
LGCFOR0240.00	Trimipramine maleate		10 mg
LGCFOR0601.03	Tropic Acid		10 mg
LGCFOR0393.00	Venlafaxine HCl	 x HCl	10 mg

Code	Product		Unit
LGCFOR0022.00	Verapamil Hydrochloride		10 mg
LGCFOR0149.00	Zopiclone		10 mg
LGCFOR0149.01	Zopiclone Oxide		10 mg

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...and many more

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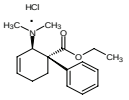
Certificate of Analysis

Tilidine HCl

ISO GUIDE 34
ISO/IEC 17025
ISO 9001:2008



Catalog Number: T-068
Solution Lot: FE021811-01
Retest Date: April 2012
Solvent: Methanol
Volume per Ampule: Not less than 1 mL
Storage: Store in freezer.
Intended Use: For R&D/ analytical purposes only. Not suitable for human or animal consumption.
Regulatory: USDEA Exempt | Canadian TK # 61-620 **Safety:** Flammable, Poison

- Retest Date - stability studies ongoing. Certificate of Analysis will be updated upon completion of retest.
- Ampules are overfilled to ensure a minimum 1 mL volume fill. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Component	Chromatographic Purity	Certified Concentration
Tilidine HCl	98.9%	1.000 ± 0.006 mg/mL (as free base)

- Uncertainty of the concentration is expressed as an expanded uncertainty in accordance with ISO 17025 and Guide 34 at the approximate 95% confidence interval using a coverage factor of k = 2 and has been calculated by statistical analysis of our production system and incorporates uncertainty of the purity factor, material density, and balance and weighing technique.
- Concentration is corrected for chromatographic purity, residual water, residual solvents and residual inorganics.

Solution Standard Verification and Homogeneity

Standard Solution	Lot Number	Verified Concentration (mg/mL) Actual Results	Verified Concentration (mg/mL) Acceptance Crtieria	%RSD - Homogeneity Actual Results	%RSD - Homogeneity Acceptance Crtieria
New Lot	FE021811-01	0.999	± 3%	0.3	≤ 3%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity of the New Lot is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The % RSD of samples pulled from across the lot demonstrate homogeneity of the New Lot.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared calibration solution gravimetrically prepared using balances calibrated to NIST.
- In addition, each neat material utilized has been identified and thoroughly characterized through the use of multiple analytical techniques. Spectral data is provided on subsequent pages of the COA.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

ACLASS

Lara Sparks, Quality Assurance Director

June 30, 2011
Date

Standard Solution Assay Parameters

Analysis Method: UV/Vis
Wavelength: 227 nm
Slit Width: 1.0 nm
Response: 0.5 s

Calibration Curve

Calibration Curve: Linear Regression
Number of Points: 4
Linearity (r): 1.000

Neat Material Data

Compound Name: Tilidine HCl
Compound Lot: PC012511-01

Chemical Formula: $C_{17}H_{23}NO_2$•HCl
CAS Number: 27107-79-5
Molecular Weight: 309.83

Neat Material Characterization Summary

Analytical Test	Method	Results
Primary Chromatographic Purity by HPLC/PDA Analysis	SP10-0102	98.9%
Secondary Purity Analysis by Thin Layer Chromatography	SP10-0106	Single Spot, R_f = 0.68
Identity by LC/MS Analysis	SP10-0107	Consistent with Structure
Identity by ^{1}H-NMR Analysis	USP <761>, SP10-0116	Consistent with Structure
Residual Solvent Analysis by GC/FID Headspace	AM1087 [1]	None Detected
Residual Water Analysis by Karl Fischer Coulometry	USP <921>, SP10-0103	2.73%
Inorganic Content by Microash Analysis	SP10-0135	< 0.2%
Purity Factor		96.21%

- Primary purity is calculated as the average of two independently performed analyses utilizing two different methods. Acceptance criteria requires the purity values to be within 0.5% of each other.
- The primary chromatographic purity value is used to calculate the Purity Factor.
- A secondary chromatographic purity method is utilized as a control.
- Purity Factor = [(100 - wt% residual solvent - wt% residual water - wt% residual inorganics) x Chromatographic Purity/100].
- Purity factor does not include adjustment for chiral and/or isotopic purity.

[1] Validated analytical method

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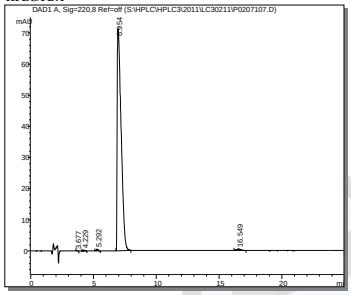
Spectral and Physical Data

HPLC/PDA



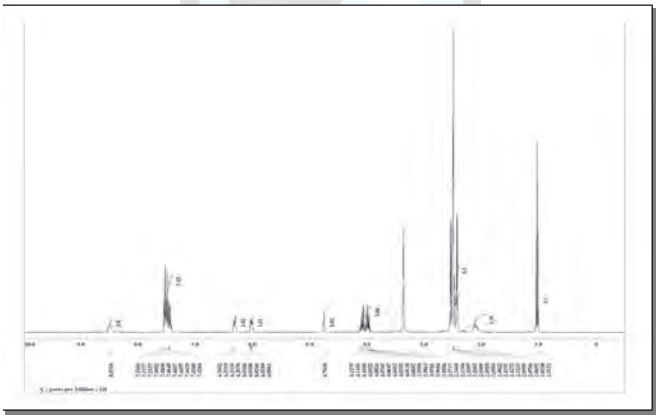
Column: Betasil Phenyl, 4.6 x 150 mm
Mobile Phase: Acetonitrile::10 mM Potassium phosphate buffer (30::70)
Flow Rate: 1.0 mL/min
Wavelength: 220 nm

Data File Name: S:\HPLC\HPLC3\2011\LC30211\P0207107.D
Operator: TNT
Instrument: LC#3
Sample Name: PC012511-01
Method File: PRM241-1.M
Acquired: February 7, 2011 2:51 PM

Peak #	Ret Time	Area	Height	Area %
1	3.68	0.37	0.05	0.02
2	4.23	2.47	0.32	0.16
3	5.29	4.99	0.56	0.32
4	6.95	1564.54	71.16	98.77
5	16.55	11.61	0.49	0.73

^{1}H NMR

Instrument: JEOL ECS 400
Solvent: DMSO-D_6



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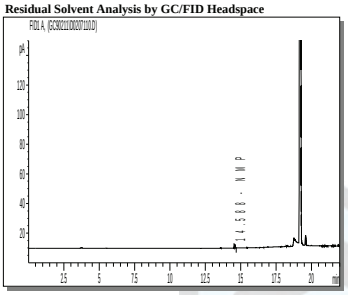
Spectral and Physical Data (cont.)

Residual Solvent Analysis by GC/FID Headspace



Column: DB-ALC1 30 m x 0.53 mm, 3 µm film thickness
Temp Program: 40°C (12 min) to 220°C at 40°C/min (5.5 min)
Carrier Gas: Helium
Flow Rate: 2.0 mL/min
Detector Heater Temp: 250°C
Injector: Headspace Sampler
HS Oven Temp: 60°C
Vial Equilibration: 10 minutes

Data File Name: C:\CHEM32\1\DATA\GC90211\D0207110.D
Operator: BD
Instrument: GC#9
Sample Name: PC012511-01
Acquired: February 7, 2011 4:16 PM

Peak	Compound	Area	Weight %
1	NMP	NA	NA
Total			**ND**

ND - Not Detected

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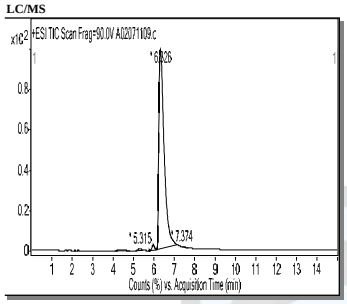
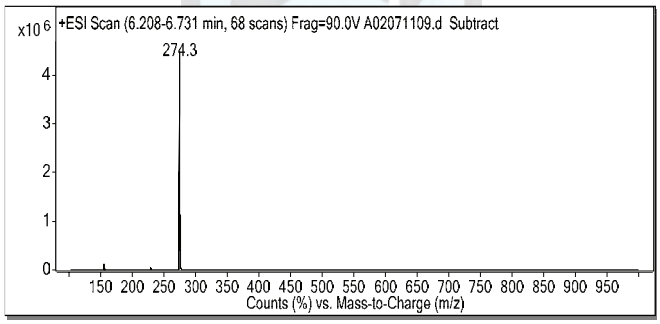
Spectral and Physical Data (cont.)

LC/MS



Column:	Luna 3µ C_{18}, 2.0 x 100 mm
Mobile Phase:	Acetonitrile::0.1% Formic acid in Water (10::90 to 50::50 at 5 mins, hold 10 mins)
Flow Rate:	0.3 mL/min
Scan Range:	100-1000 amu
Ionization:	Electrospray, Positive Ion
Data File Name:	A02071109.d
Operator:	HJ
Instrument:	LC/MS/MS
Sample Name:	PC012511-01
Method File:	19-55C2P.M
Acquired:	February 7, 2011 12:31 PM



Stability

Short Term Stability *: A summary of accelerated stability findings for a related product (Nortilidine HCl) is listed below.*

Storage Condition	Mean Kinetic Temperature (MKT)	Time Period
Freezer	-15°C	No decrease in purity was noted after one month.
Refrigerator	4°C	
Room Temperature	21°C	
40°C	40°C	

Transport/Shipping *: Stability data supports transport of this product at MKT not exceeding 40 °C over a period of one month.*

COA Revision History

Revision No.	Date	Reason for Revision
00	3/2/2011	Initial version
01	6/30/2011	Revised Storage condition from "Refrigerate or freeze" to "Store in freezer."

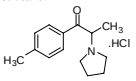
Australian Government

National Measurement Institute

REFERENCE MATERIAL ANALYSIS REPORT

Report ID: D964.2011.01

Compound Name: **(±)-4'-Methyl-pyrrolidinopropiophenone hydrochloride**
Description: White solid
Collection Number: D964 — Batch Number: 11-D-02
Chemical Formula: $C_{14}H_{19}NO.HCl$ — Molecular Weight: 253.8 (salt), 217.3 (base)
CAS Number: 28117-80-8 (base) — Batch production completed: March 2011
Structure:



Synonyms: 1-(4-Methylphenyl)-2-(1-pyrrolidinyl)-1-propanone hydrochloride
4'-Methyl-2-(1-pyrrolidinyl)-propiophenone hydrochloride
MPPP

Purity (mass fraction): 99.5 ± 2.9% (95% coverage interval)

Purity estimate obtained from a combination of traditional analytical techniques and quantitative nuclear magnetic resonance (QNMR). The purity estimate by traditional analytical techniques was obtained by subtraction from 100% of total impurities by HPLC with UV detection, thermogravimetric analysis, Karl Fischer analysis and ^{1}H NMR analysis. The purity value obtained from quantitative nuclear magnetic resonance (QNMR) using a combination of the three proton doublet at 1.6 ppm and the one proton quartet at 5.2 ppm against a certified internal standard of maleic acid. Supporting evidence is provided by headspace GC-MS analysis of occluded solvents and elemental microanalysis.

HPLC:
- Instrument: Shimadzu Binary pump LC-20AB, SIL-20 A HT autosampler
- Column: X-Bridge C-18, 5 µm (4.6 mm x 150 mm)
- Column oven: Ambient
- Mobile Phase: Acetonitrile/MilliQ water (40:60) The aqueous phase was buffered at pH 10.8 using 20mM NH_4OAc and NH_4OH
- Flow rate: 2.0 mL/min
- Detector: Shimadzu SPD-M20A operating at 225 nm
- Retention time: 5.7 min

Relative peak area response of main component:
- Initial analysis: Mean = 99.3%, s = 0.04% (10 sub samples in duplicate, March 2011)

Thermogravimetric analysis: Non volatile residue < 0.2 % mass fraction (April 2011). The volatile content (e.g. organic solvents and/or water) could not be determined because of the inherent volatility of the material.

Karl Fischer analysis: Moisture content 0.2% mass fraction (April 2011)

QNMR:
- Instrument: Bruker Avance DMX-600
- Field strength: 600 MHz — Solvent: D_2O (4.79 ppm)
- Internal standard: Maleic acid (98.7% m/m)
- Initial analysis: Mean (1.6 ppm) = 99.7%, s = 0.1% (5 sub samples, March 2011)
- Initial analysis: Mean (5.2 ppm) = 100.0%, s = 0.2% (5 sub samples, March 2011)

Spectroscopic and other characterisation data

GC-MS:
- Instrument: Agilent 6890/5973
- Column: TG-1MS, 30 m x 0.25 mm I.D. x 0.25 µm
- Program: 60 °C (1 min), 10 °C/min to 100 °C, 15 °C/min to 250 °C (5 min), 30 °C/min to 300 °C (2 min)
- Injector: 250 °C — Transfer line temp: 280 °C
- Carrier: Helium, 1.0 mL/min — Split ratio: 30/1

The retention time of the parent compound is reported with the major peaks in the mass spectra. The latter are reported as mass/charge ratios and (in brackets) as a percentage relative to the base peak.

Parent (12.7 min): 119 (9), 98 (100), 91 (8), 65 (4), 56 (8), 44 (8) m/z

ESI -MS:
- Instrument: Micromass Quatro LC Micro
- Operation: Positive ion mode, direct infusion at 10 µL/min
- Ionisation: ESI spray voltage at 3.5 kV positive ion
- EM voltage: 650 V
- Cone voltage 3 V
- Peak: 218.2 ($M+H^+$) m/z

HS-GC-MS:
- Instrument: Agilent 6890/5973/G1888
- Column: DB-624, 30 m x 0.25 mm I.D. x 1.4 µm
- Program: 50 °C (5 min), 7 °C/min to 120 °C, 15 °C/min to 220 °C (8.3 min)
- Injector: 150 °C — Transfer line temp: 280 °C
- Carrier: Helium, 1.2 mL/min — Split ratio: 50/1
- Solvents detected: Diethyl ether, ethanol

TLC: Conditions: Kieselgel $60F_{254}$, Methanol/NH_3 (100/1.5) Single spot observed, R_f = 0.66. Visualisation with UV at 254 nm

IR:
- Instrument: Biorad FTS3000MX FT-IR
- Range: 4000-400 cm^{-1}, KBr powder
- Peaks: 2955, 2640, 2579, 2447, 2361, 1686, 1606, 1457, 1388, 1339, 1295, 1244, 1135, 978, 830, 736, 586 cm^{-1}

^{1}H NMR:
- Instrument: Bruker Avance DMX-600
- Field strength: 600 MHz — Solvent: D_2O (4.79 ppm)
- Spectral data: δ 7.91 (2H, d, *J* = 8.3 Hz), 7.44 (2H, d, *J* = 8.1 Hz), 5.23 (1H, q, *J* = 7.1 Hz), 2.80-4.10 (4H, m (br)), 2.44 (3H, s), 1.80-2.35 (4H, m (br)), 1.63 (3H, d, *J* = 7.1 Hz) ppm Ethanol and diethyl ether, estimated at 0.08% mass fraction were observed in the ^{1}H NMR

^{13}C NMR:
- Instrument: Bruker Avance DMX-600
- Field strength: 151 MHz — Solvent: D_2O
- Spectral data: δ 16.1, 21.0, 22.9, 52.2, 54.4, 65.4, 129.1, 129.8, 130.0, 147.6, 197.2 ppm

Melting point: 222-223 °C

Microanalysis: Found: C = 66.4%; H = 8.1%; N = 5.5%; Cl = 14.1% (April, 2011)
Calc: C = 66.3%; H = 7.9%; N = 5.5%; Cl = 14.0% (Calculated for $C_{14}H_{19}NO.HCl$).

Expiration of certification
The property values are valid till 24th March 2014, i.e. three years from the date of certification provided the **unopened** material is handled and stored in accordance with the recommendations below. The material as issued in the unopened container and stored as recommended below should be suitable for use beyond this date, subject to confirmation of batch stability from the issuing body.

The expiry date/shelf life does not apply to sample bottles that have been opened. In such cases, it is recommended that the end-user conduct their own in-house stability trials.

The long-term stability of the compound in solution has not been examined.

This material has been given a shelf life of three years from the date of certification. The material will be re-tested on an annual basis to ensure that the property values are still valid. In the event a product fails the stability trial, notification will be sent to all impacted customers.

In the absence of stability data the measurement uncertainty at the 95% coverage interval has been expanded to accommodate any potential change in the property value. The stability component has been estimated from stability trials conducted on similar materials by NMI Australia over the last 10 years.

Homogeneity assessment
The homogeneity of the material was assessed using purity assay by HPLC with UV detection on ten randomly selected 1-2 mg sub samples of the material. The material was judged to be homogeneous at this level of sampling as the variation in analysis results between samples was not significantly different at a 95% confidence level from that observed on repeat analysis of the same sample.

Recommended storage
When not in use, this material should be stored at or below 20 °C in a closed container in a dry, dark area.

Intended Use
For ***in vitro*** laboratory analysis only.

Caution
Treat as hazardous substance. Use appropriate work practices when handling to avoid skin or eye contact, ingestion or inhalation of dust.

Legal notice
Neither NMI nor any person acting on NMI's behalf assumes any liability with respect to the use of, or for damages resulting from the use of, this reference material or the information contained in this certificate.

Authorised by:

S. R. Davies

Dr Stephen R. Davies,
Team Leader,
Chemical Reference Materials, NMI.
Dated: 1 July, 2011.

Characterisation data and property values specified in this report were first issued on 1st July 2011.

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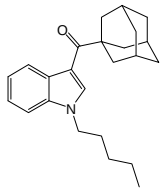
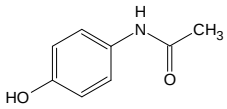
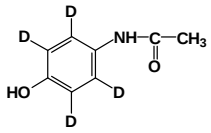
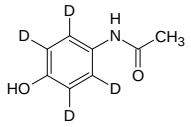
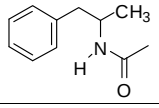
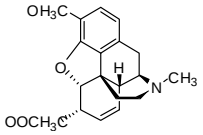
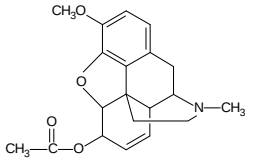
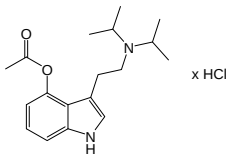
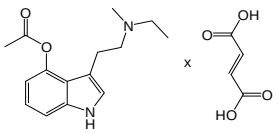
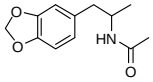
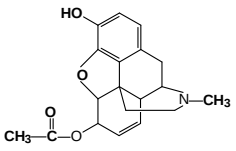
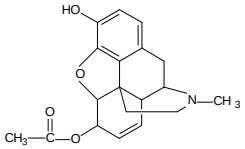
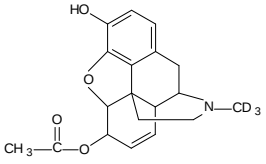
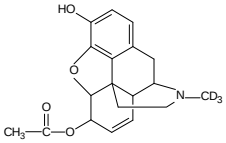
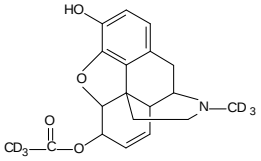
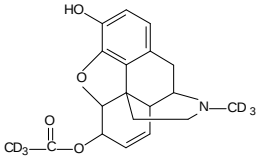
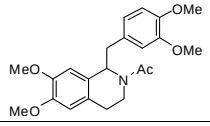
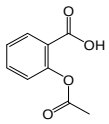
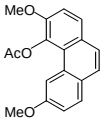
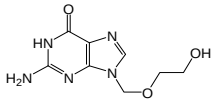
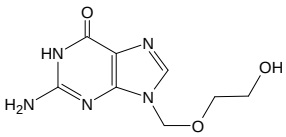
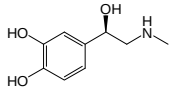
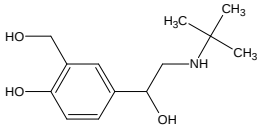
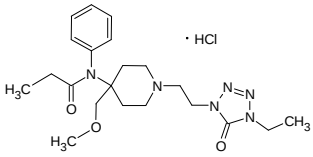
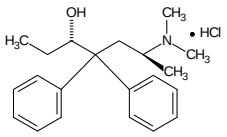
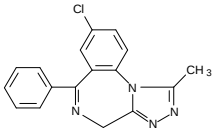
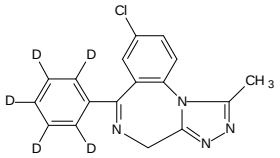
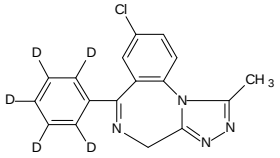
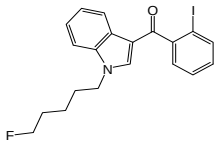
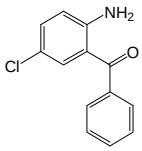
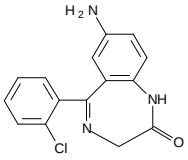
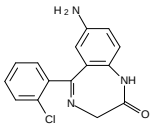
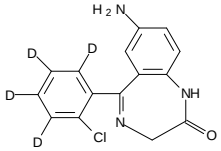
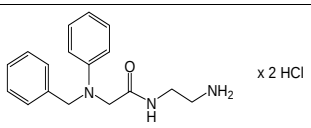
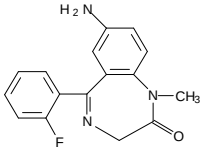
Drugs and metabolites of forensic and clinical interest

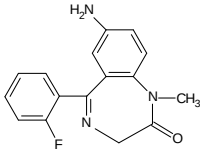
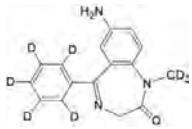
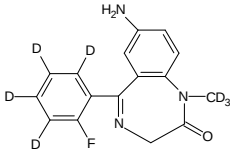
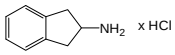
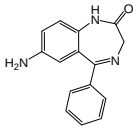
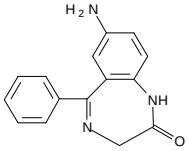
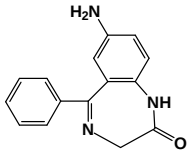
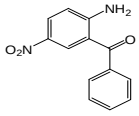
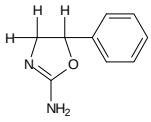
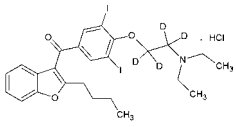
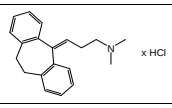
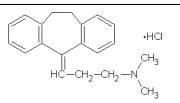
Drugs of abuse and metabolites

Code	Product		Unit
LGCFOR1275.71	AB-001 (Adamantyl(1-pentylindol-3-yl)methanone)		10 mg
TRC-A105000	Abacavir sulfate		5 mg
CERA-064	Acetaminophen (1.0 mg/ml) (Paracetamol) in Methanol		1 mL
CERP-909	Acetaminophen-D4 (0.1 mg/ml) (Paracetamol) in Methanol		1 mL
CERP-917	Acetaminophen-D4 (1.0 mg/ml) (Paracetamol) in Methanol		1 mL
NMIAD445	N-Acetylamphetamine		50 mg
NMIAD821	Acetylcodeine base		50 mg
CERA-053	6-Acetylcodeine (1.0 mg/ml) in Acetonitrile		1 mL
LGCFOR1275.28	4-Acetoxy-N,N-diisopropyltryptamine Hydrochloride (4-AcO-DIPT HCl, 4-Acetoxy-DIPT HCl, Ipracetin HCl)		10 mg
LGCFOR1275.29	4-Acetoxy-N-methyl-N-ethyltryptamine Fumarate (4-AcO-MET Fumarate, 4-Acetoxy-MET Fumarate)		10 mg
NMIAD738	(±)-N-Acetyl-3,4-methylenedioxyamphetamine		50 mg
CERA-003	6-Acetylmorphine (0.1 mg/ml) in Acetonitrile		1 mL

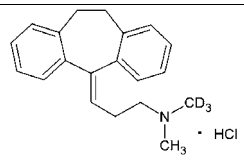
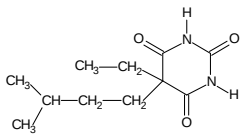
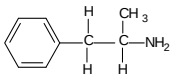
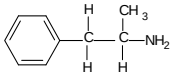
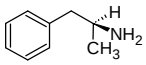
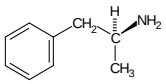
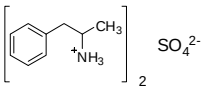
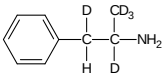
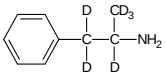
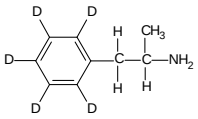
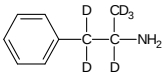
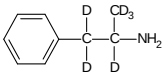
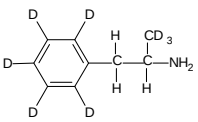
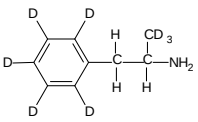
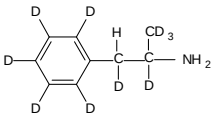
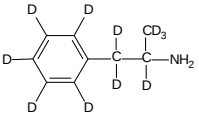
Code	Product		Unit
CERA-009	6-Acetylmorphine (1.0 mg/ml) in Acetonitrile		1 mL
CERA-006	6-Acetylmorphine-D3 (0.1 mg/ml) in Acetonitrile		1 mL
CERA-010	6-Acetylmorphine-D3 (1.0 mg/ml) in Acetonitrile		1 mL
CERA-026	6-Acetylmorphine-D6 (0.1 mg/ml) in Acetonitrile		1 mL
CERA-027	6-Acetylmorphine-D6 (1.0 mg/ml) in Acetonitrile		1 mL
NMIAD697	N-Acetylnorlaudanosine		10 mg
LGCFOR0133.00	Acetylsalicylic Acid		10 mg
NMIAD704	Acetylthebaol		5 mg
LGCFOR0061.00	Aciclovir		10 mg
CERA-066	Acyclovir		100 mg
LGCFOR0614.02	L-Adrenaline		10 mg
CERA-067	Albuterol (1.0 mg/ml) in Methanol		1 mL
CERA-071	Alfentanyl HCl (1.0 mg/ml) (as free base) in Methanol		1 mL

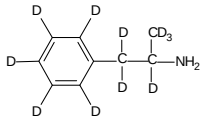
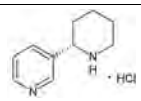
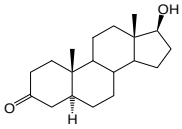
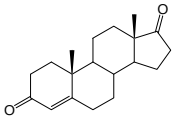
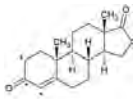
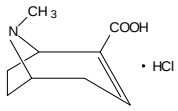
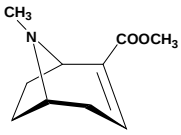
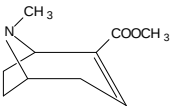
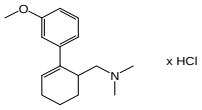
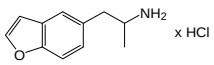
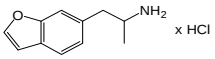
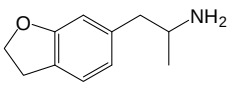
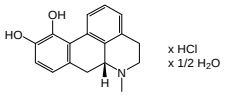
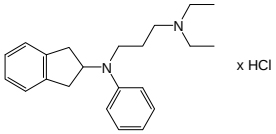
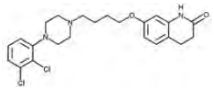
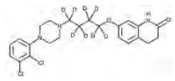
Drugs and metabolites of forensic and clinical interest

Code	Product		Unit
CERM-107	Alphamethadol HCl (1.0 mg/ml) in Methanol		1 mL
CERA-903	Alprazolam (1.0 mg/ml) in Methanol		1 mL
CERA-902	Alprazolam-D5 (0.1 mg/ml) in Methanol		1 mL
CERA-910	Alprazolam-D5 (1.0 mg/ml) in Methanol		1 mL
LGCFOR1275.17	AM-694 (1-(5-Fluoropentyl)-3-(2-iodobenzoyl)indole)		10 mg
THC-1359-M	AM-1220 (1 mg/ml) in Methanol		1 mL
THC-1372M	AM-2201 (1-(5-fluoropentyl)-3-(naphthalen-1-oyl)indole) (1 mg/mL) in Methanol		1 mL
LGCFOR0028.03	2-Amino-5-chlorobenzophenone		10 mg
CERA-915	7-Aminoclonazepam (0.1 mg/ml) in Acetonitrile		1 mL
CERA-916	7-Aminoclonazepam (1.0 mg/ml) in Acetonitrile		1 mL
CERA-917	7-Aminoclonazepam-D4 (0.1 mg/ml) in Acetonitrile		1 mL
LGCFOR0171.01	N-(2-Aminoethyl)-2-(benzylphenylamino)acetamide Dihydrochloride		10 mg
CERA-912	7-Aminoflunitrazepam (0.1 mg/ml) in Acetonitril		1 mL

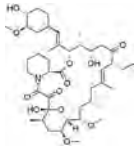
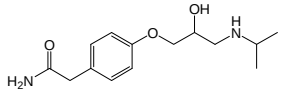
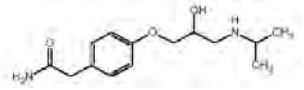
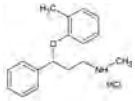
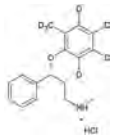
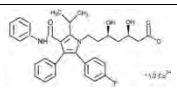
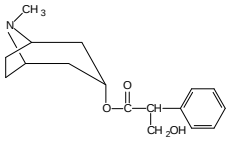
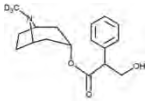
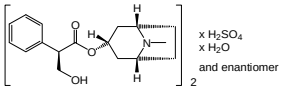
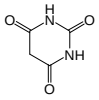
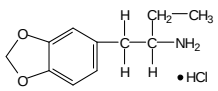
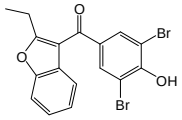
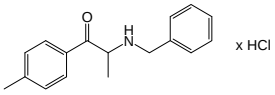
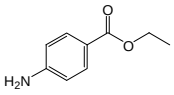
Code	Product		Unit
CERA-911	7-Aminoflunitrazepam (1.0 mg/ml) in Acetonitril		1 mL
CERA-925	7-Aminoflunitrazepam-D7 (1.0 mg/ml) in Acetonitrile		1 mL
CERA-921	7-Aminoflunitrazepam-D7 (0.1 mg/ml) in Acetonitrile		1 mL
LGCFOR1275.50	2-Aminoindane Hydrochloride (2-AI HCl)		10 mg
LGCFOR0078.07	7-Aminonitrazepam		10 mg
CERA-914	7-Aminonitrazepam (0.1 mg/ml) in Acetonitrile		1 mL
CERA-913	7-Aminonitrazepam (1.0 mg/ml) in Methanol		1 mL
LGCFOR0078.01	2-Amino-5-nitrobenzophenone		10 mg
CERA-040	Aminorex (1.0 mg/ml) in Acetonitrile		1 mL
TRC-A632950	Amiodarone HCl		5 g
CERA-060	Amiodarone HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
TRC-A632952	Amiodarone HCl-D4		2.5 mg
CERA-083	Amiodarone-D4 HCl (0.1 mg/ml) in Methanol		1 mL
TRC-A633250	Amisulpride		10 mg
TRC-A633252	Amisulpride-D5		1 mg
LGCFOR0062.00	Amitriptyline HCl		10 mg
CERA-923	Amitriptyline (1.0 mg/ml) (as free base) in Methanol		1 mL

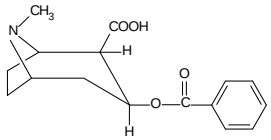
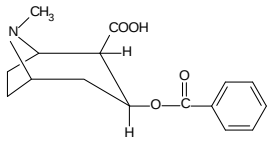
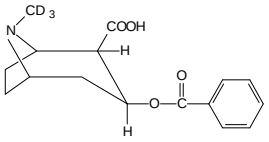
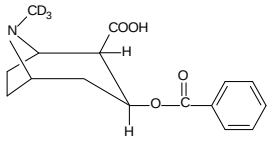
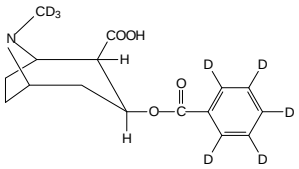
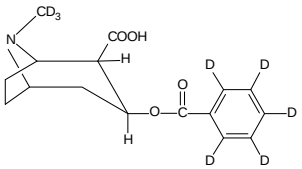
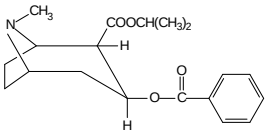
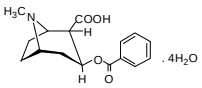
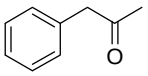
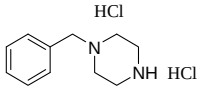
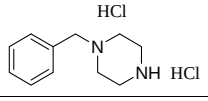
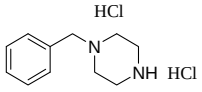
Drugs and metabolites of forensic and clinical interest

Code	Product		Unit
CERA-085	Amitriptyline-D3 HCl (0.1mg/ml) (as free base)		1 mL
CERA-020	Amobarbital (1.0 mg/ml) in Methanol		1 mL
CERA-011	(±)-Amphetamine (0.1 mg/ml) in Methanol		1 mL
CERA-007	(±)-Amphetamine (1.0 mg/ml) in Methanol		1 mL
CERA-049	R(-)-Amphetamine (1.0 mg/ml) (Levamfetamin) in Methanol		1 mL
CERA-008	S(+)-Amphetamine (dextro-Amphetamine) (1.0 mg/ml) in Methanol		1 mL
NMIAD420	(±)-Amphetamine Sulfate		50 mg
CERA-005	(±)-Amphetamine-D5 (0.1 mg/ml) (deuterium label on side chain) in Methanol		1 mL
CERA-013	(±)-Amphetamine-D5 (1.0 mg/ml) in Methanol		1 mL
CERA-002	(±)-Amphetamine-D5 (0.1 mg/ml) (deuterium label on ring) in Methanol		1 mL
CERA-044	Amphetamine-D6 (0.1 mg/ml) in Methanol		1 mL
CERA-045	Amphetamine-D6 (1.0 mg/ml) in Methanol		1 mL
CERA-017	(±)-Amphetamine-D8 (0.1 mg/ml) in Methanol		1 mL
CERA-018	(±)-Amphetamine-D8 (1.0 mg/ml) in Methanol		1 mL
CERA-038	(±)-Amphetamine-D10 (0.1 mg/ml) in Methanol		1 mL
CERA-016	(±)-Amphetamine-D11 (0.1 mg/ml) in Methanol		1 mL

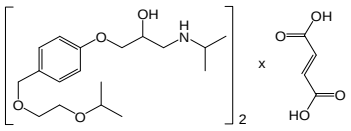
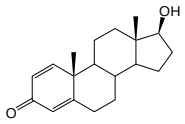
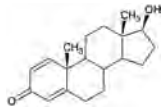
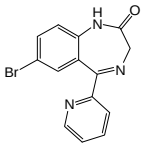
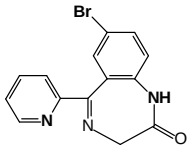
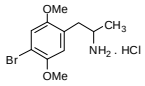
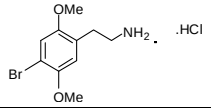
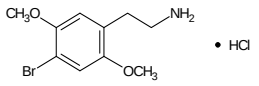
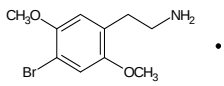
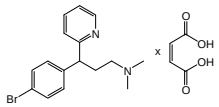
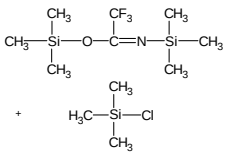
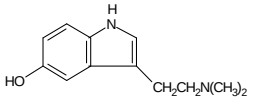
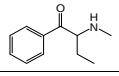
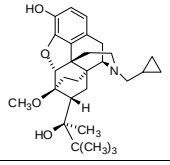
Code	Product		Unit
CERA-019	(±)-Amphetamine-D11 (1.0 mg/ml) in Methanol		1 mL
TRC-A634400	Amprenavir		5 mg
TRC-A634402	Amprenavir-D4		1 mg
CERA-097	(+)-Anabasine HCl (1.0 mg/mL) (as free base) in Methanol		1 mL
LGCFOR0565.00	Androstanolone (5alpha-Dihydrotestosterone, Stanolone)		10 mg
LGCFOR0323.01	Androstenedione		10 mg
CERA-084	Androstene-3,17-dione-2,3,4-13C3 (0.1 mg/ml) in Acetonitrile		1 mL
CERA-036	Anhydroecgonine HCl (1.0 mg/ml) in Methanol		1 mL
NMIAD847	Anhydroecgonine methyl ester		
CERA-034	Anhydroecgonine methyl ester (1.0 mg/ml) in Acetonitrile		1 mL
LGCFOR0007.04	2-Anhydrotramadol Hydrochloride (2-(3-Methoxyphenyl)-N,N-dimethyl-2-cyclohexene-1-methanamine Hydrochloride)		10 mg
LGCFOR1275.24	5-APB HCl (1-Benzofuran-5-ylpropan-2-amine Hydrochloride, 5-(2-Aminopropyl)benzofuran Hydrochloride)		10 mg
LGCFOR1275.23	6-APB HCl (1-Benzofuran-6-ylpropan-2-amine Hydrochloride, 6-(2-Aminopropyl)benzofuran Hydrochloride)		10 mg
LGCFOR1275.25	6-APDB (1-(2,3-Dihydro-1-benzofuran-6-yl)propan-2-amine, 6-(2-Aminopropyl)-2,3-dihydrobenzofuran, 4-Desoxy-MDA)		10 mg
LGCFOR0562.00	Apomorphine HCl		10 mg
LGCFOR0467.00	Aprindine Hydrochloride		10 mg
CERA-080	Aripiprazole (1.0 mg/mL) in Acetonitrile		1 mL
CERA-081	Aripiprazole-D8 (0.1 mg/ml) in Acetonitrile		1 mL

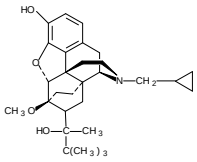
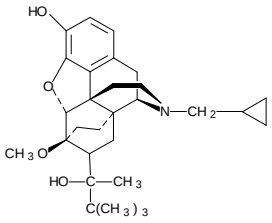
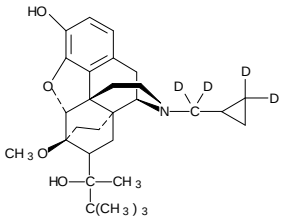
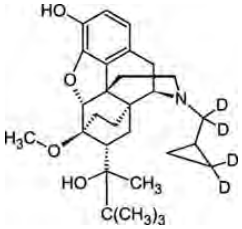
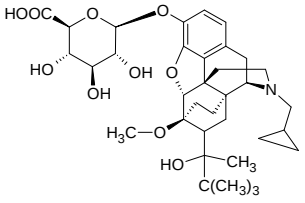
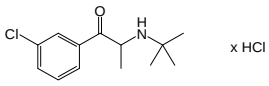
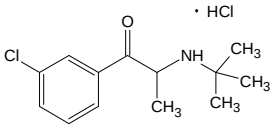
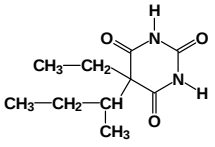
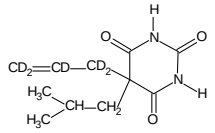
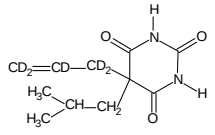
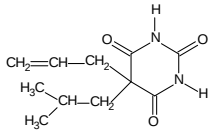
Drugs and metabolites of forensic and clinical interest

Code	Product		Unit
CERA-094	Ascomycin (1.0 mg/mL) in Acetonitrile		1 mL
TRC-A790051	Atazanavir		5 mg
TRC-A790052	Atazanavir-D5		1 mg
LGCFOR0013.00	Atenolol		10 mg
CERA-072	Atenolol (1.0 mg/ml) in Acetonitrile		1 mL
CERA-095	Atomoxetine HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
CERA-093	Atomoxetine-D7 HCl (0.1 mg/ml) (as free base) in Methanol		1 mL
CERA-078	Atorvastatin calcium salt (1.0 mg/ml) (as free carboxylate) in Methanol		1 mL
CERA-046	Atropine (1.0 mg/ml) in Acetonitrile		1 mL
CERA-077	Atropine-D3 (0.1 mg/ml) in Acetonitrile		1 mL
LGCFOR0289.00	Atropine sulphate		10 mg
LGCFOR0265.03	Barbituric Acid		10 mg
CERB-016	(±)-BDB HCl (1.0 mg/ml) in Methanol		1 mL
LGCFOR0456.00	Benzbromarone		10 mg
LGCFOR1275.36	Benzedrone Hydrochloride (4-Methyl-N-benzylcathinone Hydrochloride)		10 mg
LGCFOR0490.02	Benzhydrol (Diphenylmethanol)		10 mg
LGCFOR0094.00	Benzocaine		10 mg

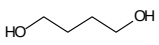
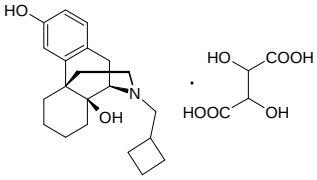
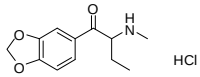
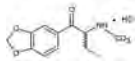
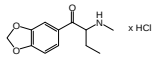
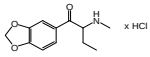
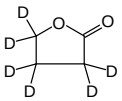
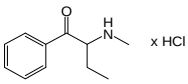
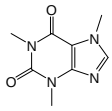
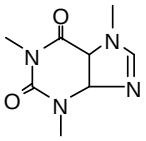
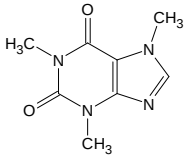
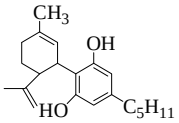
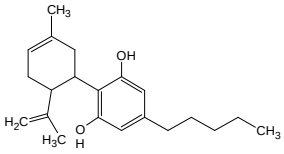
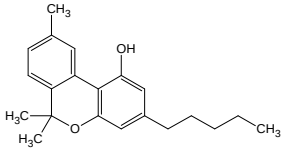
Code	Product		Unit
CERB-007	Benzoylecgonine (0.1 mg/ml) in Methanol		1 mL
CERB-004	Benzoylecgonine (1.0 mg/ml) in Methanol		1 mL
CERB-001	Benzoylecgonine-D3 (0.1 mg/ml) in Methanol		1 mL
CERB-008	Benzoylecgonine-D3 (1.0 mg/ml) in Methanol		1 mL
CERB-013	Benzoylecgonin-D8 (0.1 mg/ml) in Methanol		1 mL
CERB-014	Benzoylecgonine-D8 (1.0 mg/ml) in Methanol		1 mL
CERB-010	Benzoylecgonine isopropyl ester (1.0 mg/ml) in Acetonitrile		1 mL
NMIAD745	Benzoylecgonine tetrahydrate		50 mg
TRC-B276580	Benzyl fentanyl		1 mg
TRC-B276582	Benzyl fentanyl-D3		1 mg
NMIAD868	Benzyl methyl ketone (P2P) - DRUG PRECURSOR		10 mg
NMIAD456	1-Benzyl-3-methylnaphthalene		50 mg
NMIAD905	BZP (Benzyl piperazine dihydrochloride)		50 mg
NMIAD905	BZP (Benzyl piperazine dihydrochloride)		50 mg
CERB-906	Benzylpiperazine diHCl (1.0 mg/ml) in Methanol		1 mL
CERB-907	Benzylpiperazine-D7 diHCl (0.1 mg/ml) in Methanol		1 mL
TRC-B288612	N-Benzylpiperazine-D8 diHCl		1 mg

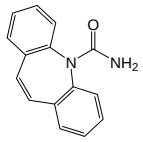
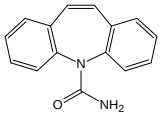
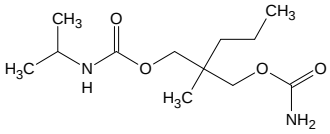
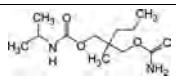
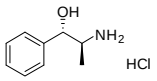
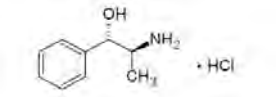
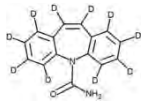
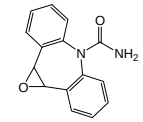
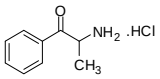
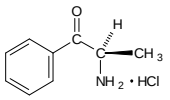
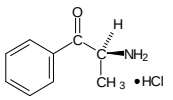
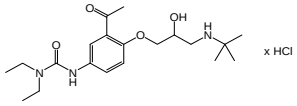
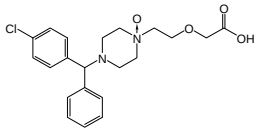
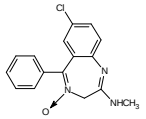
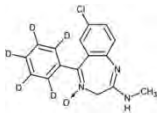
Drugs and metabolites of forensic and clinical interest

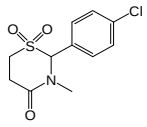
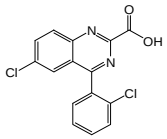
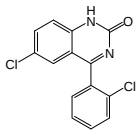
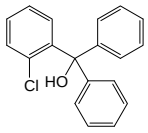
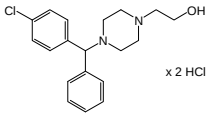
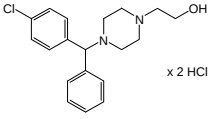
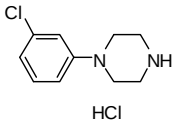
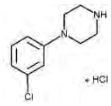
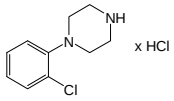
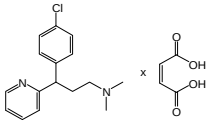
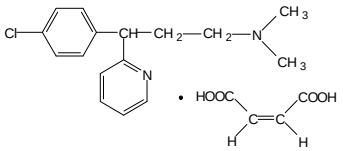
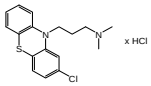
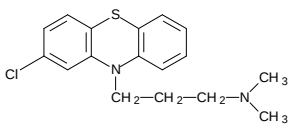
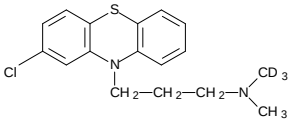
Code	Product		Unit
LGCFOR0460.08	Bisoprolol Fumarate		10 mg
LGCFOR0864.00	Boldenone		10 mg
CERB-042	Boldenone (1.0 mg/ml) in Acetonitrile		1 mL
LGCFOR0064.00	Bromazepam		10 mg
CERB-903	Bromazepam (1.0 mg/ml) in Methanol		1 mL
NMIAD396	DOB ((±)-4-Bromo-2,5-dimethoxyamphetamine HCl (Brolamfetamin)		20 mg
NMIAD758	(±)-4-Bromo-2,5-dimethoxyphenethylamine HCl (Nexus)		20 mg
CERB-026	4-Bromo-2,5-dimethoxyphenethylamine HCl (1.0 mg/ml) in Methanol		1 mL
TRC-B684210	(R)-(-)-Bromodragonfly HCl		10 mg
NMIAD455	Bromosaffrole		50 mg
LGCFOR0060.00	Brompheniramine maleate		100 mg
CERB-023	BSTFA with 1% TMCS		10 x 1 mL
TRC-B689450	Buclizine dihydrochloride		50 mg
CERB-022	Bufotenine (1.0 mg/ml) in Acetonitrile		1 mL
LGCFOR1275.19	Buphedrone		10 mg
NMIAD932	Buprenorphine, free base		10 mg

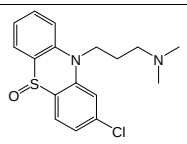
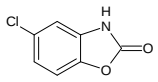
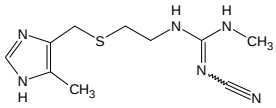
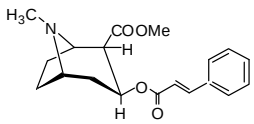
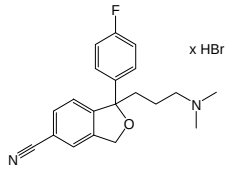
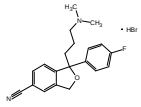
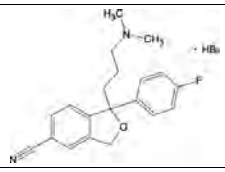
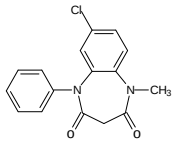
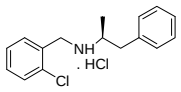
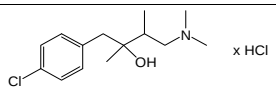
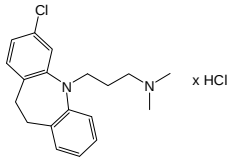
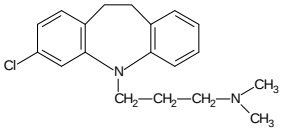
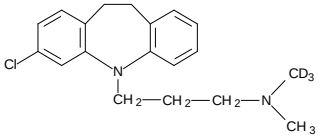
Code	Product		Unit
CERB-044	Buprenorphine (1.0 mg/ml) in Methanol		1 mL
CERB-902	Buprenorphine (0.1 mg/ml) in Methanol		1 mL
CERB-901	Buprenorphine-D4 (0.1 mg/ml) in Methanol		1 mL
CERB-908	Buprenorphine-D4 (1.0 mg/ml) in Methanol		1 mL
CERB-035	Buprenorphine-3beta-D-glucuronide (0.1 mg/mL) in Methanol		1 mL
LGCFOR0745.00	Bupropion HCl		10 mg
CERB-034	Bupropion HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
CERB-024	Butabarbital (1.0 mg/ml) (Secbutabarbital) in Methanol		1 mL
CERB-005	Butalbital-D5 (0.1 mg/ml) in Methanol		1 mL
CERB-030	Butalbital-D5 (1.0 mg/ml) in Methanol		1 mL
CERB-006	Butalbital (1.0 mg/ml) in Methanol		1 mL

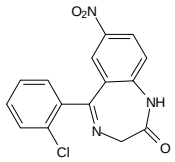
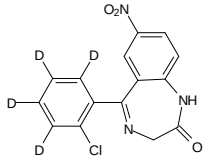
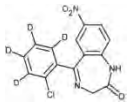
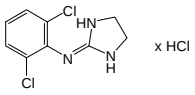
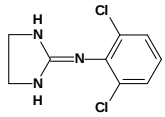
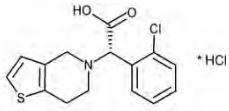
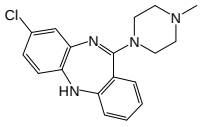
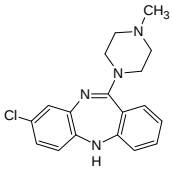
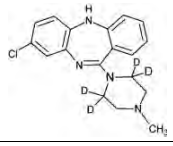
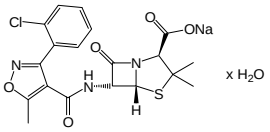
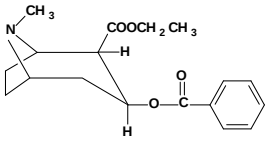
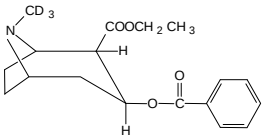
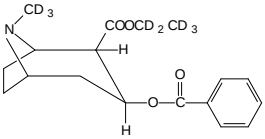
Drugs and metabolites of forensic and clinical interest

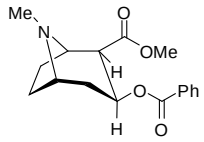
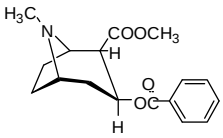
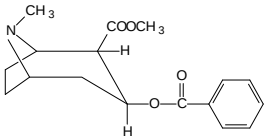
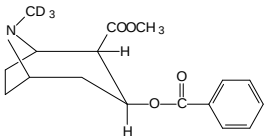
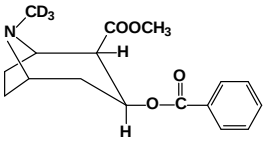
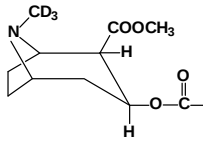
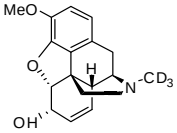
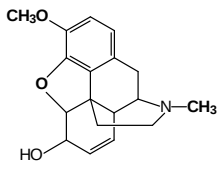
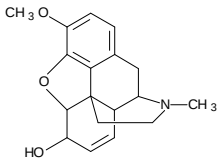
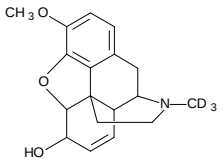
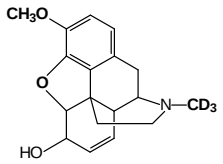
Code	Product		Unit
CERB-020	1,4-Butanediol (1.0 mg/ml) in Methanol		1 mL
CERB-037	Butorphanol tartrate (1.0 mg/ml) (as free base) in Methanol		1 mL
NMIAD948	Butylone HCl ° (1-(3,4-Methylenedioxyphenyl)-2-(methylamino)butan-1-one)		20 mg
CERB-046	Butylone-D3 HCl (bk-MBDB, B1) (0.1 mg/ml) (as free base) in Methanol		1 mL
LGCFOR1275.03	Butylone Hydrochloride		10 mg
CERB-045	Butylone HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
CERB-018	gamma-Butyrolactone (1.0 mg/ml) in Acetonitrile		1 mL
CERB-032	gamma-Butyrolactone-D6 (1.0 mg/ml) in Acetonitrile		1 mL
LGCFOR1275.32	Buphedrone Hydrochloride		10 mg
LGCFOR0494.00	Caffeine		10 mg
NMIAM724	Caffeine		50 mg
CERC-051	Caffeine (1.0 mg/ml) in Methanol		1 mL
NMIAD512	Cannabidiol		50 mg
CERC-045	Cannabidiol (1.0 mg/ml) in Methanol		1 mL
THC-1073M	Cannabidiol (1 mg / mL) in Methanol		1 mL
THC-1284M	Cannabidiol-D3 (0.1 mg / mL) in Methanol		1 mL
CERC-046	Cannabinol (1.0 mg/ml) in Methanol		1 mL

Code	Product		Unit
LGCFOR0076.00	Carbamazepine		10 mg
CERC-053	Carbamazepine (1.0 mg/ml) in Methanol		1 mL
CERC-042	Carisoprodol		500 mg
CERC-077	Carisoprodol (1.0 mg/ml) in Methanol		1 mL
NMIAM297	(+)-Norpseudoephedrine HCl (Cathine)		50 mg
CERN-046	Norpseudoephedrine HCl (0.1 mg/ml) as free base in Methanol		1 mL
CERC-094	Carbamazepine-D10 (0.1 mg/ml) in Methanol		1 mL
LGCFOR0076.01	Carbamazepine 10,11-Epoxide		10 mg
CERC-111	Catecholamine Metabolites Mix(1.0 mg/ml) of each component in Methanol		1 mL
TRC-C225702	Cathinone-D3 HCl		1 mg
NMIAD929	(±)-Cathinone HCl		20 mg
CERC-028	R(+)-Cathinone HCl (1.0 mg/ml) in Methanol		1 mL
CERC-019	S(-)-Cathinone HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
LGCFOR0128.00	Celiprolol Hydrochloride		10 mg
LGCFOR0380.13	Cetirizine N-Oxide		10 mg
CERC-022	Chlordiazepoxide (1.0 mg/ml) in Methanol		1 mL
CERC-912	Chlordiazepoxide-D5 (0.1 mg/mL) in Methanol		1 mL

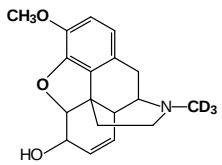
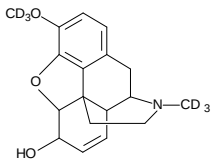
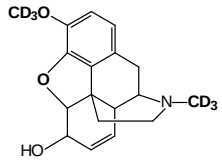
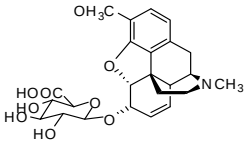
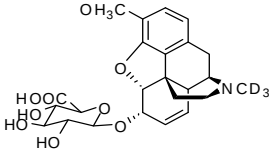
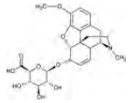
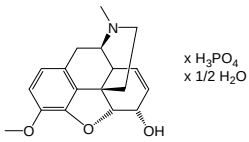
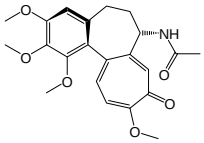
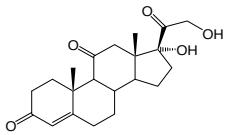
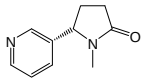
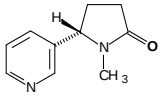
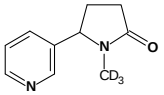
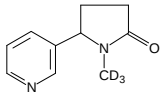
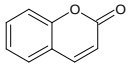
Code	Product		Unit
LGCFOR0017.00	Chlormezanone		10 mg
LGCFOR0071.04	6-Chloro-4-(2-chlorophenyl)-2-quinazolinecarboxylic Acid		10 mg
LGCFOR0071.09	6-Chloro-4-(2-chlorophenyl)-2(1H)-quinazolinone		10 mg
LGCFOR0015.01	(2-Chlorophenyl)diphenylmethanol		10 mg
LGCFOR0380.01	1-[(4-Chlorophenyl)phenylmethyl]piperazine		10 mg
LGCFOR0380.11	4-[(4-Chlorophenyl)phenylmethyl]-1-piperazineethanol Dihydrochloride		10 mg
NMIAD907	m-Chlorophenylpiperazine HCl (mCPP)		50 mg
CERC-089	1-(3-Chlorophenyl)piperazine (mCPP) HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
LGCFOR1275.16	ortho-Chlorophenylpiperazine Hydrochloride (oCPP HCl)		10 mg
TRC-C379965	Chloroquine diphosphate salt		100 mg
LGCFOR0090.00	Chlorphenamine Maleate		10 mg
CERC-036	Chlorpheniramine maleate (1.0 mg/ml) in Methanol		1 mL
LGCFOR0420.00	Chlorpromazine Hydrochloride		10 mg
CERC-904	Chlorpromazine HCl (1.0 mg/ml) in Methanol		1 mL
CERC-902	Chlorpromazine-D3 (0.1 mg/ml) in Methanol		1 mL

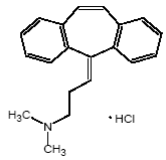
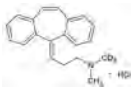
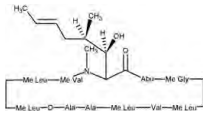
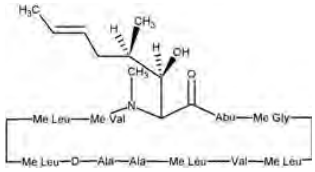
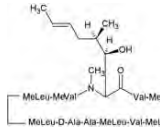
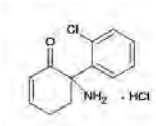
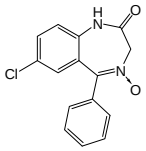
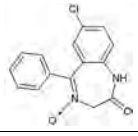
Code	Product		Unit
LGCFOR0420.01	Chlorpromazine Sulphoxide		10 mg
CERC-074	Chlorzoxazone (0.1 mg/ml) in Acetonitrile		1 mL
CERC-055	Cimetidine		250 mg
NMIAD468	trans-Cinnamoylcocaine		20 mg
LGCFOR0242.00	Citalopram HBr		10 mg
CERC-057	Citalopram HBr (0.1 mg/ml) (as free base) in Methanol		1 mL
CERC-095	Citalopram HBr (1.0 mg/mL) (as free base) in Methanol		1 mL
CERC-090	Citalopram-D6 HBr (0.1 mg/ml) (as free base) in Methanol		1 mL
CERC-909	Clobazam (1.0 mg/ml) in Methanol		1 mL
NMIAD692	Clobenzorex HCl		20 mg
LGCFOR0038.00	Clobutinol Hydrochloride		10 mg
LGCFOR0545.00	Clomipramine HCl		10 mg
CERC-903	Clomipramine (1.0 mg/ml) in Methanol		1 mL
CERC-901	Clomipramine-D3 (0.1 mg/ml) in Methanol		1 mL

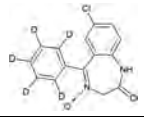
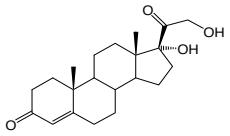
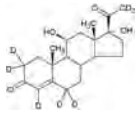
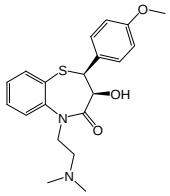
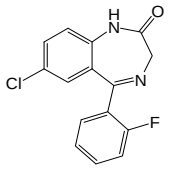
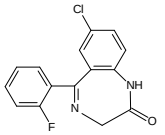
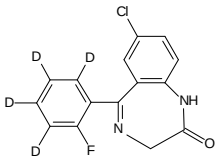
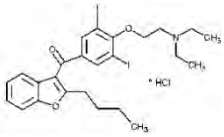
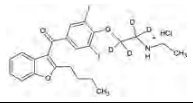
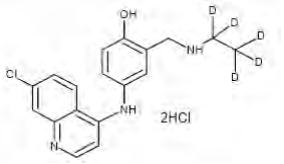
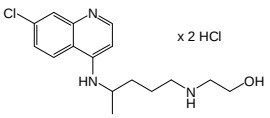
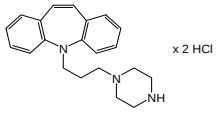
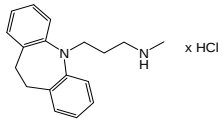
Code	Product		Unit
CERC-907	Clonazepam (1.0 mg/ml) in Methanol		1 mL
CERC-905	Clonazepam-D4 (0.1 mg/ml) in Methanol		1 mL
CERC-906	Clonazepam-D4 (1.0 mg/ml) in Methanol		1 mL
LGCFOR0983.00	Clonidine Hydrochloride		10 mg
CERC-033	Clonidine (1.0 mg/ml) in Methanol		1 mL
CERC-092	Clopidogrel carboxylic acid HCl (0.1 mg/ml) (as free base) in Methanol		1 mL
LGCFOR0480.00	Clozapine		10 mg
TRC-C587502	Clozapine-d8		1 mg
CERC-059	Clozapine (1.0 mg/ml) in Methanol		1 mL
CERC-091	Clozapine-D4 (0.1 mg/ml) in Methanol		1 mL
LGCFOR0682.00	Cloxacillin Sodium Monohydrate		10 mg
CERC-010	Cocaethylene (1.0 mg/ml) (Benzoylethylecgonin) in Acetonitrile		1 mL
CERC-009	Cocaethylene-D3 (0.1 mg/ml) in Acetonitrile		1 mL
CERC-024	Cocaethylene-D8 (0.1 mg/ml) in Acetonitrile		1 mL

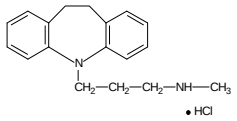
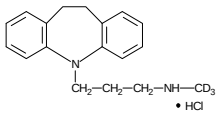
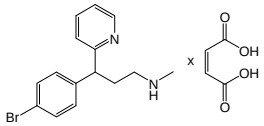
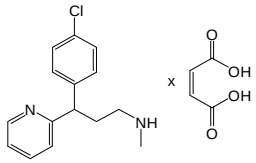
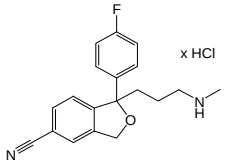
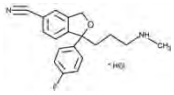
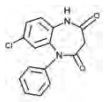
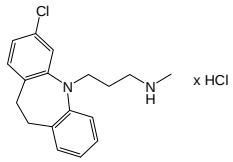
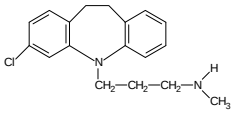
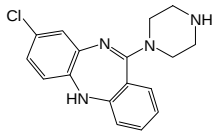
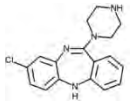
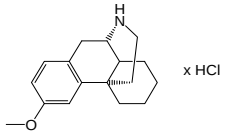
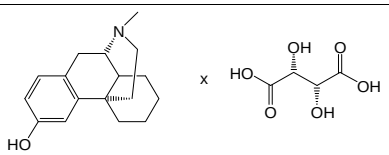
Code	Product		Unit
NMIAD826	Cocaine base		50 mg
NMIAD747	Cocaine HCl		20 mg
CERC-008	Cocaine (1.0 mg/ml) in Acetonitrile		1 mL
CERC-004	Cocaine-D3 (0.1 mg/ml) in Acetonitrile		1 mL
CERC-014	Cocaine-D3 (1.0 mg/ml) in Acetonitrile		1 mL
NMIAD671	Codeine base		50 mg
NMIAD673	Codeine base-D3		1 mg
CERC-015	Codeine (0.1 mg/ml) in Methanol		1 mL
CERC-006	Codeine (1.0 mg/ml) in Methanol		1 mL
CERC-005	Codeine-D3 (0.1 mg/ml) in Methanol		1 mL
CERC-039	Codeine-D3 (0.1 mg/ml) in Methanol		5 mL

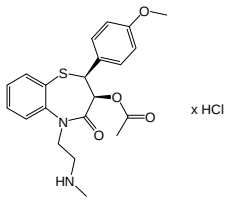
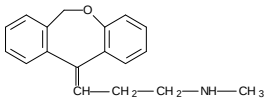
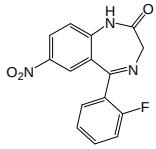
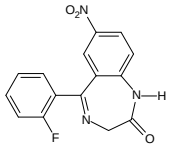
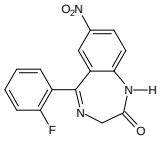
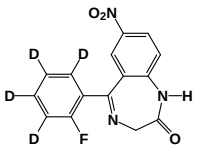
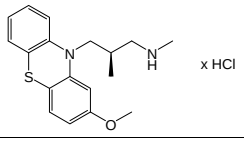
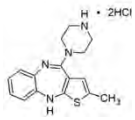
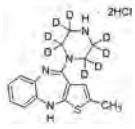
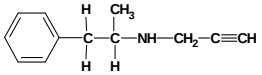
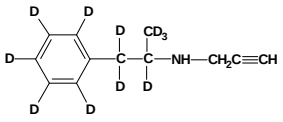
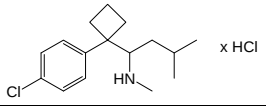
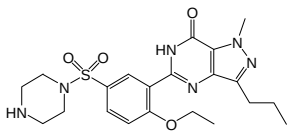
Drugs and metabolites of forensic and clinical interest

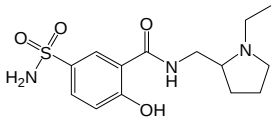
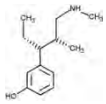
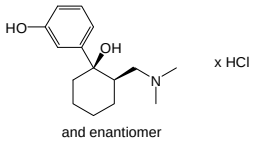
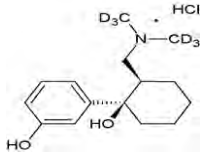
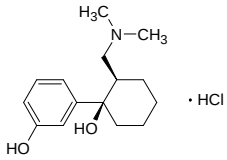
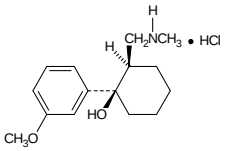
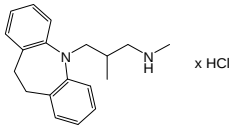
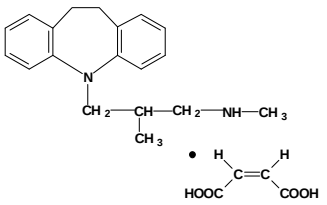
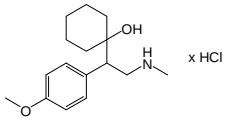
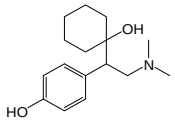
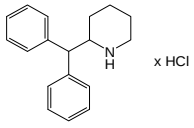
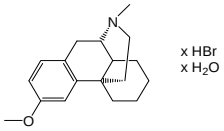
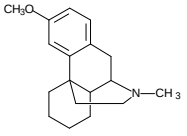
Code	Product		Unit
CERC-007	Codeine-D3 (1.0 mg/ml) in Methanol		1 mL
CERC-040	Codeine-D6 (0.1 mg/ml) in Methanol		1 mL
CERC-041	Codeine-D6 (1.0 mg/ml) in Methanol		1 mL
NMIAD694	Codeine glucuronide *		0.1 mg
NMIAD695	Codeine glucuronide-D3*		0.1 mg
CERC-087	Codeine-6-beta-D-glucuronide (0.1 mg/ml) in Water/Methanol (80:20)		1 mL
LGCFOR0442.00	Codeine phosphate hemihydrate		10 mg
LGCFOR1083.00	Colchicine		10 mg
LGCFOR0214.00	Cortisone		10 mg
LGCFOR0517.03	Cotinine		10 mg
CERC-016	(-)-Cotinine (1.0 mg/ml) in Methanol		1 mL
CERC-017	(±)-Cotinine-D3 (0.1 mg/ml) in Methanol		1 mL
CERC-035	(±) Cotinine-D3 (1.0 mg/ml) in Methanol		1 mL
CERC-073	Coumarin (1.0 mg/ml) in Acetonitrile		1 mL

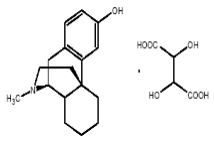
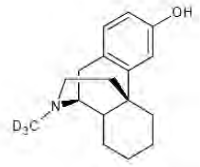
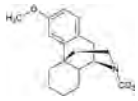
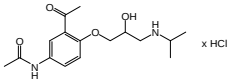
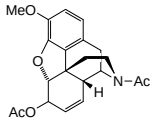
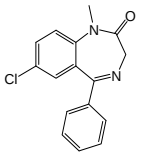
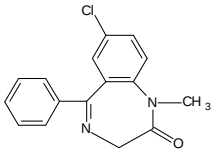
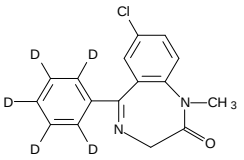
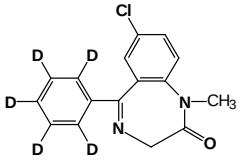
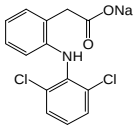
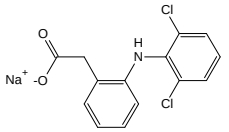
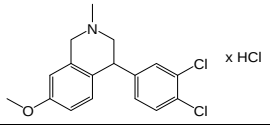
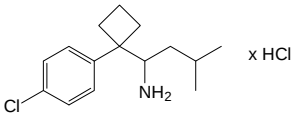
Code	Product	Unit
THC-1240	CP 47,497 (2-((1R,3S/1S,3R)-3-hydroxycyclohexyl)-5-(2-methyloctan-2-yl)phenol)	5 mg
THC-1187	CP47,497 (2-((1R,3S/1S,3R)-3-hydroxycyclohexyl)-5-(2-methyloctan-2-yl)phenol)	
CAY-16851	(+/-) CP47,497 (5-(1,1-Dimethylheptyl)-2-((1R,3S)-3-hydroxycyclohexyl)-phenol)	5 mg
THC-1186	CP47,497 (5-(1,1-Dimethylheptyl)-2-((1R,3S)-3-hydroxycyclohexyl)-phenol) (1.0 mg / ml) in Methanol	1 mL
CAY-13218	(-) CP47,497 (5-(1,1-Dimethylheptyl)-2-((1R,3S)-3-hydroxycyclohexyl)-phenol)	5 mg
CAY-13219	(+) CP47,497 (5-(1,1-Dimethylheptyl)-2-((1R,3S)-3-hydroxycyclohexyl)-phenol)	5 mg
CAY-90084	(-)-CP 55,940 (5-(1,1-dimethylheptyl)-2-((1R,2R,5R)-5-hydroxy-2-(3-hydroxypropyl)cyclohexyl)-phenol)	5 mg
TRC-C781502	Creatinine-D3	2.5 mg
CERC-060	Cyclobenzaprine HCl (1.0 mg/ml) (as free base) in Methanol 	1 mL
CERC-114	Cyclobenzaprine-D3 HCl 0.1 mg/ml) (as free base) in Methanol 	1 mL
CERC-104	Cyclosporin A (0.1 mg/ml) in Acetonitrile 	1 mL
CERC-093	Cyclosporin A (1.0 mg/mL) in Acetonitrile 	1 mL
CERC-108	Cyclosporin D (1.0 mg/mL) in Acetonitrile 	1 mL
TRC-D193500	Darunavir	5 mg
TRC-D193502	Darunavir-D9	1 mg
CERD-066	Dehydroepiandrosterone-D5-3-sulfate sodium salt (DHEAS-D5) (2,2,3,4,4-D5) (O.1 mg/ml) in Methanol	1 mL
CERD-046	Dehydronorketamine HCl (0.1 mg/ml) (as free base) in Acetonitrile 	1 mL
TRC-D230625	Delavirdine	10 mg
TRC-D230630	Delavirdine mesylate	10 mg
LGCFOR0028.02	Demoxepam 	10 mg
CERD-079	Demoxepam (1.0 mg/mL) in Acetonitrile 	1 mL

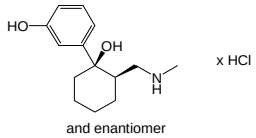
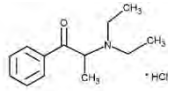
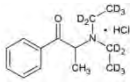
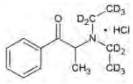
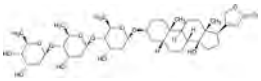
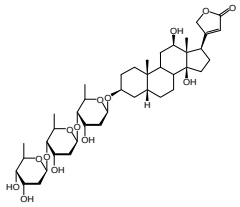
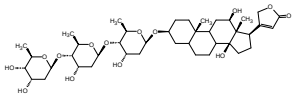
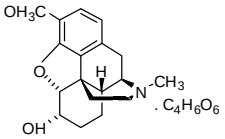
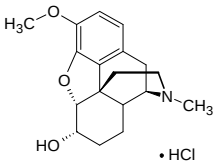
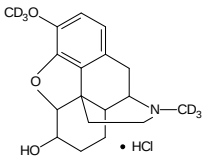
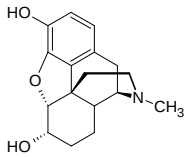
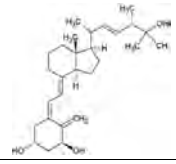
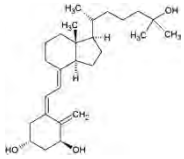
Code	Product		Unit
CERD-080	Demoxepam-D5 (0.1 mg/ml)		
LGCFOR0185.08	11-Deoxycortisol (17,21-Dihydroxypregn-4-ene-3,20-dione)		10 mg
CERD-076	21-Deoxycortisol-D8 (2,2,4,6,6,21,21,21-D8) (0.1 mg/ml) in Methanol		1 mL
LGCFOR0068.05	Desacetyldiltiazem		10 mg
LGCFOR0070.02	Desalkylflurazepam (7-Chloro-5-(2-fluorophenyl)-1,3-dihydro-2H-1,4-benzodiazepin-2-one)		10 mg
CERD-915	Desalkylflurazepam (1.0 mg/ml) in Methanol		1 mL
CERD-924	Desalkylflurazepam-D4 (0.1 mg/ml) in Methanol		1 mL
CERD-055	N-Desethylamiodarone HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
CERD-056	N-Desethylamiodarone-D4 HCl (0.1 mg/ml) (as free base) i n Methanol		1 mL
CERD-040	N-Desethylamodiaquine-D5 diHCl (0.1 mg/ml) in Methanol		1 mL
TRC-D288735	Desethylchloroquine		2.5 mg
LGCFOR0764.02	Desethylhydroxychloroquine Dihydrochloride		10 mg
LGCFOR0422.01	Deshydroxyethylopipramol Dihydrochloride (5-(3-Piperazin-1-yl-propyl)-5H-dibenzo[b,f]azepine Dihydrochloride)		10 mg
LGCFOR0589.00	Desipramine Hydrochloride		10 mg

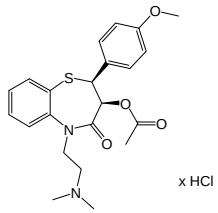
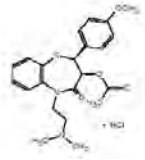
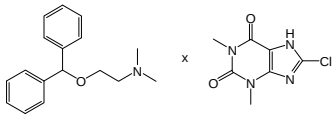
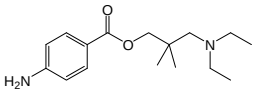
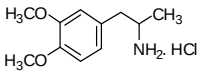
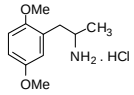
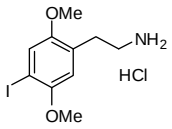
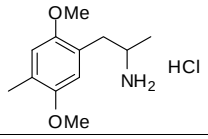
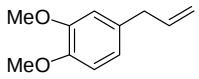
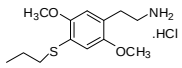
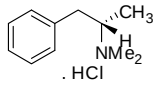
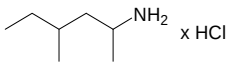
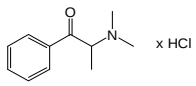
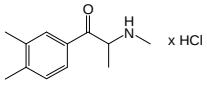
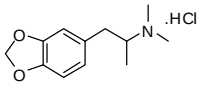
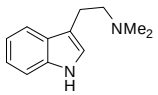
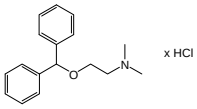
Code	Product		Unit
CERD-906	Desipramine (1.0 mg/ml) in Methanol		1 mL
CERD-903	Desipramine-D3 HCl (0.1 mg/ml) in Methanol		1 mL
LGCFOR0060.16	Desmethylbrompheniramine Maleate		10 mg
LGCFOR0090.13	Desmethylchlorphenamine Maleate		10 mg
LGCFOR0242.09	Desmethylcitalopram Hydrochloride		10 mg
CERD-047	N-Desmethylcitalopram HCl (1.0 mg/mL) (as free base) in Methanol		1 mL
CERD-049	N-Desmethylclobazam (0.1 mg/ml) in Acetonitrile		1 mL
LGCFOR0545.08	Desmethylclomipramine HCl		10 mg
CERD-916	N-Desmethylclomipramine (1.0 mg/ml) (as free base) in Methanol		1 mL
LGCFOR0480.03	Desmethylclozapine (Norclozapine)		10 mg
CERD-048	N-Desmethylclozapine (1.0 mg/mL) in Methanol		1 mL
LGCFOR0033.10	N-Desmethyldextromethorphan Hydrochloride (ent-3-Methoxymorphinan Hydrochloride)		10 mg
LGCFOR0033.09	O-Desmethyldextromethorphan Hydrochloride (ent-17-Methylmorphinan-3-ol (L)-Tartrate)		10 mg

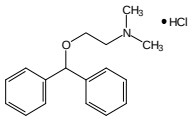
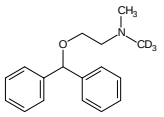
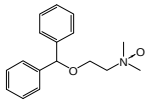
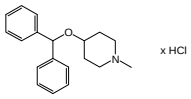
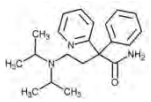
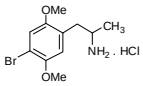
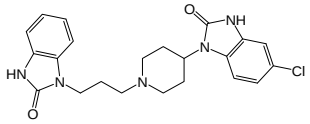
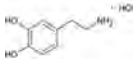
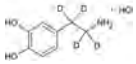
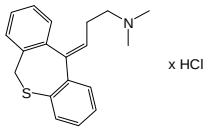
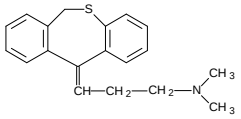
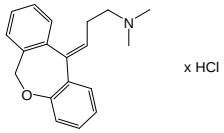
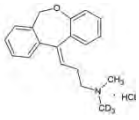
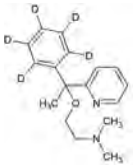
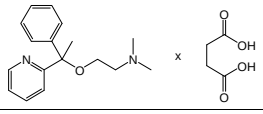
Code	Product		Unit
LGCFOR0068.03	N-Desmethyldiltiazem HCl		10 mg
CERD-007	Desmethyldoxepin (cis/trans) (1.0 mg/ml) in Methanol		1 mL
LGCFOR0069.02	Desmethylflunitrazepam		10 mg
CERD-919	Desmethylflunitrazepam(0.1 mg/ml) in Methanol		1 mL
CERD-918	Desmethylflunitrazepam (1.0 mg/ml) in Methanol		1 mL
CERD-925	N-Desmethylflunitrazepam-D4 (0.1 mg/ml) in Methanol		1 mL
LGCFOR0019.07	N-Desmethyllevomepromazine Hydrochloride		10 mg
CERD-069	Desmethylolanzapine diHCl (1.0 mg/ml) in Acetonitrile : Water (1:1)		1 mL
CERD-070	N-Desmethylolanzapine-D8 dihydrochloride (0.1 mg/ml) (as free base) in 1:1 Acetonitrile:Water		1 mL
TRC-D292145	O-Desmethylquinine		5 mg
CERD-012	(±)-N-Desmethylselegiline (1.0 mg/ml) in Methanol		1 mL
CERD-016	N-Desmethylselegiline-D11 (0.1 mg/ml) in Methanol		1 mL
LGCFOR0991.02	Desmethylsibutramine Hydrochloride		10 mg
LGCFOR0254.08	Desmethylsildenafil (1-[[3-(4,7-Dihydro-1-methyl-7-oxo-3-propyl-1H-pyrazolo[4,3-d]pyrimidin-5-yl)-4-ethoxyphenyl]sulfonyl]piperazine)		10 mg

Code	Product		Unit
LGCFOR0051.07	O-Desmethylsulpiride		10 mg
CERD-052	N-Desmethyltapentadol (1.0 mg/ml) in Methanol		1 mL
LGCFOR0007.06	O-Desmethyltramadol HCl	 x HCl and enantiomer	10 mg
CERD-058	O-Desmethyl-cis-tramadol-D6 HCl (0.1 mg/ml) (as free base)		1 mL
CERT-035	O-Desmethyl-cis-tramadol HCl (1 mg/ml) (as free base) in Methanol		1 mL
CERD-023	N-Desmethyl-cis-tramadol HCl (1.0 mg/ml) in Methanol		1 mL
LGCFOR0240.02	Desmethyltrimipramine HCl		10 mg
CERD-920	N-Desmethyltrimipramine maleate (1.0 mg/ml) in Methanol		1 mL
LGCFOR0393.04	N-Desmethylvenlafaxine Hydrochloride		10 mg
LGCFOR0393.01	O-Desmethylvenlafaxine		10 mg
LGCFOR1275.22	Desoxypipradrol Hydrochloride (2-DPMP HCl)		10 mg
LGCFOR0033.00	Dextromethorphan HBr		10 mg
CERD-013	Dextromethorphan (1.0 mg/ml) in Methanol		1 mL

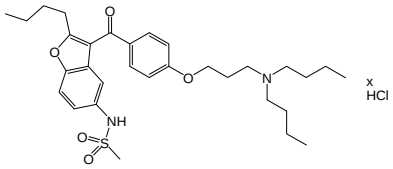
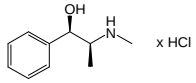
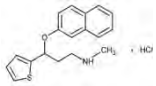
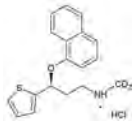
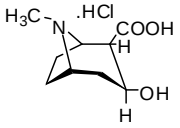
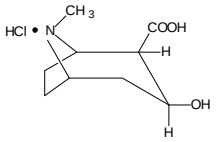
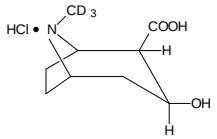
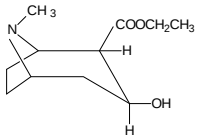
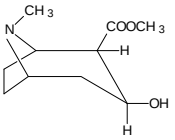
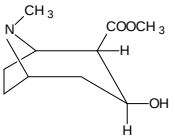
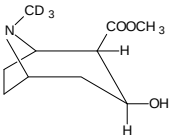
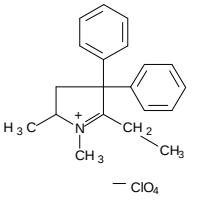
Code	Product		Unit
CERD-034	Dextrorphan tartrate (1.0 mg/ml) (as free base) in Methanol		1 mL
CERD-041	Dextrorphan-D3 (0.1 mg/ml) in Methanol		1 mL
CERD-071	Dextromethorphan-D3 (0.1 mg/ml) in Methanol		1 mL
LGCFOR0435.02	Diacetolol Hydrochloride		10 mg
NMIAD699	N-Diacetylnorcodeine		5 mg
LGCFOR0023.00	Diazepam [Controlled Substance]		10 mg
CERD-907	Diazepam (1.0 mg/ml) in Methanol		1 mL
CERD-902	Diazepam-D5 (0.1 mg/ml) in Methanol		1 mL
CERD-910	Diazepam-D5 (1.0 mg/ml) in Methanol		1 mL
LGCFOR0006.00	Diclofenac Sodium		10 mg
CERD-028	Diclofenac sodium		250 mg
LGCFOR1275.18	Diclofensine Hydrochloride		10 mg
TRC-D440960	Didesethylchloroquine		1 mg
LGCFOR0991.03	Didesmethylsibutramine Hydrochloride		10 mg

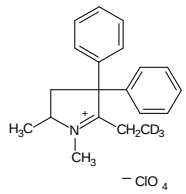
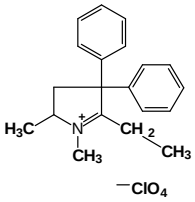
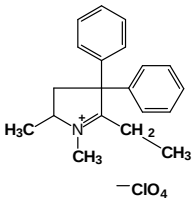
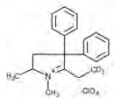
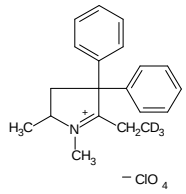
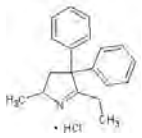
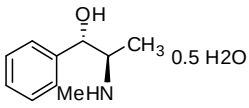
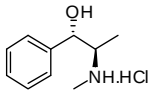
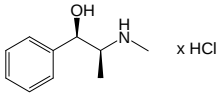
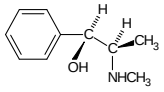
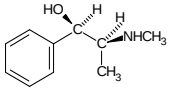
Code	Product		Unit
LGCFOR0007.08	N,O-Didesmethyltramadol Hydrochloride	 and enantiomer	10 mg
TRC-D444785	Diethylpropion HCl (Amfepramon HCl, Diethylcathinone HCl)		1 g
CERD-050	Diethylpropion HCl (1.0 mg/ml) (as free base) (Amfepramon HCl) in Methanol		1 mL
CERD-059	Diethylpropion-D10 HCl (0.1 mg/ml) (as free base) in Methano		1 mL
TRC-D444787	rac Diethylpropion-D10 HCl		1 mg
NMIAD675	N,N-Diethyltryptamine		20 mg
CERD-067	Digitoxin (1.0 mg/ml) in Methanol		1 mL
LGCFOR0212.00	Digoxin		10 mg
CERD-029	Digoxin (1.0 mg/ml) in Methanol		1 mL
NMIAD823	Dihydrocodeine hydrogen tartrate		50 mg
CERD-019	Dihydrocodeine HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
CERD-021	Dihydrocodeine-D6 HCl (0.1 mg/ml) in Methanol		1 mL
CERD-033	Dihydromorphine (1.0 mg/ml) in Methanol		1 mL
CERH-090	1alpha, 25-Dihydroxyvitamin D2 (5 µg/ml) in Ethanol		1 mL
CERH-089	1alpha, 25-Dihydroxyvitamin D3 (5 µg/ml) in Ethanol		1 mL

Code	Product		Unit
LGCFOR0068.00	Diltiazem HCl		10 mg
CERD-035	Diltiazem HCl (1.0 mg/ml) (as free base) in Acetonitrile		1 mL
LGCFOR0599.00	Dimenhydrinate		10 mg
LGCFOR1275.08	Dimethocaine Hydrochloride		10 mg
NMIAD453	(±)-3,4-Dimethoxyamphetamine HCl		50 mg
NMIAD749	(±)-2,5-Dimethoxyamphetamine HCl		50 mg
NMIAD922	2,5-Dimethoxy-4-iodo-phenylethylamine HCl (2-CI)		10 mg
NMIAD470	(±)-2,5-Dimethoxy-4-methylamphetamine HCl (DOM)		10 mg
NMIAD885	1,2-Dimethoxy-4-(2-propenyl)-benzene		25 mg
NMIAD919	2,5-Dimethoxy-4-propylthio-phenylethylamine HCl (2-CT-7)		5 mg
NMIAD693	(-)-N,N-Dimethylamphetamine HCl		20 mg
LGCFOR1275.12	Dimethylamylamine Hydrochloride (4-Methyl-2-hexanamine Hydrochloride, DMAA HCl)		10 mg
LGCFOR1275.30	Dimethylcathinone Hydrochloride (N,N-Dimethylcathinone Hydrochloride, Metamfepramone Hydrochloride)		10 mg
LGCFOR1275.42	3,4-Dimethylmethcathinone Hydrochloride (3,4-DMMC HCl)		10 mg
NMIAD503	(±)-N,N-Dimethyl-3,4-methylenedioxy-amphetamine HCl		20 mg
NMIAD674	N,N-Dimethyltryptamine		20 mg
LGCFOR0490.00	Diphenhydramine HCl		10 mg

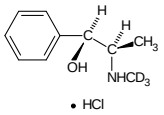
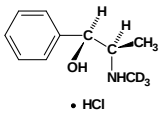
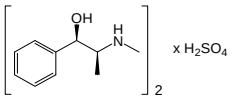
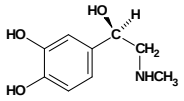
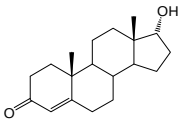
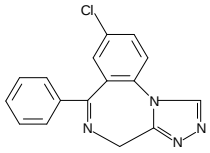
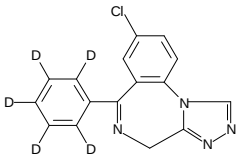
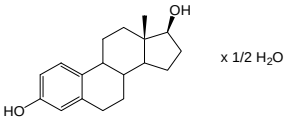
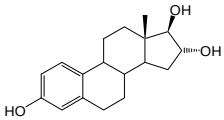
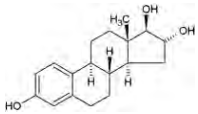
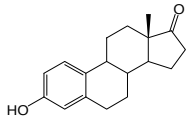
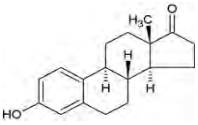
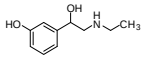
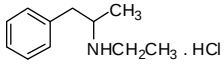
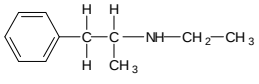
Code	Product		Unit
CERD-015	Diphenhydramine HCl (1.0 mg/ml) in Methanol		1 mL
CERD-017	Diphenhydramine-D3 (0.1 mg/ml) in Methanol		1 mL
LGCFOR0490.01	Diphenhydramine N-Oxide		10 mg
LGCFOR0557.00	Diphenylpyraline HCl		10 mg
CERD-054	Disopyramide (1.0 mg/ml) in Methanol		1 mL
NMIAD396	DOB ((±)-4-Bromo-2,5-dimethoxyamphetamine HCl (Brolamfetamin)		20 mg
LGCFOR0107.00	Domperidone		10 mg
CERD-081	Dopamine HCl (1.0 mg/ml) (as free base) in Methanol with 5% 1 M HCl		1 mL
CERD-072	Dopamine-D4 HCl (0.1 mg/ml) (as free base) in Methanol (with 5% 1 M HCl)		1 mL
LGCFOR0510.00	Dosulepin HCl (Dothiepin)		10 mg
CERD-908	Dothiepin (cis/trans) (1.0 mg/ml) in Methanol		1 mL
LGCFOR0032.00	Doxepin Hydrochloride		10 mg
CERD-060	Doxepin-D3 HCl (cis/trans) (0.1 mg/ml) (as free base) in Methanol		1 mL
CERD-051	Doxylamine-D5 (0.1 mg/ml) in Acetonitrile		1 mL
LGCFOR0101.00	Doxylamine Hydrogen Succinate		10 mg

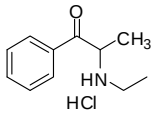
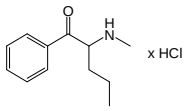
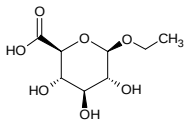
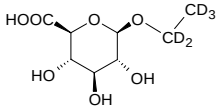
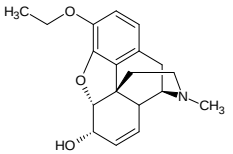
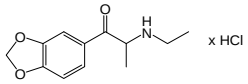
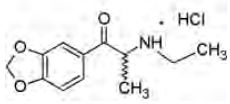
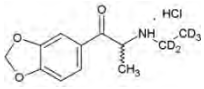
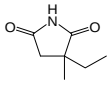
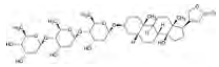
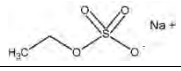
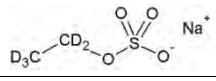
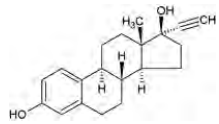
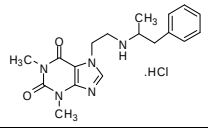
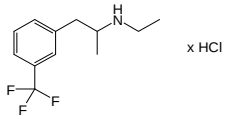
Drugs and metabolites of forensic and clinical interest

Code	Product		Unit
LGCFOR1294.00	Dronedarone Hydrochloride		10 mg
LGCFOR1122.00	Duloxetine Hydrochloride		10 mg
CERD-044	Duloxetine HCl (1.0 mg/ml) in Methanol		1 mL
CERD-068	Duloxetine-D3 HCl		
NMIAD746	Ecgonine HCl		50 mg
CERE-004	Ecgonine HCl (1.0 mg/ml) in Methanol		1 mL
CERE-003	Ecgonine-D3 HCl (0.1 mg/ml) in Methanol		1 mL
CERE-019	Ecgonine ethyl ester (1.0 mg/ml) in Acetonitrile		1 mL
CERE-008	Ecgonine methyl ester (0.1 mg/ml) in Acetonitrile		1 mL
CERE-001	Ecgonine methyl ester (1.0 mg/ml) in Acetonitrile		1 mL
CERE-002	Ecgonine methyl ester-D3 (0.1 mg/ml) in Acetonitrile		1 mL
CERE-006	EDDP perchlorate (as salt)		10 mg

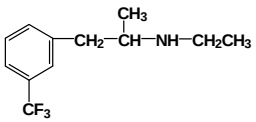
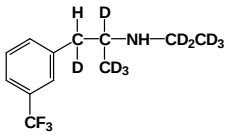
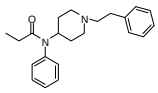
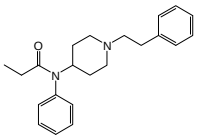
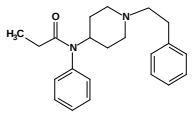
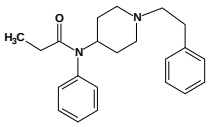
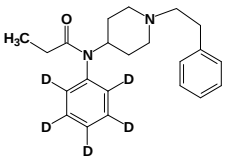
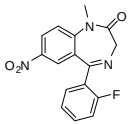
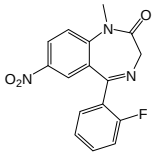
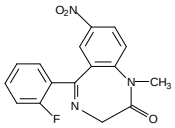
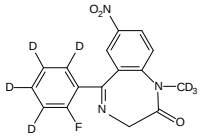
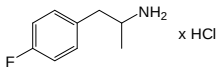
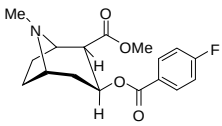
Code	Product		Unit
CERE-005	EDDP-D3 perchlorate (as salt)		5 mg
CERE-022	EDDP perchlorate (1.0 mg/ml) in Methanol		1 mL
CERE-012	EDDP perchlorate (0.1 mg/ml) in Methanol		1 mL
CERE-062	EDDP-D3 perchlorate (1.0 mg/ml) (as pyrrolinium) in Methanol		1 mL
CERE-021	EDDP-D3 perchlorate (0.1 mg/ml) in Methanol		1 mL
TRC-E425000	Efavirenz		10 mg
TRC-E425002	rac-Efavirenz-D4		1 mg
CERE-057	EMDP HCl (1.0 mg/mL) (as free base) (2-Ethyl-5-methyl-3,3-diphenylpyrroline) in Methanol		1 mL
TRC-E525000	Emtricitabine		10 mg
TRC-E525002	Emtricitabine-13C,15N2		0.5 mg
NMIAM723	(+)-Ephedrine hemihydrate - DRUG PRECURSOR		100 mg
NMIAM924	(-)Ephedrine HCl - DRUG PRECURSOR		100 mg
LGCFOR0652.00	Ephedrine Hydrochloride DRUG PRECURSOR		10 mg
CERE-011	1S,2R(+)-Ephedrine HCl (1.0 mg/ml) (as free base) in Methanol - DRUG PRECURSOR		1 mL
CERE-023	1R,2S(-)-Ephedrine HCl (1.0 mg/ml) in Methanol - DRUG PRECURSOR		1 mL

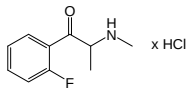
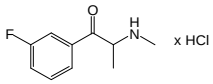
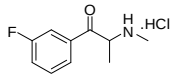
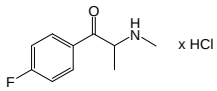
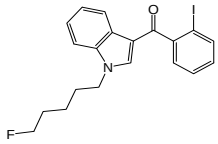
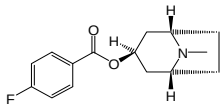
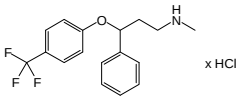
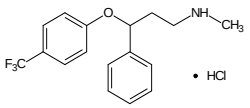
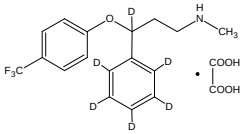
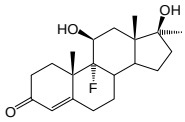
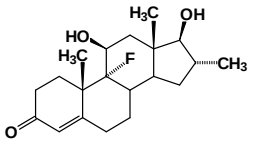
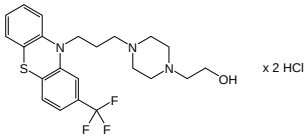
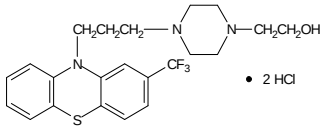
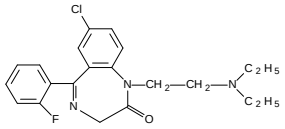
Drugs and metabolites of forensic and clinical interest

Code	Product		Unit
CERE-025	1S,2R (+)-Ephedrine-D3 HCl (0.1 mg/ml) in Methanol		1 mL
CERE-026	1S,2R (+)-Ephedrine-D3 HCl (1.0 mg/ml) in Methanol		1 mL
LGCFOR1147.00	Ephedrine Sulphate		10 mg
CERE-024	R(-)-Epinephrine		100 mg
LGCFOR0323.03	Epitestosterone		10 mg
CERE-901	Estazolam (1.0 mg/ml) in Methanol		1 mL
CERE-903	Estazolam-D5 (0.1 mg/ml) in Methanol		1 mL
LGCFOR0300.00	Estradiol Hemihydrate		10 mg
LGCFOR0130.00	Estriol		10 mg
CERE-074	Estriol (1.0 mg/ml) in Methanol		1 mL
LGCFOR0282.00	Estrone		10 mg
CERE-075	Estrone (1.0 mg/ml) in Methanol		1 mL
NMIAM880	Etilephrine HCl		50 mg
NMIAD753	(±)-N-Ethylamphetamine HCl		50 mg
CERE-018	(±)-N-Ethylamphetamine (1.0 mg/ml) in Methanol		1 mL

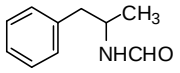
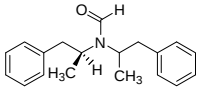
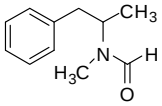
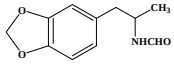
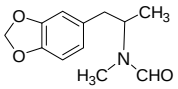
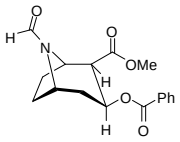
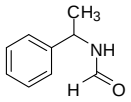
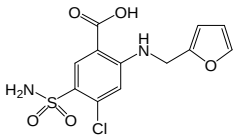
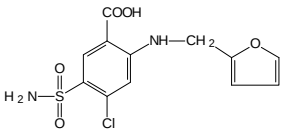
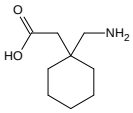
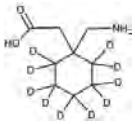
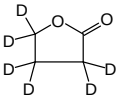
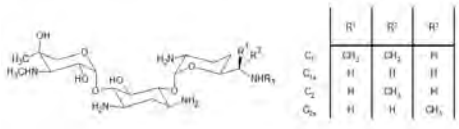
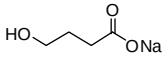
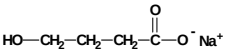
Code	Product		Unit
NMIAD938	N-Ethylcathinone HCl		10 mg
LGCFOR1275.63	beta-Ethylmethcathinone Hydrochloride		10 mg
CERE-016	Ethyl beta-D-glucuronide (0.1 mg/mL) in Methanol		1 mL
CERE-015	Ethyl-beta-D-glucuronide (1.0 mg/mL) in Methanol		1 mL
CERE-063	Ethyl-beta-D-glucuronide-D5 (1.0 mg/ml) in Methanol		1 mL
CERE-048	Ethyl beta-D-glucuronide-D5 (0.1 mg/mL) in Methanol		1 mL
CERE-052	Ethylmorphine (1.0 mg/mL) in Methanol		1 mL
TRC-E925340	Ethylone		5 mg
TRC-E925342	Ethylone-D5		1 mg
LGCFOR1275.02	Ethylone Hydrochloride		10 mg
CERE-071	Ethylone HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
CERE-072	Ethylone-D5 HCl (0.1 mg/ml) (as free base)		1 mL
LGCFOR0750.00	Ethosuximide		10 mg
CERE-067	Ethosuximide (1.0 mg/ml) in Methanol		1 mL
CERE-064	Ethyl sulfate sodium salt (1.0 mg/ml)(as ethyl sulfate) in Methanol		1 mL
CERE-066	Ethyl-D5 sulfate sodium salt (1.0 mg/mL) (as ethyl sulfate) in Methanol		1 mL
CERE-076	17a-Ethynylestradiol (1.0 mg/ml) in Methanol		1 mL
NMIAD543	Fenetylline HCl		20 mg
LGCFOR0608.00	Fenfluramine Hydrochloride		10 mg

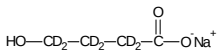
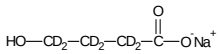
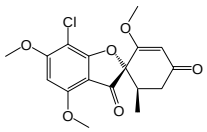
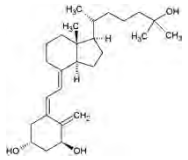
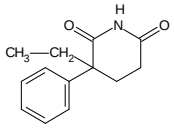
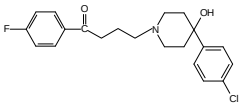
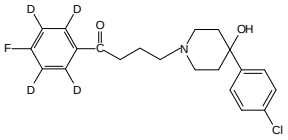
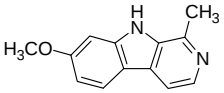
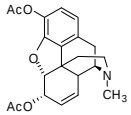
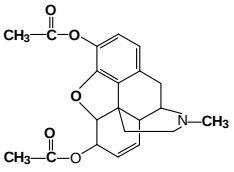
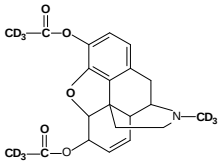
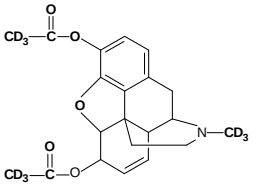
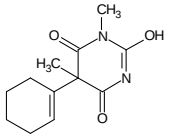
Drugs and metabolites of forensic and clinical interest

Code	Product		Unit
CERF-009	Fenfluramine (1.0 mg/ml) in Methanol		1 mL
CERF-010	Fenfluramine-D10 (0.1 mg/ml) in Methanol		1 mL
NMIAD918	Fentanyl base		20 mg
LGCFOR0528.00	Fentanyl		10 mg
CERF-002	Fentanyl (0.1 mg/ml) in Methanol		1 mL
CERF-013	Fentanyl (1.0 mg/ml) in Methanol		1 mL
CERF-001	Fentanyl-D5 (0.1 mg/ml) in Methanol		1 mL
TRC-F274990	Fentanyl citrate		10 mg
NMIAD882	Flunitrazepam		25 mg
LGCFOR0069.00	Flunitrazepam		10 mg
CERF-907	Flunitrazepam (1.0 mg/ml) in Methanol		1 mL
CERF-915	Flunitrazepam-D7 (0.1 mg/ml) in Methanol		1 mL
LGCFOR0741.02	4-Fluoroamphetamine HCl		10 mg
NMIAD854	p-Fluorococaine HCl		20 mg
TRC-F588480	p-Fluoro fentanyl		1 mg
TRC-F588482	p-Fluoro fentanyl-D3		1 mg

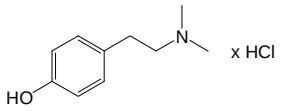
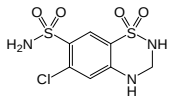
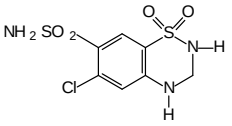
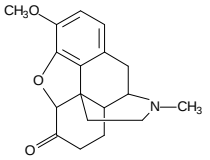
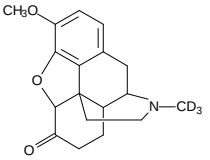
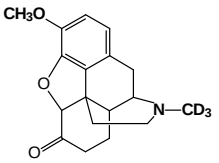
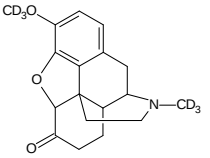
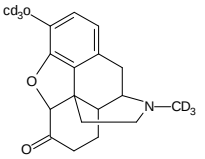
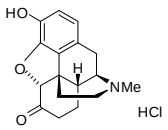
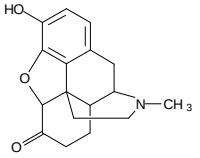
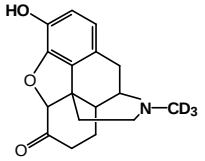
Code	Product		Unit
LGCFOR1275.64	2-Fluoromethcathinone Hydrochloride (1-(2-Fluorophenyl)-2-(methylamino)propan-1-one Hydrochloride)		10 mg
LGCFOR1275.43	3-Fluoromethcathinone Hydrochloride (1-(3-Fluorophenyl)-2-(methylamino)propan-1-one Hydrochloride)		10 mg
NMIAD947	3-Fluoromethcathinone HCl		20 mg
LGCFOR1275.33	Flephedrone Hydrochloride (4-Fluoromethcathinone Hydrochloride)		10 mg
LGCFOR1275.17	AM-694 (1-(5-Fluoropentyl)-3-(2-iodobenzoyl)indole)		10 mg
LGCFOR1275.13	4-Fluorotropacocaine (3-Pseudotropyl 4-Fluorobenzoate, 3beta-(p-Fluorobenzoyloxy)tropane)		10 mg
LGCFOR0256.00	Fluoxetine HCl		10 mg
CERF-918	Fluoxetine HCl (1.0 mg/mL) (as free base) in Methanol		1 mL
CERF-919	Fluoxetine-D6 oxalate (0.1 mg/mL) (as free base) in Methanol		1 mL
LGCFOR0959.00	Fluoxymesterone		10 mg
CERF-909	Fluoxymesterone (1.0 mg/mL) in Dimethoxyethane		1 mL
TRC-F597950	cis-(Z)-Flupentixol bromide, dihydrobromide		1 mg
TRC-F597960	trans-(E)-Flupentixol bromide dihydrobromide		1 mg
TRC-F598000	cis-(Z)-Flupentixol bromide, methanethiosulfonate		1 mg
TRC-F598010	trans-(E)-Flupentixol bromide methanethiosulfonate		0.25 mg
LGCFOR0114.00	Fluphenazine Dihydrochloride		10 mg
CERF-903	Fluphenazine (1.0 mg/ml) in Methanol		1 mL
CERF-003	Flurazepam (1.0 mg/ml) in Methanol		1 mL

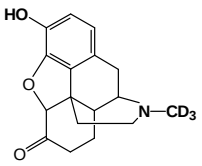
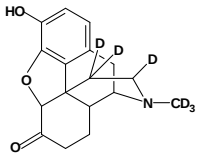
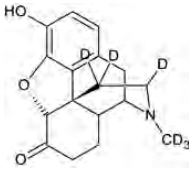
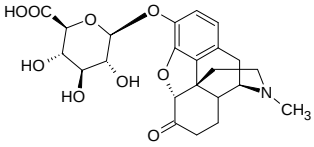
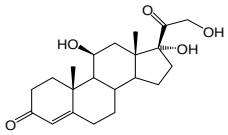
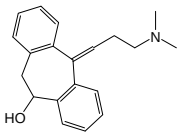
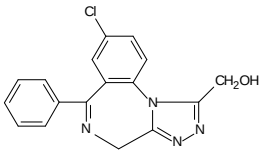
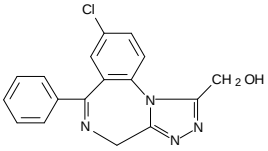
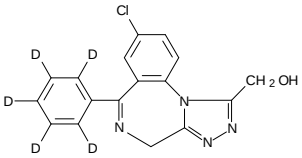
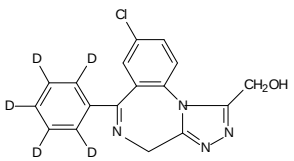
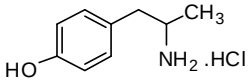
Drugs and metabolites of forensic and clinical interest

Code	Product		Unit
NMIAD447	N-Formylamphetamine		50 mg
NMIAD465	N-Formyl-di-(1-isopropylphenyl)amine (N-Formyl DPIA)		20 mg
NMIAD502	N-Formyl-N-methylamphetamine		20 mg
NMIAD498	(±)-N-Formyl-3,4-methylenedioxyamphetamine		50 mg
NMIAD538	N-Formyl-N-methyl-3,4-methylenedioxyamphetamine		50 mg
NMIAD857	N-Formylnorcocaine		10 mg
NMIAD526	N-Formyl-1-phenylethylamine		50 mg
TRC-F727250	Fosamprenavir calcium salt		1 mg
LGCFOR0014.00	Furosemide		10 mg
CERF-005	Furosemide (1.0 mg/ml) in Methanol		1 mL
CERG-007	Gabapentin (1.0 mg/mL) in Methanol		1 mL
CERG-901	Gabapentin-D10 (0.1 mg/ml) in Methanol		1 mL
LGCFOR1275.51	Gammabutyrolactone (GBL)		10 mg
CERB-018	gamma-Butyrolactone (1.0 mg/ml) in Acetonitrile		1 mL
CERB-032	gamma-Butyrolactone-D6 (1.0 mg/ml) in Acetonitrile		1 mL
CERG-011	Gentamicin sulfate (1.0 mg/ml) in water		1 mL
NMIAD812	GHB (gamma-Hydroxybutyric acid sodium salt)		50 mg
CERG-001	GHB (4-Hydroxybutyric acid sodium salt) (1.0 mg/ml) (as salt) in Methanol		1 mL

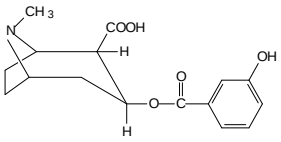
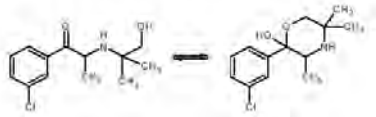
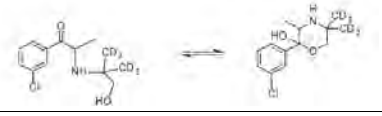
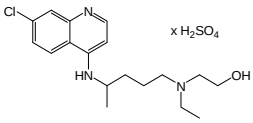
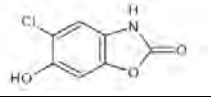
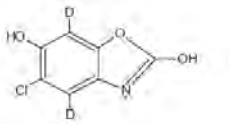
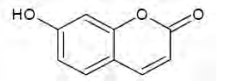
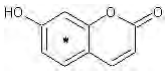
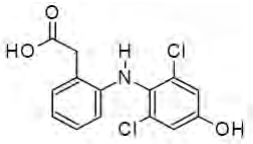
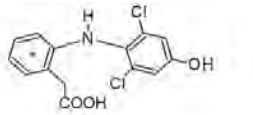
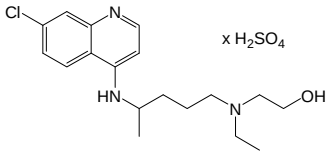
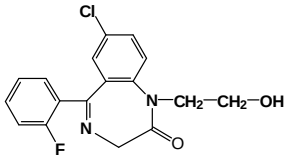
Code	Product		Unit
CERG-003	GHB-D6 (4-Hydroxy-2,2,3,3,4,4-hexadeuterobutyric acid sodium salt) (0.1 mg/ml) (as salt) in Methanol		1 mL
CERG-006	GHB-D6 (4-Hydroxy-2,2,3,3,4,4-hexadeuterobutyric acid sodium salt) (1.0 mg/ml) (as salt) in Methanol		1 mL
LGCFOR0582.00	Griseofulvin		10 mg
CERH-089	1alpha, 25-Dihydroxyvitamin D3 (5 µg/ml) in Ethanol		1 mL
CERG-005	Glutethimide (1.0 mg/ml) in Methanol		1 mL
CERH-030	Haloperidol (1.0 mg/ml) in Methanol		1 mL
CERH-002	Haloperidol-D4 (0.1 mg/ml) in Methanol		1 mL
NMIAD884	Harmine		10 mg
NMIAD752	Heroin base		50 mg
CERH-038	Heroin (1.0 mg/ml) in Acetonitrile		1 mL
CERH-036	Heroin-D9 (0.1 mg/ml) in Acetonitrile		1 mL
CERH-037	Heroin-D9 (1.0 mg/ml) in Acetonitrile		1 mL
CERH-013	Hexobarbital (1.0 mg/ml) in Methanol		1 mL

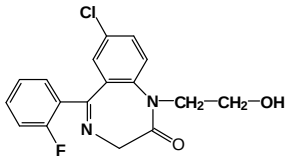
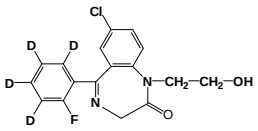
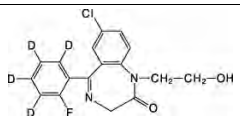
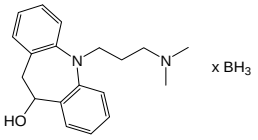
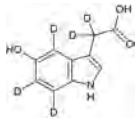
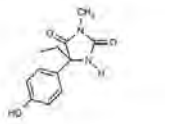
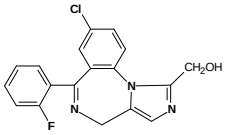
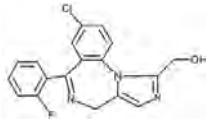
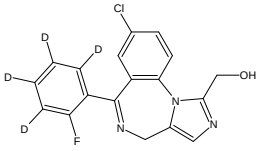
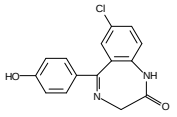
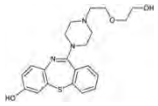
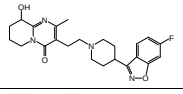
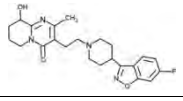
Drugs and metabolites of forensic and clinical interest

Code	Product		Unit
LGCFOR1275.49	Hordenine Hydrochloride (4-Hydroxy-N,N-dimethylphenethylamine Hydrochloride)		10 mg
CAY-90082	HU-210 (1,1-dimethylheptyl-11-hydroxytetrahydrocannabinol)		5 mg
CAY-10005673	HU-331 - 3-hydroxy-2-((1R,6R)-3-methyl-6-(1-methylethenyl)-2-cyclohexen-1-yl) -5-pentyl-2,5-cyclohexadiene-1,4-dione)		5 mg
LGCFOR0011.00	Hydrochlorothiazide		10 mg
CERH-001	Hydrochlorothiazide (1.0 mg/ml) in Methanol		1 mL
CERH-003	Hydrocodone (1.0 mg/ml) in Methanol		1 mL
CERH-005	Hydrocodone-D3 (0.1 mg/ml) in Methanol		1 mL
CERH-008	Hydrocodone-D3 (1.0 mg/ml) in Methanol		1 mL
CERH-047	Hydrocodone-D6 (0.1 mg/ml) in Methanol		1 mL
CERH-048	Hydrocodone-D6 (1.0 mg/ml) in Methanol		1 mL
NMIAD785	Hydromorphone HCl		20 mg
CERH-004	Hydromorphone (1.0 mg/ml) in Methanol		1 mL
CERH-006	Hydromorphone-D3 (0.1 mg/ml) in Methanol		1 mL

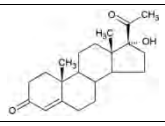
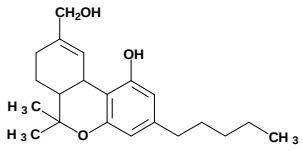
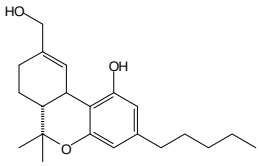
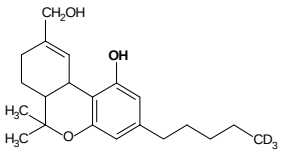
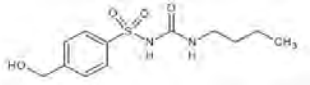
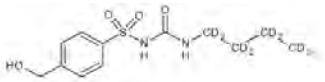
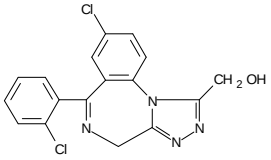
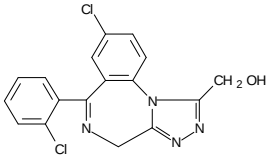
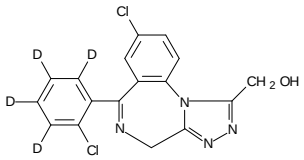
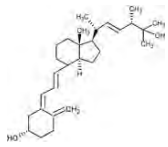
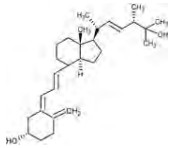
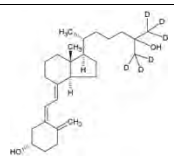
Code	Product		Unit
CERH-010	Hydromorphone-D3 (1.0 mg/ml) in Methanol		1 mL
CERH-078	Hydromorphone-D4 (0.1 mg/ml) in Methanol		1 mL
CERH-049	Hydromorphone-D6 (0.1 mg/ml) in Methanol		1 mL
CERH-050	Hydromorphone-D6 (1.0 mg/ml) in Methanol		1 mL
CERH-051	Hydromorphone-3beta-D-glucuronide (0.1 mg/mL) in Methanol/Water		1 mL
LGCFOR0185.00	Hydrocortisone (Cortisol)		10 mg
LGCFOR0062.05	10-Hydroxyamitriptyline		10 mg
CERA-905	alpha-Hydroxyalprazolam (0.1 mg/ml) in Methanol		1 mL
CERA-907	alpha-Hydroxyalprazolam (1.0 mg/ml) in Methanol		1 mL
CERA-904	alpha-Hydroxyalprazolam-D5 (0.1 mg/ml) in Methanol		1 mL
CERA-908	alpha-Hydroxyalprazolam-D5 (1.0 mg/ml) in Methanol		1 mL
NMIAD824	(±)-4-Hydroxyamphetamine HCl (HMA)		20 mg

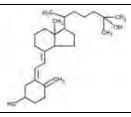
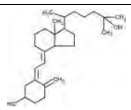
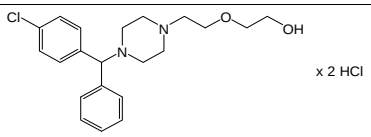
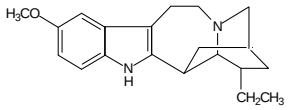
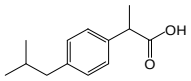
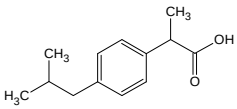
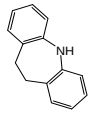
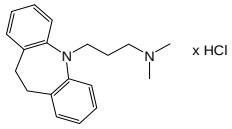
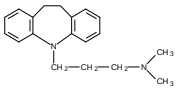
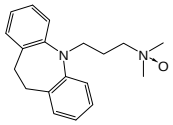
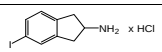
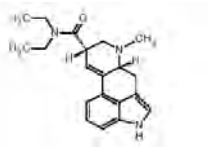
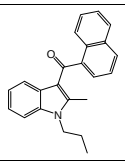
Drugs and metabolites of forensic and clinical interest

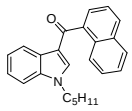
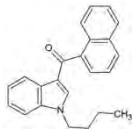
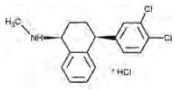
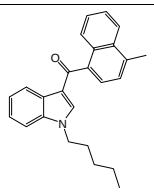
Code	Product		Unit
CERH-017	m-Hydroxybenzoylecgonin (1.0 mg/ml) in Methanol		1 mL
CERH-066	(±)-Hydroxybupropion (1.0 mg/ml) in Acetonitril		1 mL
CERH-062	(±)-Hydroxybupropion-D6 (0.1 mg/ml) in Acetonitrile		1 mL
TRC-H916900	Hydroxychloroquine sulphate		10 mg
LGCFOR0764.00	Hydroxychloroquine sulphate		10 mg
CERH-063	6-Hydroxychlorzoxazone (0.1 mg/ml) in Methanol		1 mL
CERH-064	6-Hydroxychlorzoxazone-D2,15N (0.1 mg/ml) in Methanol		1 mL
TRC-H924500	trans-3'-Hydroxycotinine		10 mg
TRC-H924510	trans-3'-Hydroxycotinine methyl-D3		1 mg
CERH-060	7-Hydroxycoumarin (1.0 mg/ml) in Acetonitrile		1 mL
CERH-061	7-Hydroxycoumarin-13C6 (0.1 mg/ml) in Acetonitrile		1 mL
CERH-052	4'-Hydroxydiclofenac (0.1 mg/ml) in Acetonitrile		1 mL
CERH-053	4'-Hydroxydiclofenac-13C6 (0.1 mg/ml) in Methanol		1 mL
LGCFOR0076.10	10-Hydroxy-10,11-dihydrocarbamazepine		10 mg
TRC-H941825	rac 8-Hydroxy efavirenz		1 mg
TRC-H941827	rac 8-Hydroxy efavirenz-D4		1 mg
CERF-901	2-Hydroxyethylflurazepam (0.1 mg/ml) in Methanol		1 mL

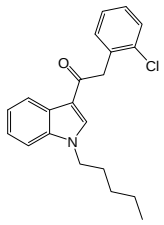
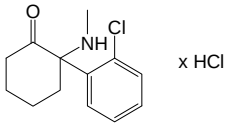
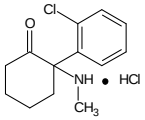
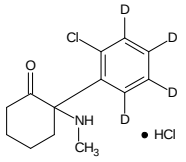
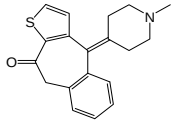
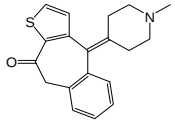
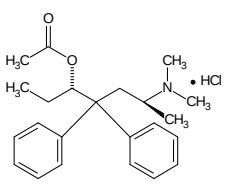
Code	Product		Unit
CERF-902	2-Hydroxyethylflurazepam (1.0 mg/ml) in Methanol		1 mL
CERH-919	2-Hydroxyethylflurazepam-D4 (0.1 mg/ml) in Methanol		1 mL
CERH-923	2-Hydroxyethylflurazepam-D4 (1.0 mg/ml) in Methanol		1 mL
TRC-H942400	beta-Hydroxyfentanyl HCl		1 mg
TRC-H942402	beta-Hydroxyfentanyl-d3 HCl		1 mg
LGCFOR0077.04	10-Hydroxyimipramine BH3-Adduct		10 mg
CERH-093	5-Hydroxyindole-4,6,7-D3-3-acetic-D2 Acid (5-HIAA-D5) (1.0 mg/ml) in Methanol		1 mL
CERH-077	4-Hydroxymephenytoin (0.1 mg/mL) in Methanol		1 mL
CERH-902	alpha-Hydroxymidazolam (0.1 mg/ml) in Methanol		1 mL
CERH-922	alpha-Hydroxymidazolam (1.0 mg/mL) in Methanol		1 mL
CERH-921	alpha-Hydroxymidazolam-D4 (0.1 mg/ml) in Acetonitrile		1 mL
TRC-H948625	2-Hydroxynevirapine		2.5 mg
CERH-918	4-Hydroxynordiazepam (1.0 mg/ml) in 1,2-Dimethoxyethane		1 mL
CERH-081	7-Hydroxyquetiapine (1.0 mg/ml) in Methanol		1 mL
TRC-H953225	7-Hydroxyquetiapine		1 mg
TRC-H953227	7-Hydroxyquetiapine-D3		1 mg
LGCFOR0491.03	9-Hydroxyrisperidone		10 mg
CERH-076	9-Hydroxyrisperidone (1.0 mg/ml) in Methanol		1 mL

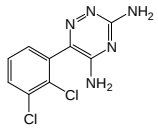
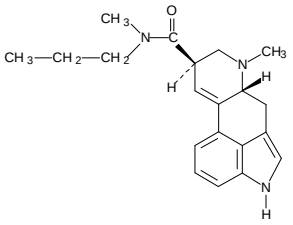
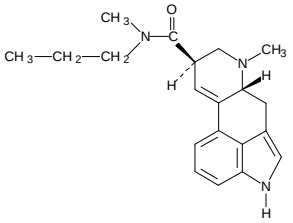
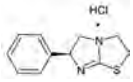
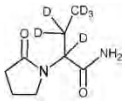
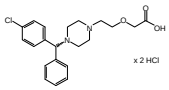
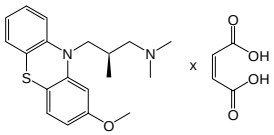
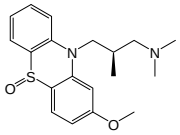
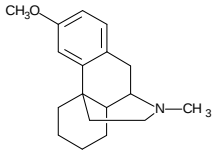
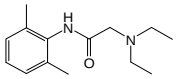
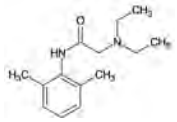
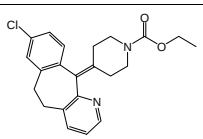
Drugs and metabolites of forensic and clinical interest

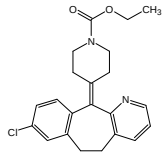
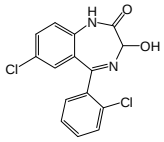
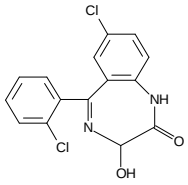
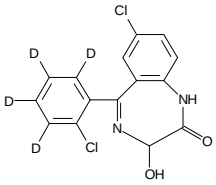
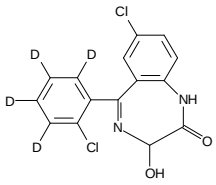
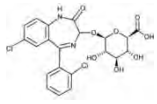
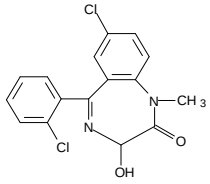
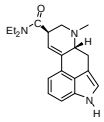
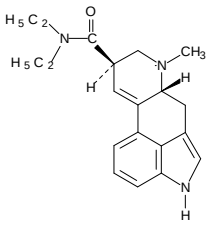
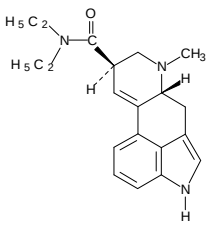
Code	Product		Unit
CERH-085	17alpha-Hydroxyprogesterone (1.0 mg/ml) in Methanol		1 mL
CERH-026	11-hydroxy-delta 9-THC (0.1 mg/ml) in Methanol		1 mL
CERH-027	11-hydroxy-delta 9-THC (1.0 mg/ml) in Methanol		1 mL
CERH-041	11-hydroxy-delta 9-THC-D3 (0.1 mg/ml) in Methanol		1 mL
CERH-054	4-Hydroxytolbutamide (1.0 mg/ml) in Acetonitrile		1 mL
CERH-055	4-Hydroxytolbutamide-D9 (0.1 mg/ml) in Acetonitrile		1 mL
CERT-915	alpha-Hydroxytriazolam (0.1 mg/ml) in Methanol		1 mL
CERT-911	alpha-Hydroxytriazolam (1.0 mg/ml) in Methanol		1 mL
CERT-916	alpha-Hydroxytriazolam-D4 (1.0 mg/ml) in Methanol		1 mL
CERT-909	alpha-Hydroxytriazolam-D4 (0.1 mg/ml) in Methanol		1 mL
CERH-073	25-Hydroxyvitamin D2 (0.05 mg/ml) in Ethanol		1 mL
CERH-087	25-Hydroxyvitamin D2 (5 µg/ml) in Ethanol		1 mL
CERH-074	D6-25-Hydroxyvitamin D3 (26,26,26,27,27,27-D6) (0.05 mg/mL) in Ethanol		1 mL

Code	Product		Unit
CERH-086	25-Hydroxyvitamin D3 (5 µg/ml) in Ethanol		1 mL
CERH-083	25-HydroxyvVitamin D3 (1.0 mg/ml) in Ethanol		1 mL
LGCFOR0852.00	Hydroxyzine Hydrochloride		10 mg
CERI-001	Ibogaine (1.0 mg/ml) in Methanol		1 mL
LGCFOR0002.00	Ibuprofen		10 mg
CERI-009	Ibuprofen (1.0 mg/ml) in Methanol		1 mL
LGCFOR0076.06	Iminodibenzyl (10,11-Dihydro-5H-dibenzo[b,f]azepine)		10 mg
TRC-I465200	Imipenem monohydrate		10 mg
LGCFOR0077.00	Imipramine Hydrochloride		10 mg
CERI-902	Imipramine HCl (1.0 mg/ml) in Methanol		1 mL
LGCFOR0077.12	Imipramine N-Oxide		10 mg
TRC-I525000	Indinavir sulphate		5 mg
TRC-I525006	Indinavir sulphate-D6		1 mg
LGCFOR1275.78	5-Iodo-2-aminoindane (5-IAI) Hydrochloride		10 mg
CERI-010	iso-LSD (iso-Lysergic acid diethylamide) (0.1 mg/ml) in Acetonitrile		1 mL
CAY-10266	JWH-007		5 mg
RCG-375-1ML	JWH-007 (1.0 mg/ml) in Methanol		1 ml
CAY-10660	JWH 015-D7		1 mg
CAY-10486	JWH 007-D9		1 mg
LGCFOR1275.72	JWH-015 ((2-Methyl-1-propylindol-3-yl)(naphthalen-1-yl)methanone)		10 mg
CAY-10009018	JWH-015		5 mg

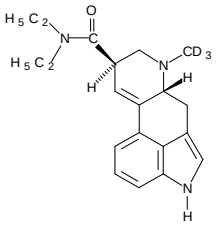
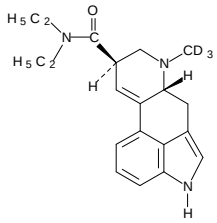
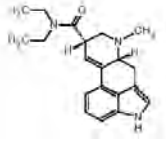
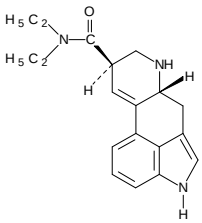
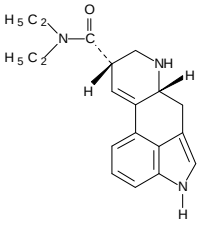
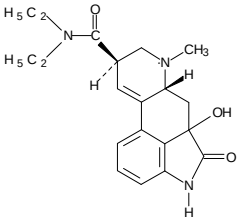
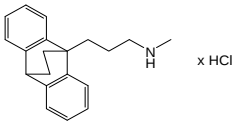
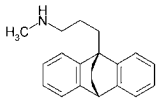
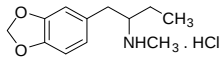
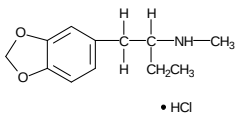
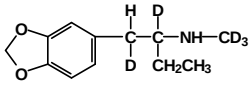
Code	Product	Unit
NMIAD955	JWH-018 (N-Pentyl-3-(1-naphthoyl)indole) 	20 mg
THC-1185	JWH-018 (Naphthalen-1-yl(1-pentyl-1H-indol-3-yl)methanon)	10 mg
TRC-P283652	JWH-018-D11 (1-(Pentyl-d11)-3-(1-naphthoyl)indole)	1 mg
CERS-025	JWH-018 (Spice Cannabinoid) (0.1 mg/ml)	1 mL
THC-1185M	JWH-018 (Naphthalen-1-yl(1-pentyl-1H-indol-3-yl)methanon) (1 mg/ mL) in Methanol	1 mL
CAY-9000855	JWH 018 - N-(5-hydroxypentyl) metabolite (solution in ethanol)	1 mg
CAY-13824	JWH 018-D9 (1 mg/ml) in Methanol	1 mg
CAY-10697	JWH 018 6-methoxyindole analog (solution)	1 mg
CAY-9000851-5	JWH 018 4-hydroxyindole metabolite	
CAY-9000856	JWH 018 N-pentanoic acid metabolite	1 mg
THC-1244	JWH-019 (1-Hexyl-1H-indol-3-yl)(naphthalen-1-yl)methanon	5 mg
THC-1216	JWH-019 ((1-Hexyl-1H-indol-3-yl)(naphthalen-1-yl)methanon) (1mg / mL) in Methanol	1 mL
THC-1215	JWH-073 ((1-Butyl-1H-indol-3-yl)(naphthalen-1-yl)methanon) (1mg / mL) in Methanol	1 mL
CAY-13170	JWH-073 (1-butyl-1H-indol-3-yl)-1-naphthalenyl-methanon (25 mg/ml) in Methanol	5 mg
THC-1243	JWH-073 ((1-Butyl-1H-indol-3-yl)(naphthalen-1-yl)methanon)	5 mg
CERS-027	JWH-073 (Spice Cannabinoid) (0.1 mg/ml) in Acetonitrile 	1 mL
CERS-037	JWH-073 3-Hydroxybutyl metabolite (0.1 mg/ml) in Methanol 	1 mL
CAY-9000861	JWH 073 4-hydroxyindole metabolite (solution in Ethanol)	1 mg
CAY-10691	JWH-073 3-methylbutyl homolog	5 mg
CAY-9000866	JWH 073 N-butanoic acid metabolite	1 mg
RCG-377-50MG	JWH-081	
RCG-377-1ML	JWH-081 (1.0 mg/ml) in Methanol	
CAY-10511	JWH 081-D9	500 µg
LGCFOR1275.66	JWH-122 ((4-Methylnaphthalen-1-yl)(1-pentylindol-3-yl)methanone) 	10 mg
THC-1213	JWH-122 (1.0 mg/ml) (4-Methylnaphthalen-1-yl)(1-pentyl-1H-indol-3-yl)methanon) in Methanol	1 mL
CAY-10512	JWH 122-D9	500 µg
TRC-H297400	JWH-147 (1-Hexyl-2-phenyl-4-(1-naphthoyl)pyrrole)	10 mg
RCG-381-10MG	JWH-200	
THC-1220	JWH-200 (1.0 mg/ml) ((1-(2-Morpholinoethyl)-1H-indol-3-yl)(naphthalen-1-yl)methanon) in Methanol	1 mL
CAY-13171	JWH-200	5 mg

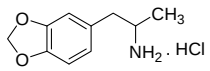
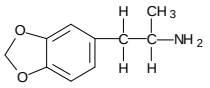
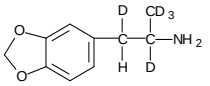
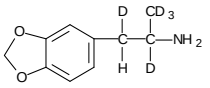
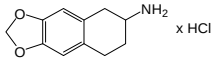
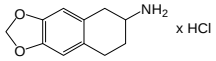
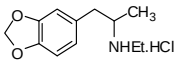
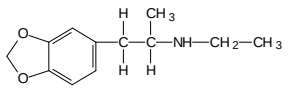
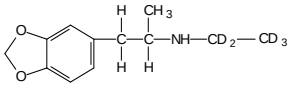
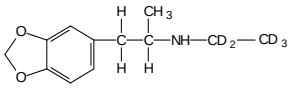
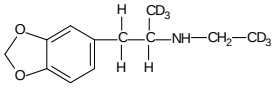
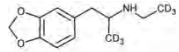
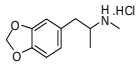
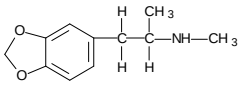
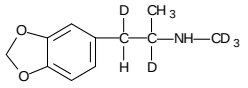
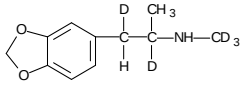
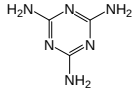
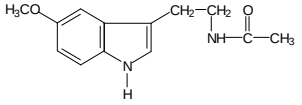
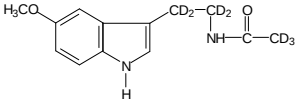
Code	Product	Unit
CAY-10682	JWH 200-D5 (solution in Acetonitrile)	1 mg
CAY-10721	JWH-201 (solution in Methyl Acetate)	5 mg
LGCFOR1275.70	JWH-203 (2-(2-Chlorophenyl)-1-(1-pentylindol-3-yl)ethanone) 	10 mg
THC-1373M	JWH-203 (1 mg/ml) in Methanol	1 mL
CAY-10644	JWH-210	5 mg
THC-1278M	JWH-210 (1.0 mg/ml) in Methanol	1 mL
CAY-10510	JWH 210-D9	500 µg
RCG-380-10MG	JWH-250	
THC-1214	JWH-250 (1.0 mg/ml) (2-(2-Methoxyphenyl)-1-(1-pentyl-1H-indol-3-yl)ethanon) in Methanol	1 mL
CAY-10661	JWH 250-D5	1 mg
CAY-10578	JWH-251	5 mg
CAY-10722	JWH-302 (solution in Methyl Acetate)	5 mg
CAY-13636	JWH 398	1 mg
NMIAD686	(±) Ketamine HCl	50 mg
LGCFOR0144.00	Ketamine HCl 	10 mg
CERK-002	Ketamine HCl (1.0 mg/ml) in Methanol 	1 mL
CERK-003	Ketamine-D4 HCl (0.1 mg/ml) in Methanol 	1 mL
LGCFOR0180.04	Ketotifen 	10 mg
LGCFOR0180.00	Ketotifen Hydrogen Fumarate 	10 mg
CERL-008	LAAM-HCl (1.0 mg/ml) (levo)-a-Acetylmethadol HCl) (as free base) in Methanol 	1 mL
TRC-L172500	Lamivudine	10 mg
TRC-L172502	Lamivudine-15N2,13C	1 mg

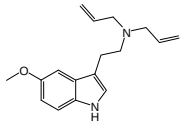
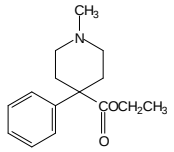
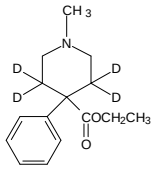
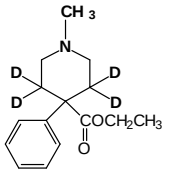
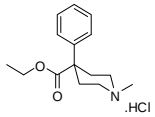
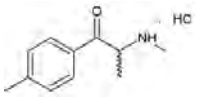
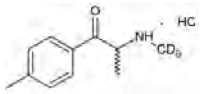
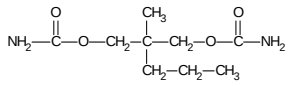
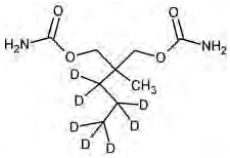
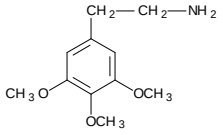
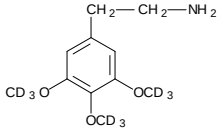
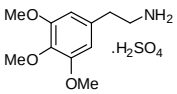
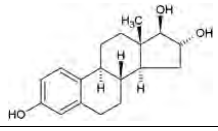
Code	Product		Unit
LGCFOR0922.00	Lamotrigine		10 mg
CERL-007	LAMPA (25 µg/ml) (Lysergic acid N,N-methylpropylamide) in Acetonitrile		1 mL
CERL-004	LAMPA (1.0 mg/ml) (Lysergic acid N,N-methylpropylamide) in Acetonitrile		1 mL
CERL-025	(-)-Levamisole HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
TRC-L331500	Levetiracetam		100 mg
CERL-023	Levetiracetam-D6 (0.1 mg/ml) in Methanol		1 mL
LGCFOR1035.00	Levocetirizine Dihydrochloride		10 mg
LGCFOR0019.00	Levomepromazine Maleate		10 mg
LGCFOR0019.01	Levomepromazine Sulphoxide		10 mg
CERL-010	Levomethorphan		10 mg
LGCFOR0102.00	Lidocaine		10 mg
CERL-018	Lidocaine (1.0 mg/ml) in Methanol		1 mL
TRC-L469480	Lopinavir		10 mg
TRC-L469482	Lopinavir-D8		1 mg
TRC-L469485	Lopinavir metabolite M-1		1 mg
TRC-L469490	Lopinavir metabolite M-3/M-4		1 mg
LGCFOR0257.00	Loratadine		10 mg

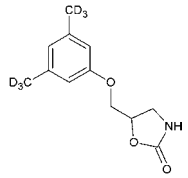
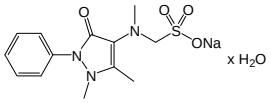
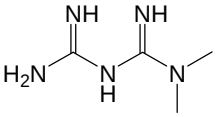
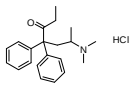
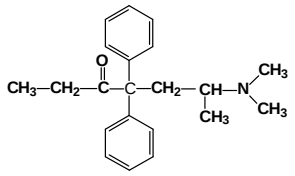
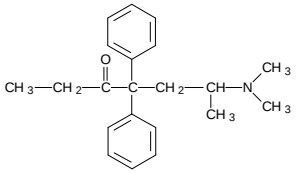
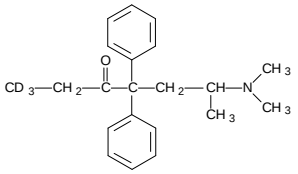
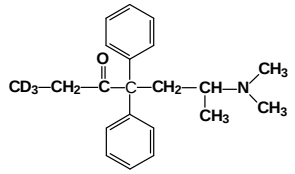
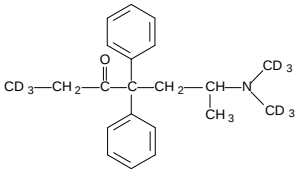
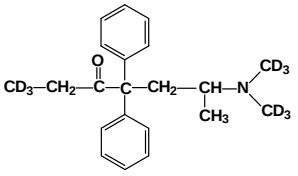
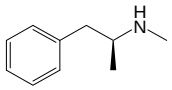
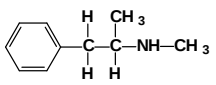
Code	Product		Unit
CERL-014	Loratadine (1.0 mg/ml) in Methanol		1 mL
LGCFOR0071.00	Lorazepam		10 mg
CERL-901	Lorazepam (1.0 mg/ml) in Acetonitrile		1 mL
CERL-902	Lorazepam-D4 (0.1 mg/ml) in Acetonitrile		1 mL
CERL-911	Lorazepam-D4 (1.0 mg/mL) in Acetonitrile		1 mL
CERL-021	Lorazepam glucuronide (0.1 mg/ml) 50 : 50 Acetonitrile : Water		1 mL
CERL-907	Lormetazepam (1.0 mg/ml) in Methanol		1 mL
THC-1218	LSA (lysergic acid amide)		1 mg
NMIAD827	LSD (9,10-didehydro-N,N-diethyl-6-methylergoline-8-beta-carboxamide) (1 mg/ml Acetonitrile solution)		Amp.
CERL-005	LSD (Lysergic acid diethylamide) (25 µg/ml) in Acetonitrile		1 mL
CERL-001	LSD (Lysergic acid diethylamide) (1.0 mg/ml) in Acetonitrile		1 mL

Drugs and metabolites of forensic and clinical interest

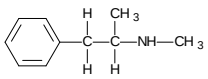
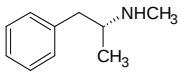
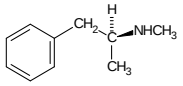
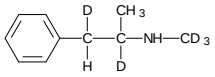
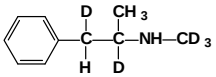
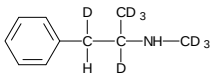
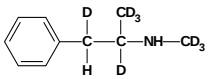
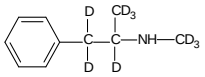
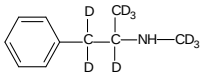
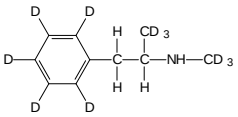
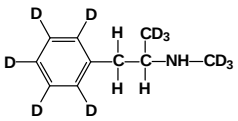
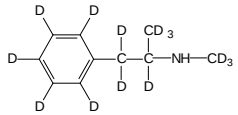
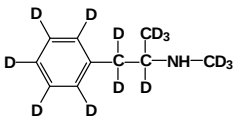
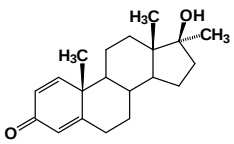
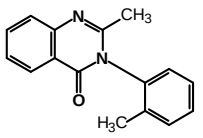
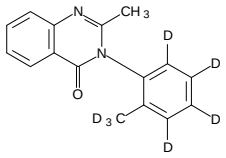
Code	Product		Unit
CERL-006	LSD-D3 (Lysergic acid diethylamide-D3) (25 µg/mL) in Acetonitrile		1 mL
CERL-002	LSD-D3 (Lysergic acid diethylamide-D3) (0.1 mg/ml) in Acetonitrile		1 mL
CERI-010	iso-LSD (iso-Lysergic acid diethylamide) (0.1 mg/ml) in Acetonitrile		1 mL
CERL-017	nor-LSD/ nor-iso-LSD	 	5 mg
CERO-013	2-Oxo-3-hydroxy-LSD (0.1 mg/ml) in Acetonitrile		1 mL
LGCFOR0820.00	Maprotiline Hydrochloride		10 mg
CERM-920	Maprotiline HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
TRC-M205502	Mefentanyl -D5*		1 mg
TRC-M225620	Meropenem sodium salt		10 mg
TRC-M305310	alpha-Methyl fentanyl		1 mg
TRC-M305312	alpha-Methyl fentanyl D3		1 mg
NMIAD450A	(±)-N-Methyl-1-(3,4-methylenedoxyphenyl)-2-butylamine HCl (MBDB)		20 mg
CERM-102	(±)-MBDB HCl ((±)-(3,4-Methylene-dioxyphenyl)-2-butamine) (1.0 mg/ml) in Methanol		1 mL
CERM-104	(±)-MBDB-D5 (±)-(3,4-Methylene-dioxyphenyl)-2-butamine-D5) (0.1 mg/ml) in Methanol		1 mL

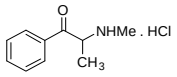
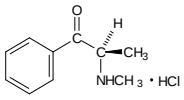
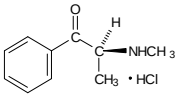
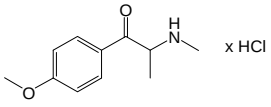
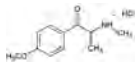
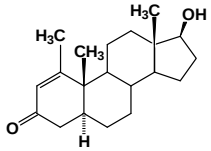
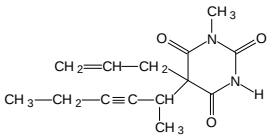
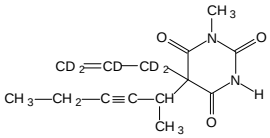
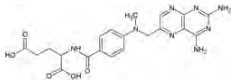
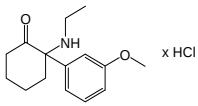
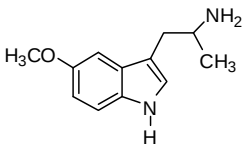
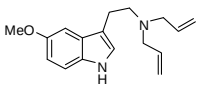
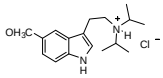
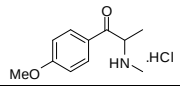
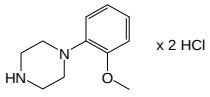
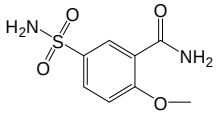
Code	Product		Unit
NMIAD842	(±)-3,4-Methylenedioxyamphetamine HCl (MDA)		50 mg
CERM-012	(±)-MDA ((±)-3,4-Methylenedioxyamphetamine) (1.0 mg/ml) (Tenamfetamin) in Methanol		1 mL
CERM-010	(±)-MDA-D5 ((±)-3,4-Methylenedioxyamphetamine-D5) (0.1 mg/ml) in Methanol		1 mL
CERM-027	(±)-MDA-D5 ((±)-3,4-Methylenedioxyamphetamine-D5) (1.0 mg/ml) in Methanol		1 mL
LGCFOR1275.21	MDAT (6,7-Methylenedioxy-2-aminotetralin)		10 mg
LGCFOR1275.80	MDAT HCl (6,7-Methylenedioxy-2-aminotetralin Hydrochloride)		10 mg
NMIAD739	(±)-N-Ethyl-3,4-methylenedioxyamphetamine HCl (MDEA)		50 mg
CERM-065	(±)-MDEA ((±)-3,4-Methylenedioxyethylamphetamine) (1.0 mg/ml) in Methanol		1 mL
CERM-067	(±)-MDEA-D5 ((±)-3,4-Methylenedioxyethylamphetamine-D5) (0.1 mg/ml) in Methanol		1 mL
CERM-068	(±)-MDEA-D5 ((±)-3,4-Methylenedioxyethylamphetamine-D5) (1.0 mg/ml) in Methanol		1 mL
CERM-081	(±)-MDEA-D6 ((±)-3,4 Methylenedioxyethylamphetamine-D6) (0.1 mg/ml) in Methanol		1 mL
CERM-082	(±)-MDEA-D6 [(±)-3,4-Methylenedioxyethylamphetamine-D6] (1.0 mg/ml) in Methanol		1 mL
NMIAD792C	MDMA HCl (N-Methyl-3,4-methylenedioxyamphetamine HCl) Purity (mass fraction)..... 99.98 ± 1.5 %		50 mg
CERM-013	(±)-MDMA ((±)-3,4-Methylenedioxymethamphetamine) (1.0 mg/ml) in Methanol		1 mL
CERM-011	(±)-MDMA-D5 ((±)-3,4-Methylenedioxymethamphetamine-D5) (0.1 mg/ml) in Methanol		1 mL
CERM-029	(±)-MDMA-D5 ((±)-3,4-Methylenedioxymethamphetamine-D5) (1.0 mg/ml) in Methanol		1 mL
LGCFOR0056.04	Melamine		10 mg
CERM-095	Melatonin (1.0 mg/ml) in Methanol		1 mL
CERM-094	Melatonin-D7 (0.1 mg/ml) in Methanol		1 mL

Code	Product		Unit
LGCFOR1275.07	5-MeO-DALT (5-Methoxy-N,N-diallyltryptamine)		10 mg
CERM-035	Meperidine (1.0 mg/ml) in Methanol		1 mL
CERM-036	Meperidine-D4 (0.1 mg/ml) in Methanol		1 mL
CERM-038	Meperidine-D4 (1.0 mg/ml) in Methanol		1 mL
NMIAD443	Meperidine HCl (Pethidine)		20 mg
CERM-138	Mephedrone HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
CERM-139	Mephedrone-D3 HCl (0.1 mg/ml) (as free base) in Methanol		1 mL
CERM-039	Meprobamate (1.0 mg/ml) in Methanol		1 mL
CERM-131	Meprobamate-D7 (propyl-D7) (0.1 mg/mL) in Methanol		1 mL
CERM-047	Mescaline HCl (1.0 mg/ml) as free base in Methanol		1 mL
CERM-051	Mescaline-D9 HCl (0.1 mg/ml) (as free base) in Methanol		1 mL
NMIAD768	Mescaline hydrogen sulfate		10 mg
CERM-074	Metaxalone (1.0 mg/mL) in Methanol		1 mL

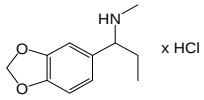
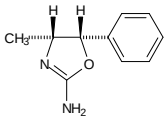
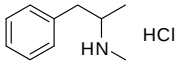
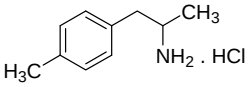
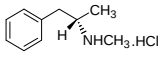
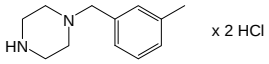
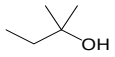
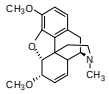
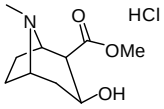
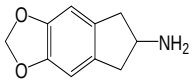
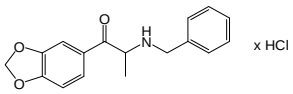
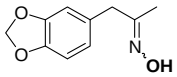
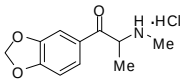
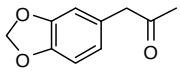
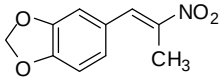
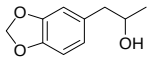
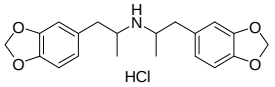
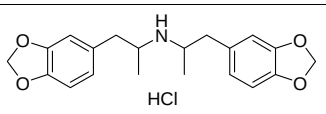
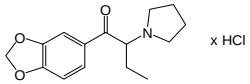
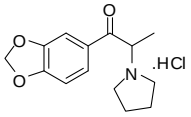
Code	Product		Unit
CERM-143	Metaxalone-D6 (0.1 mg/ml) in Methanol		1 mL
LGCFOR0052.00	Metamizole Sodium Monohydrate		10 mg
LGCFOR0056.00	Metformin Hydrochloride		10 mg
NMIAD425B	Methadone HCl		20 mg
CERM-019	(±)-Methadone (0.1 mg/ml) in Methanol		1 mL
CERM-007	(±)-Methadone (1.0 mg/ml) in Methanol		1 mL
CERM-008	(±)-Methadone-D3 (0.1 mg/ml) in Methanol		1 mL
CERM-021	(±)-Methadone-D3 (1.0 mg/ml) in Methanol		1 mL
CERM-088	(±)-Methadone-D9 (0.1 mg/ml) in Methanol		1 mL
CERM-089	(±)-Methadone-D9 (1.0 mg/ml) in Methanol		1 mL
LGCFOR0964.00	Methamphetamine HCl		10 mg
CERM-022	(±)-Methamphetamine (0.1 mg/ml) in Methanol		1 mL

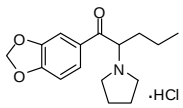
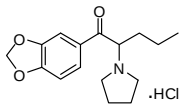
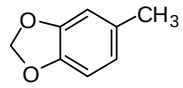
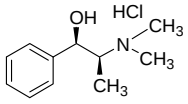
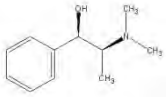
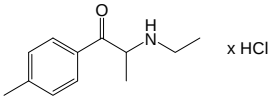
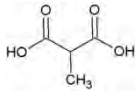
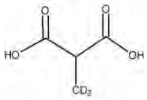
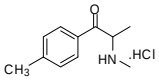
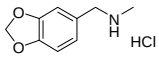
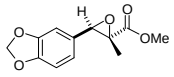
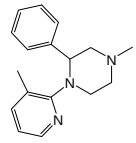
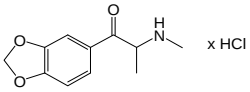
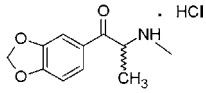
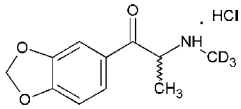
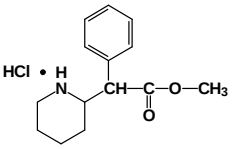
Drugs and metabolites of forensic and clinical interest

Code	Product		Unit
CERM-009	(±)-Methamphetamine (1.0 mg/ml) in Methanol		1 mL
CERM-024	R(-)-Methamphetamine (1.0 mg/mL) (Levmetamfetamin) in Methanol		1 mL
CERM-020	S(+)-Methamphetamine (1.0 mg/ml) in Methanol		1 mL
CERM-004	(±)--Methamphetamine-D5 (0.1 mg/ml) in Methanol		1 mL
CERM-023	(±)-Methamphetamine-D5 (1.0 mg/ml) in Methanol		1 mL
CERM-016	(±)-Methamphetamine-D8 (0.1 mg/ml) in Methanol		1 mL
CERM-034	(±)-Methamphetamine-D8 (1.0 mg/ml) in Methanol		1 mL
CERM-090	(±)-Methamphetamine-D9 (0.1 mg/ml) in Methanol		1 mL
CERM-091	(±)-Methamphetamine-D9 (1.0 mg/ml) in Methanol		1 mL
CERM-059	(±)-Methamphetamine-D11 (0.1 mg/ml) in Methanol		1 mL
CERM-060	(±)-Methamphetamine-D11 (1.0 mg/ml) in Methanol		1 mL
CERM-092	(±)-Methamphetamine-D14 (0.1 mg/ml) in Methanol		1 mL
CERM-093	(±)-Methamphetamine-D14 (1.0 mg/ml) in Methanol		1 mL
CERM-912	Methandienone (1.0 mg/mL) in 1,2-Dimethoxyethane		1 mL
CERM-015	Methaqualone (1.0 mg/ml) in Methanol		1 mL
CERM-014	Methaqualone-D7 (0.1 mg/ml) in Methanol		1 mL
TRC-M225925	Methcathinone		10 mg

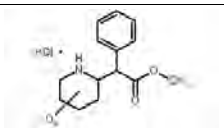
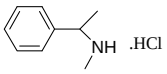
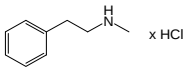
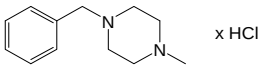
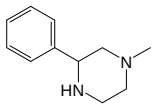
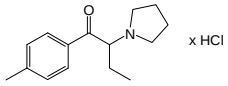
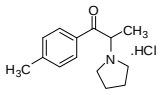
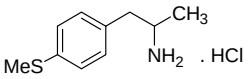
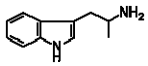
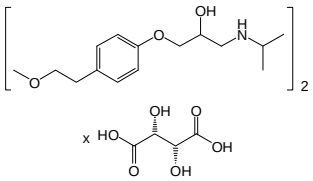
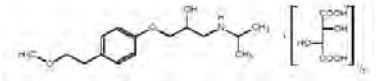
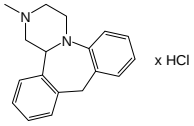
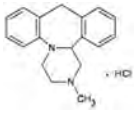
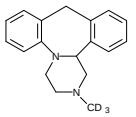
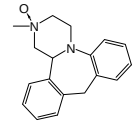
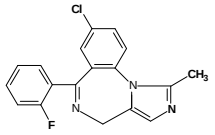
Code	Product		Unit
TRC-M225927	Methcathinone-D3		5 mg
NMIAD724	(±)-Methcathinone HCl (Ephedron) ((±)-2-(Methylamino)-1-phenyl-1-propanone HCl)		20 mg
CERM-061	R(+)-Methcathinone HCl (1.0 mg/mL) (as free base) in Methanol		1 mL
CERM-055	S(-)-Methcathinone HCl (1.0 mg/ml) in Methanol		1 mL
LGCFOR1275.04	Methedrone Hydrochloride		10 mg
TRC-M260150	Methedrone HCl		5 mg
CERM-147	Methedrone HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
TRC-M260152	Methedrone-D3 HCl		1 mg
CERM-910	Methenolone (1.0 mg/mL) in 1,2-Dimethoxyethane		1 mL
CERM-041	Methohexital (1.0 mg/ml) in Methanol		1 mL
CERM-079	Methohexital-D5 (0.1 mg/ml) in Methanol		1 mL
CERM-136	Methotrexate (1.0 mg/ml) in Methanol with 0.1 N NaOH		1 mL
LGCFOR1275.65	Methoxetamine Hydrochloride		10 mg
NMIAD899	5-Methoxy-alpha-methyltryptamine		10 mg
NMIAD954	5-Methoxy-diallyltryptamine		10 mg
NMIAD923	5-methoxy-diisopropyltryptamine HCl		1 mg
NMIAD952	4'-Methoxymethcathinone HCl (Methedrone)		20 mg
LGCFOR1247.02	1-(2-Methoxyphenyl)piperazine Dihydrochloride		10 mg
LGCFOR0051.05	2-Methoxy-5-sulphamoylbenzamide		10 mg

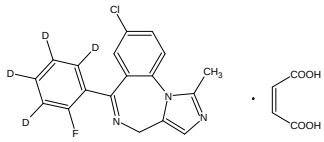
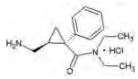
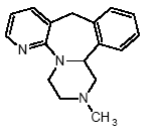
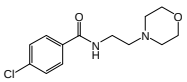
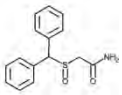
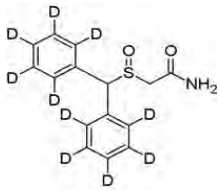
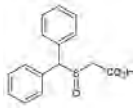
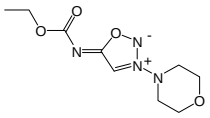
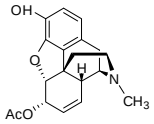
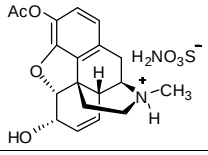
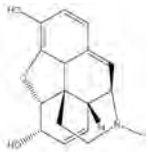
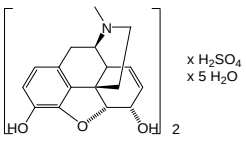
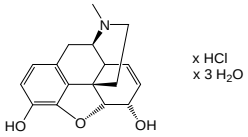
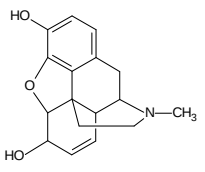
Drugs and metabolites of forensic and clinical interest

Code	Product		Unit
LGCFOR1275.41	1-Methylamino-1-(3,4-methylenedioxyphenyl)propane Hydrochloride		10 mg
CERM-045	Cis-(±)-4-Methylaminorex (1.0 mg/ml) in Acetonitrile		1 mL
NMIAD816	(±)-Methylamphetamine hydrochloride		
NMIAD895	(±)-4-Methylamphetamine HCl		10 mg
NMIAD830	(±)-S-Methylamphetamine HCl		50 mg
LGCFOR0586.07	N-(3-Methylbenzyl)piperazine DiHCl		10 mg
LGCFOR1275.44	2-Methyl-2-butanol		10 mg
NMIAD924	Methyl codeine		10 mg
NMIAD452	Methyl ecgonine HCl monohydrate		50 mg
LGCFOR1275.05	5,6-Methylenedioxy-2-aminoindane (MDAI)		10 mg
LGCFOR1275.60	3,4-Methylenedioxy-N-benzylcathinone Hydrochloride		10 mg
NMIAD890	3,4- Methylenedioxybenzyl methyl ketoximine		10 mg
NMIAD942	3,4-Methylenedioxymethcathinone HCl		20 mg
TRC-M303962	Methylenedioxymethcathinone-D3 HCl		1 mg
NMIAD810	3,4-Methylenedioxyphenylacetone (MDP2P) - DRUG PRECURSOR		20 mg
NMIAD669	1-(3,4-Methylenedioxyphenyl)-2-nitropropene		20 mg
NMIAD880	(R,S)-1-(3,4-Methylenedioxyphenyl)-propan-2-ol		10 mg
NMIAD896	bis-(1-(3,4-Methylenedioxyphenyl)-propan-2-yl)amine HCl (1 diastereoisomer)		20 mg
NMIAD879	bis-(1-(3,4-Methylenedioxyphenyl)-propan-2-yl)amine HCl (mix of isomers)		20 mg
LGCFOR1275.61	3',4'-Methylenedioxy-alpha-pyrrolidinobutiophenone Hydrochloride (MDPBP HCl)		10 mg
NMIAD960	(+/-)-3,4-Methylenedioxy-alpha-pyrrolidinopropiophenone HCl		20 mg
TRC-M304080	Methylenedioxypyrovalerone HCl		10 mg

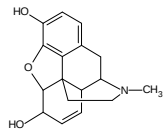
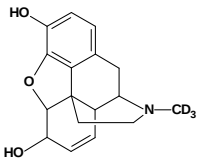
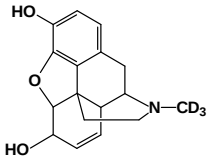
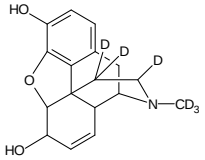
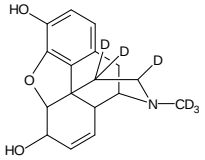
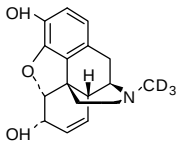
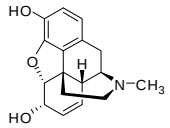
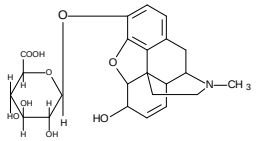
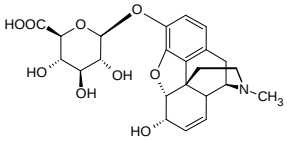
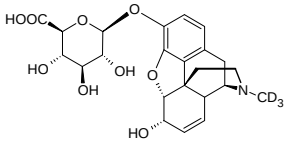
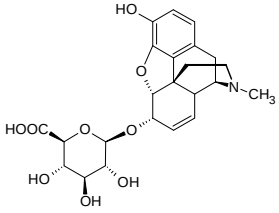
Code	Product		Unit
TRC-M304082	Methylenedioxypyrovalerone-D8 HCl		1 mg
NMIAD951	3,4-Methylenedioxypyrovalerone HCl		20 mg
CERM-146	3,4-Methylenedioxypyrovalerone HCl (MDPV) (1.0 mg/mL) (as free base) in Methanol		1 mL
NMIAD887	3,4-Methylenedioxytoluene		10 mg
NMIAM243	(-)-Methylephedrine HCl		20 mg
CERM-129	Methylephedrine (1.0 mg/ml) in Methanol		1 mL
LGCFOR1275.20	Methylethcathinone Hydrochloride (4-Methyl-N-ethylcathinone Hydrochloride, 4-MEC HCl)		10 mg
CERM-080	Methylmalonic acid (1.0 mg/ml) in Acetonitrile		1 mL
CERM-105	Methyl-D3-malonic acid (1.0 mg/ml) in Acetonitrile		1 mL
NMIAD937	(±)-4'-Methylmethcathinone HCl (Mephedrone)		10 mg
TRC-M224202	4-Methylmethcathinone-D3 HCl (Mephedrone-D3 HCl)		1 mg
NMIAD883	N-Methyl-3,4-methylenedioxybenzylamine HCl		20 mg
NMIAD903	2-Methyl-3-(3,4-methylenedioxyphenyl)-glycidic acid methyl ester		50 mg
LGCFOR1005.01	4-Methyl-1-(3-methylpyridin-2-yl)-2-phenylpiperazine		10 mg
LGCFOR1275.01	Methylone Hydrochloride		10 mg
CERM-140	Methylone HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
CERM-141	Methylone-D3 HCl (0.1 mg/ml) (as free base) in Methanol		1 mL
CERM-083	Methylphenidate HCl (1.0 mg/ml) in Methanol		1 mL

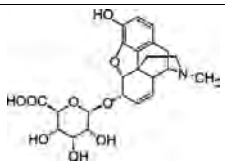
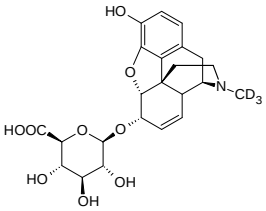
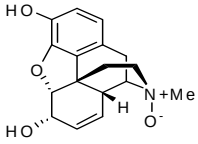
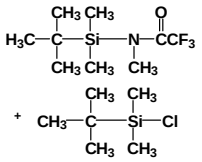
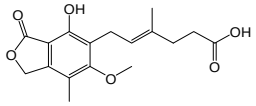
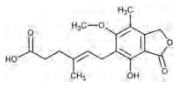
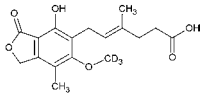
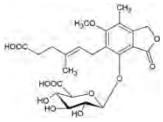
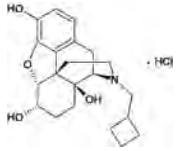
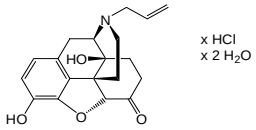
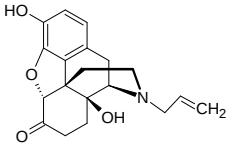
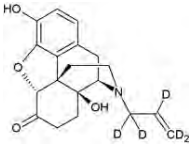
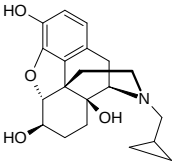
Drugs and metabolites of forensic and clinical interest

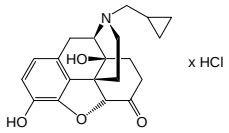
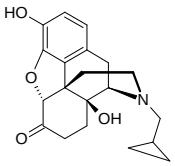
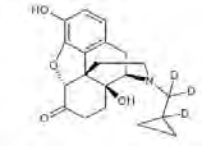
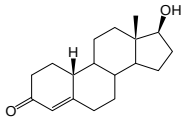
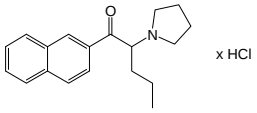
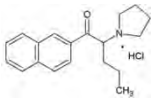
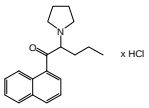
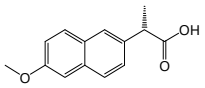
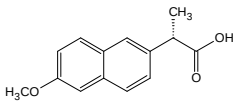
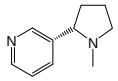
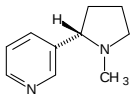
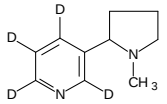
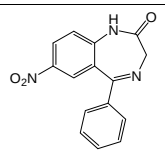
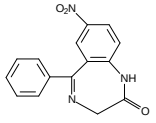
Code	Product		Unit
CERM-127	Methylphenidate-D9 HCl (0.1 mg/ml) (as free base) in Methanol		1 mL
NMIAD525	N-Methyl-1-phenylethylamine HCl		50 mg
LGCFOR1275.54	N-Methyl-2-phenylethylamine Hydrochloride (N-Methyl-PEA HCl)		10 mg
LGCFOR1280.01	1-Methyl-4-(phenylmethyl)piperazine HCl		10 mg
LGCFOR1005.07	1-Methyl-3-phenylpiperazine		10 mg
LGCFOR1275.62	4'-Methyl-alpha-pyrrolidinobutiophenone Hydrochloride (MPBP HCl)		10 mg
NMIAD964	(±)-4'-Methylmethcathinone HCl (Mephedrone)		20 mg
NMIAD687	(±)-4-Methylthioamphetamine HCl (MTA)		20 mg
TRC-M330725	alpha-Methythio fentanyl		1 mg
TRC-M330730	3-Methylthio fentanyl		1 mg
CERA-074	alpha-Methyltryptamine (0.1 mg/mL) in Methanol		1 mL
LGCFOR0027.00	Metoprolol Tartrate		10 mg
CERM-123	Metroprolol tartrate (1.0 mg/ml) in Methanol		1 mL
LGCFOR0147.00	Mianserin HCl		10 mg
CERM-919	Mianserin HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
CERM-901	Mianserin-D3 (0.1 mg/ml) in Methanol		1 mL
LGCFOR0147.06	Mianserin N-Oxide		10 mg
CERM-908	Midazolam (1.0 mg/ml) in Methanol		1 mL

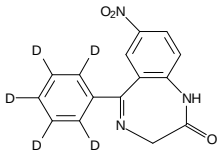
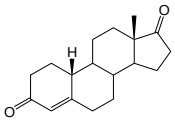
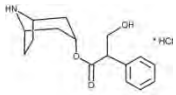
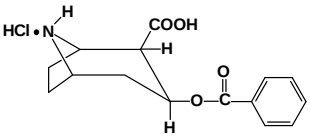
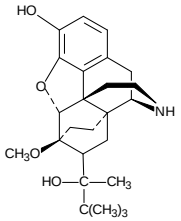
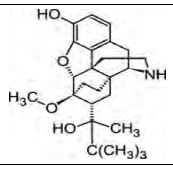
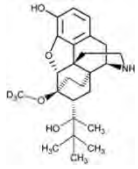
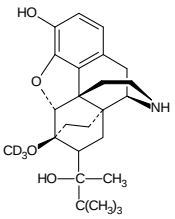
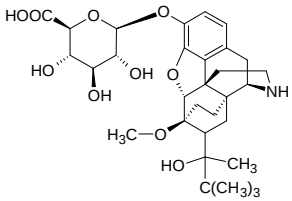
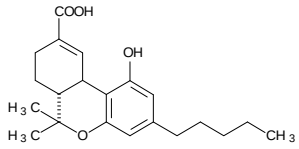
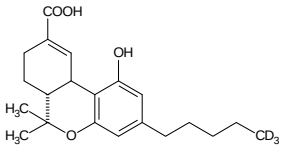
Code	Product		Unit
CERM-918	Midazolam-D4 maleate (0.1 mg/ml) (as free base) in Methanol		1 mL
CERM-145	Milnacipran HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
CERM-128	Mirtazepine (1.0 mg/ml) in Methanol		1 mL
LGCFOR0250.00	Moclobemide		10 mg
CERM-084	Modafinil (1.0 mg/ml) in Acetonitrile		1 mL
CERM-103	Modafinil-D10 (0.1 mg/ml) in Acetonitrile		1 mL
CERM-142	Modafinil acid (1.0 mg/ml) in Acetonitrile		1 mL
LGCFOR0267.00	Molsidomine		10 mg
NMIAD777	6-Monoacetylmorphine base		20 mg
NMIAD766	3-Monoacetylmorphine sulfamate		20 mg
THC-167	Morphinhemisulfat-pentahemihydrat		100 mg
LGCFOR0280.00	Morphine hemisulphate pentahemihydrate [Controlled Substance]		10 mg
LGCFOR0037.00	Morphine HCl trihydrate [Controlled Substance]		10 mg
CERM-030	Morphine (0.1 mg/ml) in Methanol		1 mL

Drugs and metabolites of forensic and clinical interest

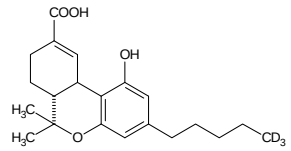
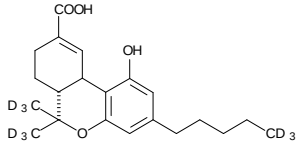
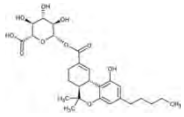
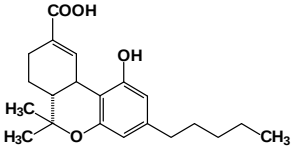
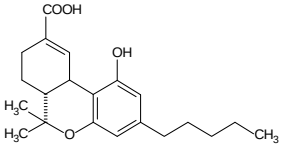
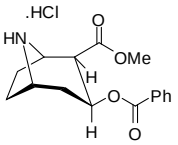
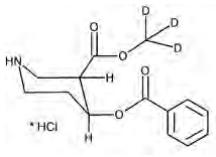
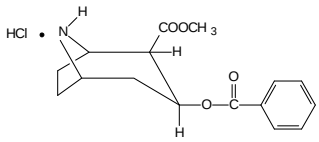
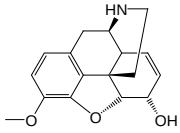
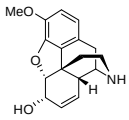
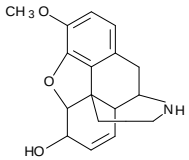
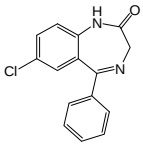
Code	Product		Unit
CERM-005	Morphine (1.0 mg/ml) (morphine anhydrate) in Methanol		1 mL
CERM-003	Morphine-D3 (0.1 mg/ml) in Methanol		1 mL
CERM-006	Morphine-D3 (1.0 mg/ml) in Methanol		1 mL
CERM-085	Morphine-D6 (0.1 mg/ml) in Methanol		1 mL
CERM-086	Morphine-D6 (1.0 mg/ml) in Methanol		1 mL
NMIAD709	Morphine base monohydrate-D3		1 mg
NMIAD408	Morphine base monohydrate		50 mg
CERM-018	Morphine-3beta-D-glucuronide (0.1 mg/ml) in Methanol		1 mL
CERM-031	Morphine-3beta-D-glucuronide (1.0 mg/ml) in Methanol		1 mL
CERM-017	Morphine-3beta-D-glucuronide-D3 (0.1 mg/ml) in Methanol		1 mL
CERM-096	Morphin-6beta-D-glucuronide (0.1 mg/ml) in methanol : water (50 : 50)		1 mL

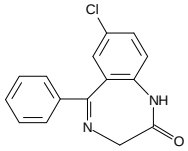
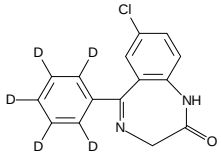
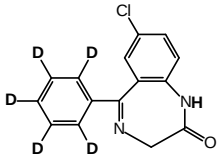
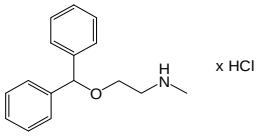
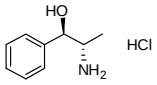
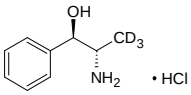
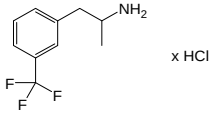
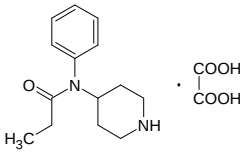
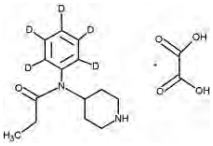
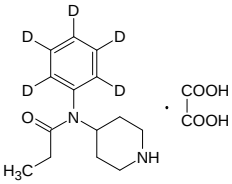
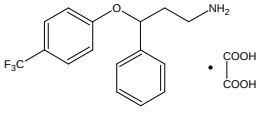
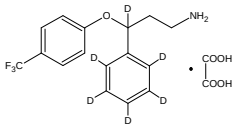
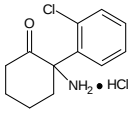
Code	Product		Unit
CERM-046	Morphine-6-beta-D-glucuronide (1.0 mg/mL) water : methanol (80:20)		1 mL
CERM-120	Morphine-6beta-D-glucurunide-D3 (0.1 mg/mL) in methanol : water (50 : 50)		1 mL
NMIAD700	Morphine N-Oxide		10 mg
CERM-108	MTBSTFA (with 1% t-BDMCS)		5 x 1 mL
LGCFOR1001.06	Mycophenolic Acid		10 mg
CERM-106	Mycophenolic acid (1.0 mg/ml) in Acetonitrile		1 mL
CERM-137	Mycophenolic acid-D3 (0.1 mg / mL) in Acetonitrile		1 mL
CERM-135	Mycophenolic acid-beta-D-glucuronide (1.0 mg/ml) in Acetonitrile		1 mL
CERN-051	Nalbuphine (1.0 mg/ml) in Methanol		1 mL
LGCFOR0272.00	Naloxone Hydrochloride Dihydrate		10 mg
CERN-004	Naloxone (1.0 mg/mL) in Methanol		1 mL
CERN-063	Naloxone-D5 (0.1 mg/ml) in Methanol		1 mL
CERN-038	6 beta-Naltrexol (1.0 mg/ml) in Methanol		1 mL

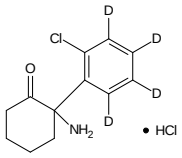
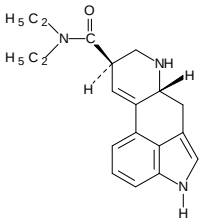
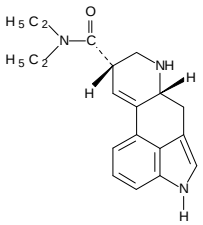
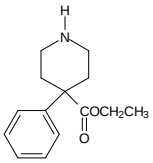
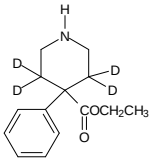
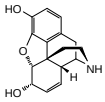
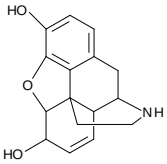
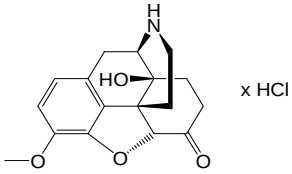
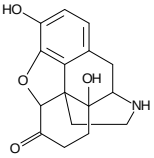
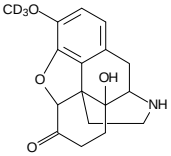
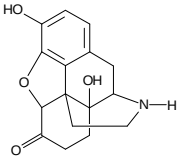
Code	Product		Unit
LGCFOR0233.00	Naltrexone Hydrochloride		10 mg
CERN-007	Naltrexone (1.0 mg/mL) in Methanol		1 mL
CERN-047	Naltrexone-D3 (0.1 mg/ml) in Methanol		1 mL
LGCFOR0660.00	Nandrolone		10 mg
LGCFOR1275.06	Naphyrone Hydrochloride (1-Naphthalen-2-yl-2-pyrrolidin-1-ylpentan-1-one Hydrochloride)		10 mg
CERN-067	Naphyrone HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
LGCFOR1275.35	1-Naphyrone Hydrochloride (1-Naphthalen-1-yl-2-pyrrolidin-1-ylpentan-1-one Hydrochloride)		10 mg
LGCFOR0152.00	Naproxen		10 mg
CERN-042	Naproxen (1.0 mg/mL) in Methanol		1 mL
TRC-N389750	Nelfinavir mesylate		10 mg
TRC-N389752	Nelfinavir-D3		1 mg
TRC-N389760	Nelfinavir hydroxy-tert-butylamide		1 mg
TRC-N391275	Nevirapine		5 mg
TRC-N391277	Nevirapine-D5		1 mg
LGCFOR0517.00	Nicotine		10 mg
CERN-008	S(-)-Nicotine (1.0 mg/ml) im Methanol		1 mL
CERN-048	Nicotine-D4 (0.1 mg/ml) in Acetonitrile		1 mL
LGCFOR0078.00	Nitrazepam [Controlled Substance]		10 mg
CERN-906	Nitrazepam (1.0 mg/ml) in Acetonitrile		1 mL

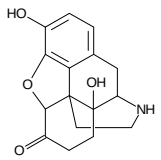
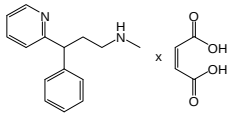
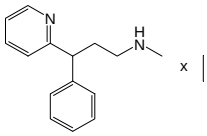
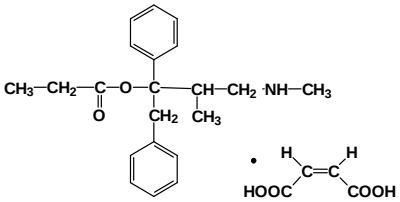
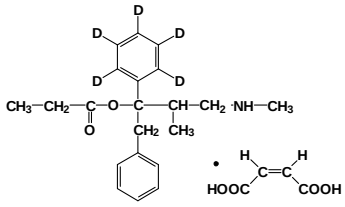
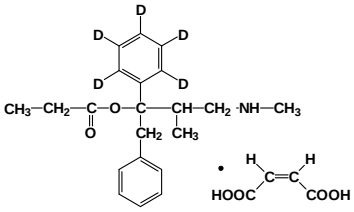
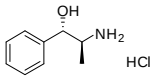
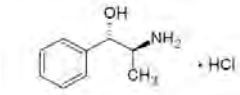
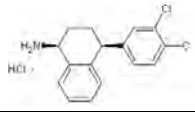
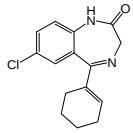
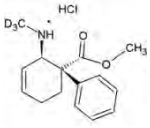
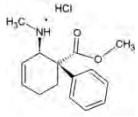
Code	Product		Unit
CERN-901	Nitrazepam-D5 (0.1 mg/ml) in Methanol		1 mL
LGCFOR0660.01	Norandrostenedione (19-Norandrost-4-ene-3,17-dione)		10 mg
CERN-057	Noratropine HCl (1.0 mg/mL) (as free base) in Methanol		1 mL
CERN-022	Norbenzoylecgonine HCl (1.0 mg/ml) in Methanol		1 mL
CERN-912	Norbuprenorphine (0.1 mg/ml) in Methanol		1 mL
CERN-059	Norbuprenorphine (1.0 mg/ml) in Methanol		1 mL
CERN-921	Norbuprenorphine-D3 (1.0 mg/ml) in Methanol		1 mL
CERN-920	Norbuprenorphine-D3 (0.1 mg/ml) in Methanol		1 mL
CERN-045	Norbuprenorphine glucuronide (0.1 mg/ml) in Methanol		1 mL
CERT-006	(±)-11-nor-9-carboxy-delta 9-THC (0.1 mg/ml) in Methanol		1 mL
CERT-004	(±)-11-nor-9-carboxy-delta 9-THC-D3 (0.1 mg/ml) in Methanol		1 mL

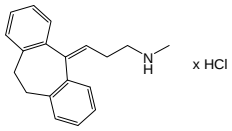
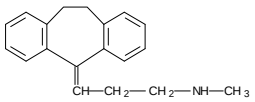
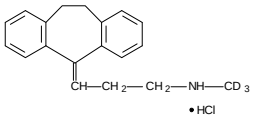
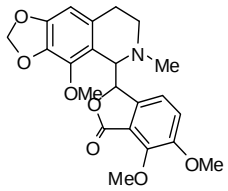
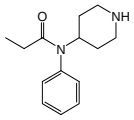
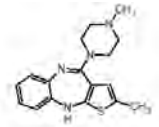
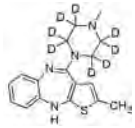
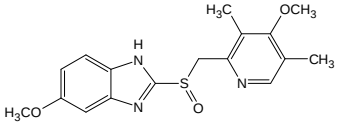
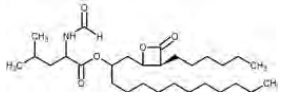
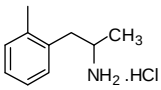
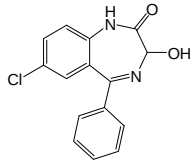
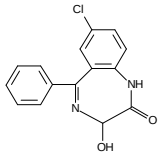
Drugs and metabolites of forensic and clinical interest

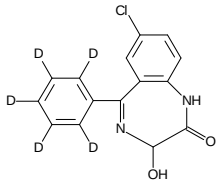
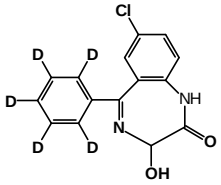
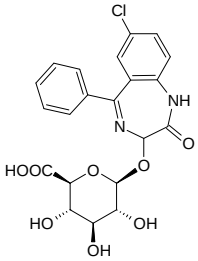
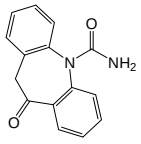
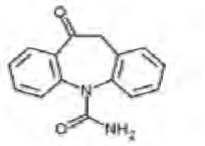
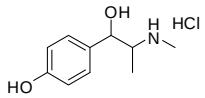
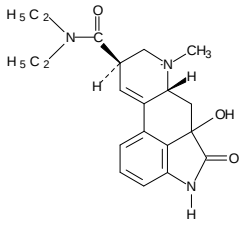
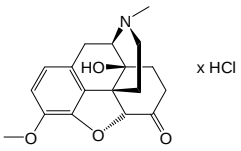
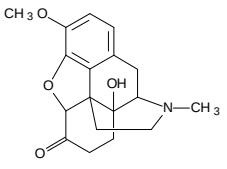
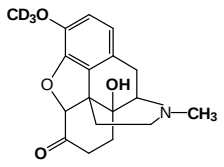
Code	Product		Unit
CERT-008	(±)-11-nor-9-carboxy-delta 9-THC-D3 (1.0 mg/ml) in Methanol		1 mL
CERT-007	(±)-11-nor-9-carboxy-delta 9-THC-D9 (0.1 mg/ml) in Methanol		1 mL
CERT-038	(+)-11-Nor-delta 9-THC-9-carboxylic acid glucuronide (not to be used for immunoassay) (0.1 mg/ ml) in Methanol		1 mL
CERT-018	(-)-11-nor-9-carboxy-delta 9-THC (0.1 mg/ml) in Methanol		1 mL
CERT-019	(-)-11-nor-9-carboxy-delta 9-THC (1.0 mg/ml) in Methanol		1 mL
NMIAD856	Norcocaine HCl		10 mg
CERN-034	Norcocaine-D3 HCl (0.1 mg/ml) (as free base) in Acetonitrile		1 mL
CERN-003	Norcocaine (1.0 mg/ml) in Acetonitrile		1 mL
LGCFOR0004.05	Norcodeine [Controlled Substance]		10 mg
NMIAD698	Norcodeine		5 mg
CERN-005	Norcodeine (1.0 mg/ml) in Methanol		1 mL
LGCFOR0023.02	Nordazepam [Controlled Substance]		10 mg

Code	Product		Unit
CERN-905	Nordiazepam (1.0 mg/ml) in Methanol		1 mL
CERN-903	Nordiazepam-D5 (0.1 mg/ml) in Methanol		1 mL
CERN-911	Nordiazepam-D5 (1.0 mg/ml) in Methanol		1 mL
LGCFOR0490.03	Nordiphenhydramine Hydrochloride		10 mg
NMIAM296	Norephedrine HCl (Phenylpropanolamine) - DRUG PRECURSOR		100 mg
CERN-043	(±)-Norephedrine-D3 HCl (1.0 mg/ml) (as free base) ((±)-Phenylpropanolamine HCl) in Methanol		1 mL
LGCFOR0608.01	Norfenfluramine Hydrochloride		10 mg
CERN-031	Norfentanyl oxalate (1.0 mg/ml) (as free base) in Methanol		1 mL
CERN-055	Norfentanyl-D5 oxalate (0.1 mg/ml) (as free base) in Methanol		1 mL
CERN-030	Norfentanyl-D5 oxalate (0.1 mg/ml) (as free base) in Acetonitrile		1 mL
CERN-923	Norfluoxetine oxalate (1.0 mg/m) (as free base) in Methanol		1 mL
CERN-922	Norfluoxetine-D6 oxalate (0.1 mg/m) (as free base) in Methanol		1 mL
CERN-036	(±)-Norketamine HCl (1.0 mg/ml) in Methanol		1 mL

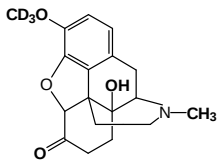
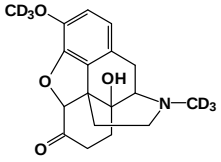
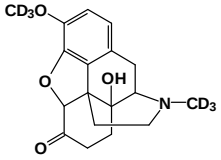
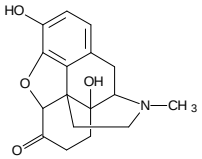
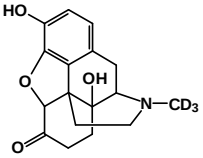
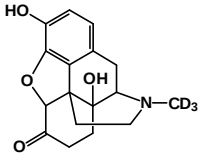
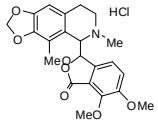
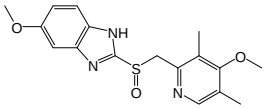
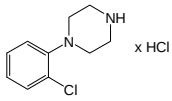
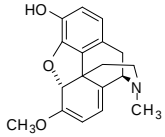
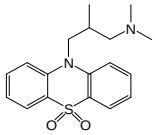
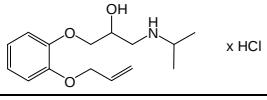
Code	Product		Unit
CERN-037	(±)-Norketamine-D4 HCl (0.1 mg/ml) in Methanol		1 mL
CERL-017	nor-LSD/ nor-iso-LSD	 	5 mg
CERN-017	Normeperidine (0.1 mg/ml) in Methanol		1 mL
CERN-020	Normeperidine-D4 (0.1 mg/ml) in Methanol		1 mL
NMIAD701	Normorphine		5 mg
CERN-006	Normorphine (1.0 mg/ml) in Methanol		1 mL
LGCFOR0672.03	Noroxycodone Hydrochloride		10 mg
CERN-011	Noroxycodone HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
CERN-032	Noroxycodone-D3 (0.1 mg/ml) in Methanol		1 mL
CERN-013	Noroxymorphone (0.1 mg/ml) in Methanol		1 mL

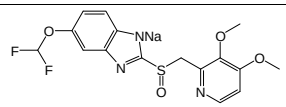
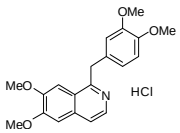
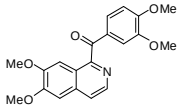
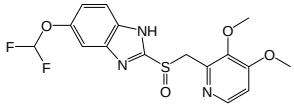
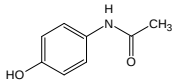
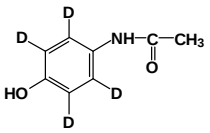
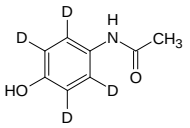
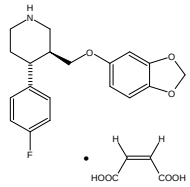
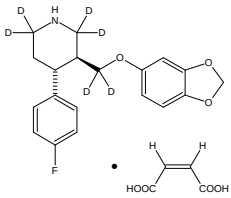
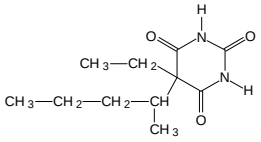
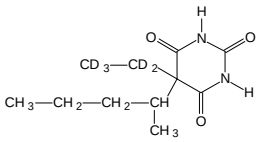
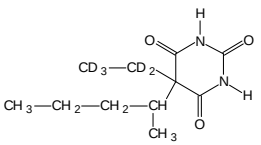
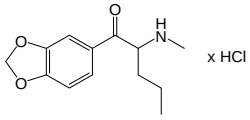
Code	Product		Unit
CERN-012	Noroxymorphone (1.0 mg/mL) in Methanol / DMSO		1 mL
LGCFOR0059.06	Norpheniramine Maleate		10 mg
NMIAM937	Norphenylephrine HCl		50 mg
CERN-913	(±)-Norpropoxyphene maleate (1.0 mg/ml) in Methanol		1 mL
CERN-904	(±)-Norpropoxyphene-D5 maleate (0.1 mg/ml) in Methanol		1 mL
CERN-919	(±)-Norpropoxyphene-D5 maleate (1.0 mg/ml) in Methanol		1 mL
NMIAM297	(+)-Norpseudoephedrine HCl (Cathine)		50 mg
CERN-046	Norpseudoephedrine HCl (0.1 mg/ml) as free base in Methanol		1 mL
CERN-049	Norsertraline HCl (0.1 mg/ml) (as free base) in Methanol		1 mL
LGCFOR0091.03	Nortetrazepam		10 mg
CERN-062	Nortilidine-D3 HCl (0.1 mg/ml) (as free base) in Methanol		1 mL
CERN-061	Nortilidine HCl (1.0 mg/mL) (as free base) in Methanol		1 mL

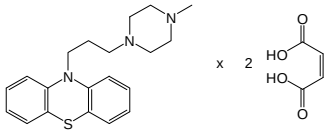
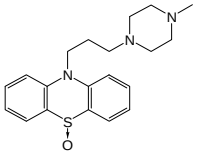
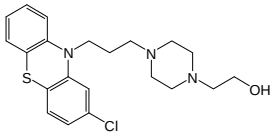
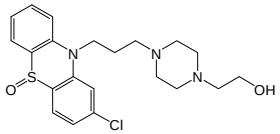
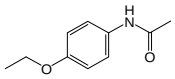
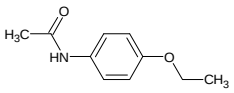
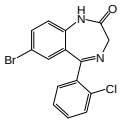
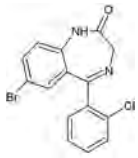
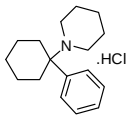
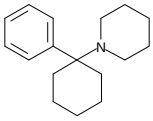
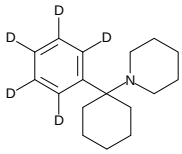
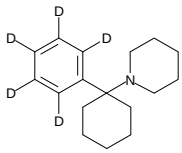
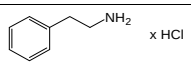
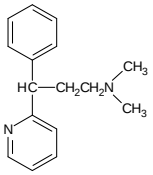
Code	Product		Unit
LGCFOR0079.00	Nortriptyline Hydrochloride		10 mg
CERN-907	Nortriptyline (1.0 mg/ml) in Methanol		1 mL
CERN-902	Nortriptyline-D3 HCl (0.1 mg/ml) in Methanol		1 mL
NMIAD831	Noscapine (Narcotine) base		50 mg
LGCFOR0528.08	N-Phenyl-N-(piperidin-4-yl)propanamide		10 mg
TRC-O415000	Ohmefentanyl		1 mg
TRC-0415002	Ohmefentanyl-D3		1 mg
CERO-024	Olanzapine (1.0 mg/ml) in Acetonitrile		1 mL
EJ-O139-0121	Olanzapine D3		10 mg
CERO-035	Olanzapine-D8 (0.1 mg/ml) iin Acetonitrile		1 mL
CERO-021	Omeprazole HCl (1.0 mg/ml) in Methanol		1 mL
CERO-032	Orlistat (1.0 mg/mL) in Acetonitrile		1 mL
TRC-O695300	Orphenadrine citrate salt		5 g
TRC-O695302	Orphenadrine citrate salt-D3		1 mg
NMIAD912	Ortetamine HCl (1-(2-methylphenyl)-2-propylamine HCl)		10 mg
LGCFOR0080.00	Oxazepam		10 mg
CERO-902	Oxazepam (1.0 mg/ml) in Methanol		1 mL

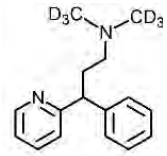
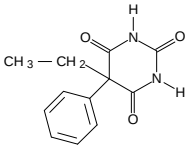
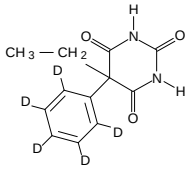
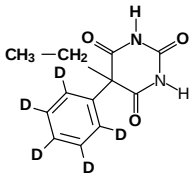
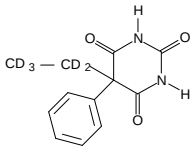
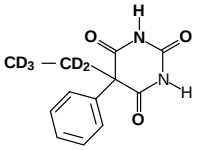
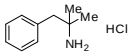
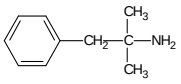
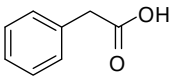
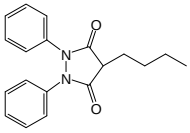
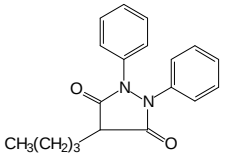
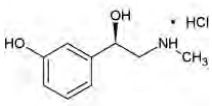
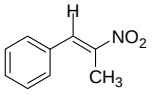
Code	Product		Unit
CERO-901	Oxazepam-D5 (0.1 mg/ml) in Methanol		1 mL
CERO-904	Oxazepam-D5 (1.0 mg/ml) in Acetonitrile		1 mL
CERO-023	Oxazepam glucuronide (0.1 mg/ml) in Methanol / Water (1 : 1)		1 mL
LGCFOR0076.17	Oxcarbazepine		10 mg
CERO-025	Oxcarbazapine (1.0 mg/ml) in Acetonitrile		1 mL
NMIAD892	Oxilofrine HCl		5 mg
CERO-013	2-Oxo-3-hydroxy-LSD (0.1 mg/ml) in Acetonitrile		1 mL
LGCFOR0672.00	Oxycodone HCl		10 mg
CERO-002	Oxycodone (1.0 mg/ml) in Methanol		1 mL
CERO-005	Oxycodone-D3 (0.1 mg/ml) in Methanol		1 mL

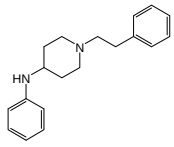
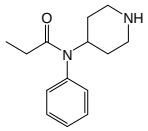
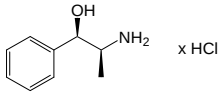
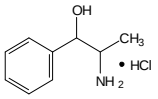
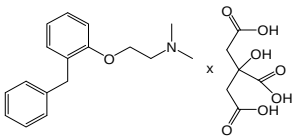
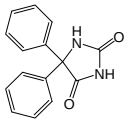
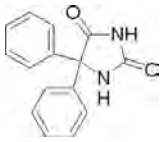
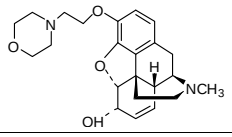
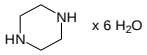
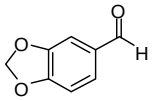
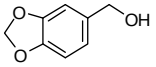
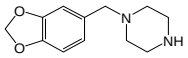
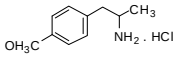
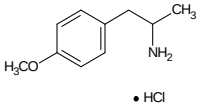
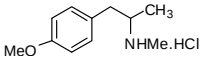
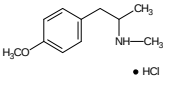
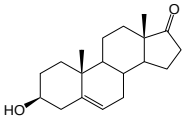
Drugs and metabolites of forensic and clinical interest

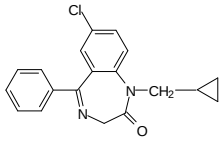
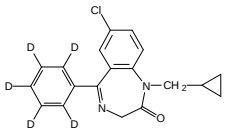
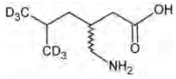
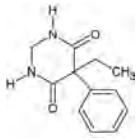
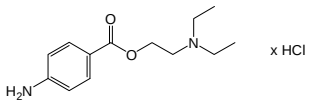
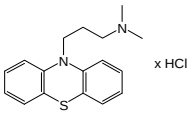
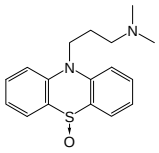
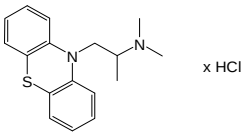
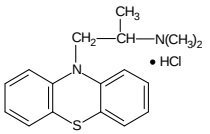
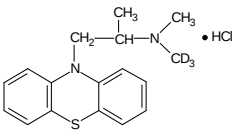
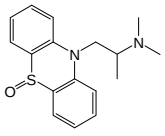
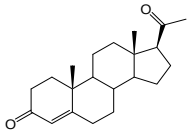
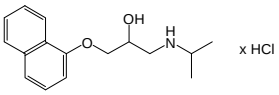
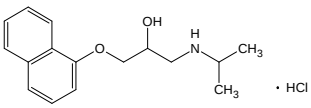
Code	Product		Unit
CERO-006	Oxycodone-D3 (1.0 mg/ml) in Methanol		1 mL
CERO-007	Oxycodone-D6 (0.1 mg/ml) in Methanol		1 mL
CERO-008	Oxycodone-D6 (1.0 mg/ml) in Methanol		1 mL
CERO-004	Oxymorphone (1.0 mg/ml) in Methanol		1 mL
CERO-003	Oxymorphone-D3 (0.1 mg/ml) in Methanol		1 mL
CERO-019	Oxymorphone-D3 (1.0 mg/mL) in Methanol		1 mL
NMIAD791	Noscapine (Narcotine) HCl		100 mg
LGCFOR0095.00	Omeprazole		10 mg
LGCFOR1275.16	ortho-Chlorophenylpiperazine Hydrochloride (oCPP HCl)		10 mg
NMIAD734	Oripavine		50 mg
LGCFOR0957.00	Oxomemazine		10 mg
LGCFOR0129.00	Oxprenolol Hydrochloride		10 mg

Code	Product		Unit
LGCFOR0099.01	Pantoprazole		10 mg
NMIAD750	Papaverine HCl		100 mg
NMIAD743	Papaveraldine		20 mg
LGCFOR0042.00	Paracetamol		10 mg
CERA-064	Acetaminophen (1.0 mg/ml) (Paracetamol) in Methanol		1 mL
CERP-909	Acetaminophen-D4 (0.1 mg/ml) (Paracetamol) in Methanol		1 mL
CERP-917	Acetaminophen-D4 (1.0 mg/ml) (Paracetamol) in Methanol		1 mL
CERP-916	Paroxetine (1.0 mg/mL) in Methanol		1 mL
CERP-915	Paroxetine-D6 maleate (0.1 mg/mL) (as free base) in Methanol		1 mL
CERP-010	Pentobarbital (1.0 mg/ml) in Methanol		1 mL
CERP-009	Pentobarbital-D5 (0.1 mg/ml) in Methanol		1 mL
CERP-013	Pentobarbital-D5 (1.0 mg/ml) in Methanol		1 mL
LGCFOR1275.57	Pentylone Hydrochloride		10 mg

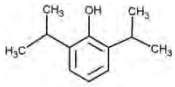
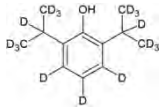
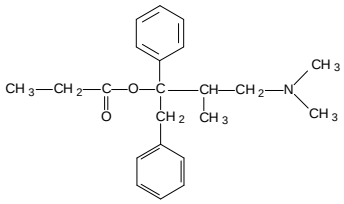
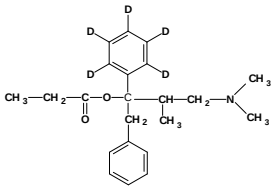
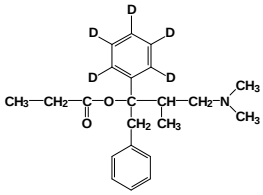
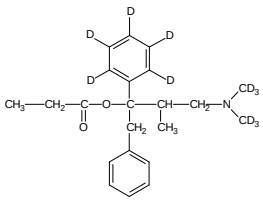
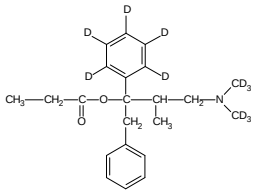
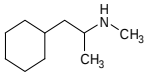
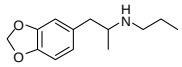
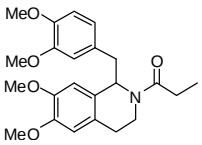
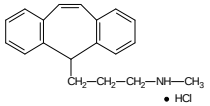
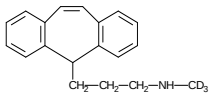
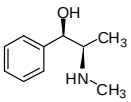
Code	Product		Unit
LGCFOR0815.00	Perazine dimaleate		10 mg
LGCFOR0157.01	Perazine Sulphoxide		10 mg
LGCFOR0826.00	Perphenazine		10 mg
LGCFOR0826.01	Perphenazine Sulphoxide		10 mg
LGCFOR0551.00	Phenacetin		10 mg
CERP-061	Phenacetin (1.0 mg/mL) in Acetonitrile		1 mL
LGCFOR0828.00	Phenazepam		10 mg
CERP-080	Phenazepam (1.0 mg/ml) in Acetonitrile		1 mL
NMIAD748	Phencyclidine HCl		50 mg
CERP-007	Phencyclidine (1.0 mg/ml) (PCP) in Methanol		1 mL
CERP-003	Phencyclidine-D5 (0.1 mg/ml) (PCP) in Methanol		1 mL
CERP-006	Phencyclidine-D5 (1.0 mg/ml) (PCP) in Methanol		1 mL
LGCFOR1275.47	2-Phenylethylamine Hydrochloride (Phenethylamine Hydrochloride, PEA HCl)		10 mg
CERP-045	Pheniramine (1.0 mg/ml) in Methanol		1 mL

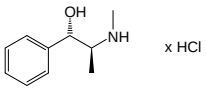
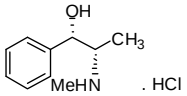
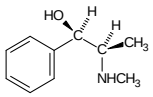
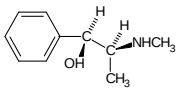
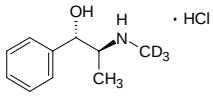
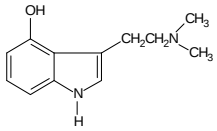
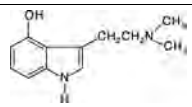
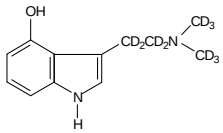
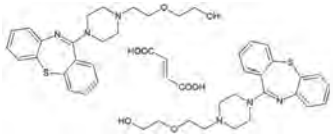
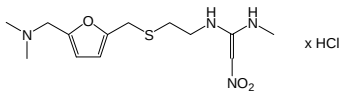
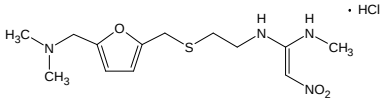
Code	Product		Unit
CERP-062	Pheniramine-D6 maleate salt (0.1 mg/ml) (as free base) in Methanol		1 mL
CERP-008	Phenobarbital (1.0 mg/ml) in Methanol		1 mL
CERP-018	Phenobarbital-D5 (0.1 mg/ml) in Methanol (deuterium label on ring)		1 mL
CERP-019	Phenobarbital-D5 (1.0 mg/ml) in Methanol (deuterium label on ring)		1 mL
CERP-004	Phenobarbital-D5 (0.1 mg/ml) in Methanol (deuterium label on side chain)		1 mL
CERP-017	Phenobarbital-D5 (1.0 mg/ml) in Methanol (deuterium label on side chain)		1 mL
NMIAD781	Phentermine HCl		100 mg
CERP-023	Phentermine (1.0 mg/ml) in Methanol		1 mL
NMIAD917	Phenylacetic acid - DRUG PRECURSOR		50 mg
LGCFOR0548.00	Phenylbutazone		10 mg
CERP-021	Phenylbutazone (1.0 mg/ml) in Acetonitril		1 mL
CERP-078	R(-)-Phenylephrine HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
NMIAD869	1-Phenyl-2-nitropropene		100 mg

Code	Product		Unit
LGCFOR0528.04	N-Phenyl-1-(2-phenylethyl)piperidin-4-amine		10 mg
LGCFOR0528.08	N-Phenyl-N-(piperidin-4-yl)propanamide		10 mg
LGCFOR0656.00	Phenylpropanolamine Hydrochloride (D,L-Norephedrine Hydrochloride)	 and enantiomer	10 mg
CERP-038	(±)-Phenylpropanolamine HCl (Norephedrine HCl) (1.0 mg/ml) (as free base) DRUG PRECURSOR in Methanol		1 mL
LGCFOR0770.00	Phenyltoloxamine Citrate		10 mg
LGCFOR0630.00	Phenytoin		10 mg
CERP-063	Phenytoin (1.0 mg/ml) in Methanol		1 mL
NMIAD539	Pholcodine		20 mg
LGCFOR0539.07	Piperazine Hexahydrate		10 mg
NMIAD870	Piperonal - DRUG PRECURSOR		100 mg
NMIAD881	Piperonyl alcohol		50 mg
LGCFOR1275.46	1-Piperonylpiperazine		10 mg
NMIAD756	(±)-4-Methoxyamphetamine HCl (PMA)		50 mg
CERP-050	PMA (p-Methoxyamphetamine) HCl (1.0 mg/mL) in Methanol		1 mL
NMIAD908	PMMA ((±)-4-Methoxymethamphetamine HCl)		10 mg
CERP-051	PMMA (p-Methoxymethamphetamine) HCl (1.0 mg/mL) in Methanol		1 mL
LGCFOR0651.00	Prasterone (DHEA, Dehydroepiandrosterone)		10 mg

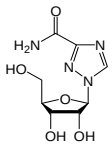
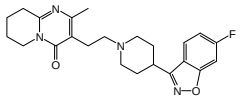
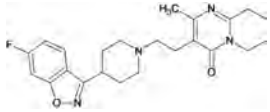
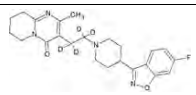
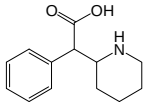
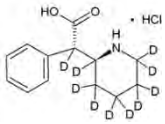
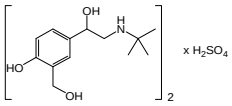
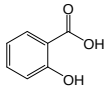
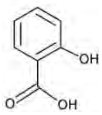
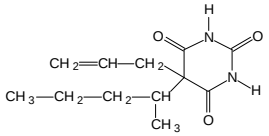
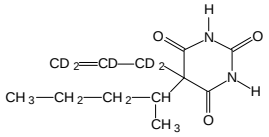
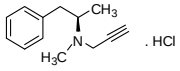
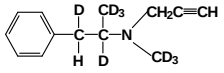
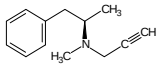
Code	Product		Unit
CERP-906	Prazepam (1.0 mg/ml) in Methanol		1 mL
CERP-905	Prazepam-D5 (0.1 mg/ml) in Methanol		1 mL
CERP-072	Pregabalin-D6 (0.1 mg/ml) in Methanol		1 mL
CERP-075	Primidone (1.0 mg/ml) in Methanol		1 mL
LGCFOR0596.00	Procaine Hydrochloride		10 mg
TRC-P755800	Prochlorperazine		10 mg
LGCFOR0290.00	Promazine HCl		10 mg
LGCFOR0290.01	Promazine Sulphoxide		10 mg
LGCFOR0412.00	Promethazine HCl		10 mg
CERP-044	Promethazine HCl		25 mg
CERP-910	Promethazine-D3 HCl		5 mg
LGCFOR0412.04	Promethazine Sulphoxide		10 mg
LGCFOR0222.00	Progesterone		10 mg
LGCFOR0043.00	Propranolol Hydrochloride		10 mg
CERP-055	Propanolol HCl (1.0 mg/ml) (as free base) in Acetonitril		1 mL

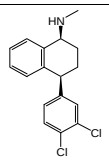
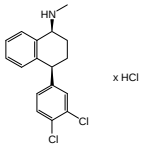
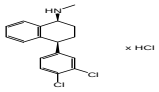
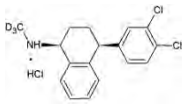
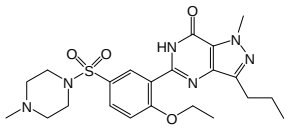
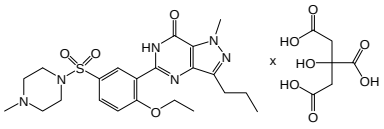
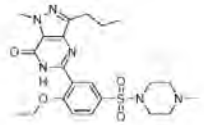
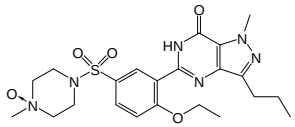
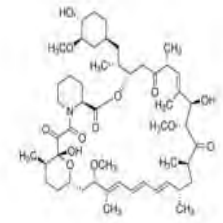
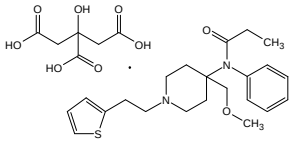
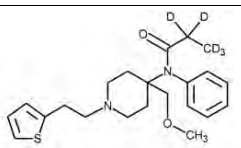
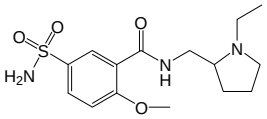
Drugs and metabolites of forensic and clinical interest

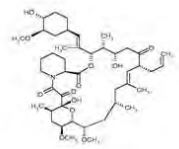
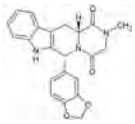
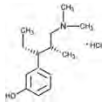
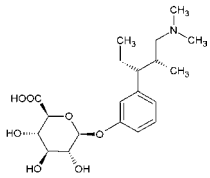
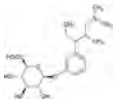
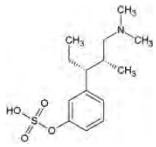
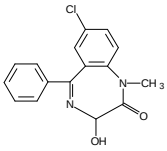
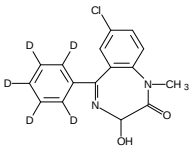
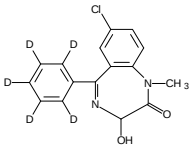
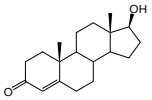
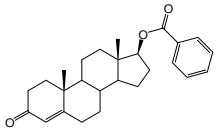
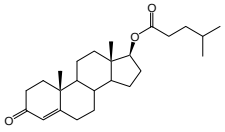
Code	Product		Unit
CERP-076	Propofol (1.0 mg/ml) in Methanol		1 mL
CERP-077	Propofol-D17 (0.1 mg/ml) in Methanol		1 mL
CERP-011	D-Propoxyphene (1.0 mg/ml) in Methanol		1 mL
CERP-901	(±)-Propoxyphene-D5 (0.1 mg/ml) in Methanol		1 mL
CERP-904	(±)-Propoxyphene-D5 (1.0 mg/ml) in Methanol		1 mL
CERP-913	(±)-Propoxyphene-D11 (0.1 mg/ml) in Methanol		1 mL
CERP-914	(±)-Propoxyphene-D11 (1.0 mg/ml) in Methanol		1 mL
NMIAM394	Propylhexedrine		50 mg
NMIAD495	(±)-N-Propyl-3,4-methylenedioxyamphetamine HCl		20 mg
NMIAD859	N-Propylnorlaudanosine		10 mg
CERP-903	Protriptyline HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
CERP-902	Protriptyline-D3 (0.1 mg/ml) in Methanol		1 mL
NMIAD397	(-)-Pseudoephedrine base - DRUG PRECURSOR		100 mg

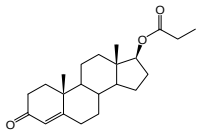
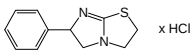
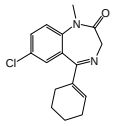
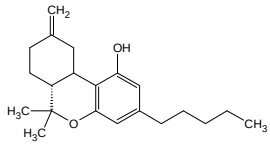
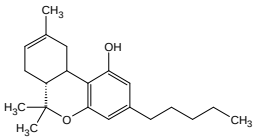
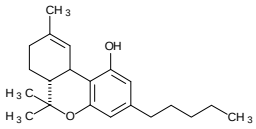
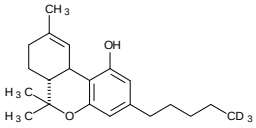
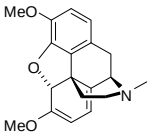
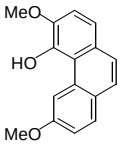
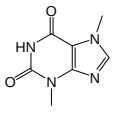
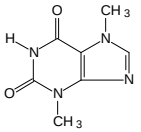
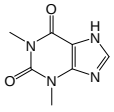
Code	Product		Unit
LGCFOR2115.00	(+)-Pseudoephedrine HCl (DRUG PRECURSOR)		10 mg
NMIAD775	(+)-Pseudoephedrine HCl - DRUG PRECURSOR		100 mg
CERP-036	(-)-Pseudoephedrine (1.0 mg/ml) in Methanol - DRUG PRECURSOR		1 mL
CERP-035	(+)-Pseudoephedrine (1.0 mg/ml) in Methanol - DRUG PRECURSOR		1 mL
CERP-056	Pseudoephedrine-D3 HCl (0.1 mg/ml) (as free base) in Methanol		1 mL
ALL-013641	Psilocybin (0.1 mg/mL) (base) in Methanol		1 mL
CERP-048	Psilocin		5 mg
NMIAD726	Psilocin		10 mg
THC-1137A	Psilocin (1 mg/ mL) in Acetonitrile		1 mL
ALL-013661	Psilocin (0.1 mg/ml) (base) in Methanol		1 mL
CERP-049	Psilocin-D10		5 mg
TRC-Q510000	Quetiapine hemifumarate		1 g
CERQ-001	Quetiapine fumarate, 1.0 mg/mL (as free base) in Methanol		1 mL
TRC-Q694000	Quinine		1 g
EJ-Q646-0311	Quinine-D3		unit
TRC-Q694010	Quinine-1 oxide		2.5 mg
TRC-Q694012	Quinine 1-oxide-D3		1 mg
TRC-Q694015	Quinine N-oxide		2.5 mg
LGCFOR0086.00	Ranitidine Hydrochloride		10 mg
CERR-002	Ranitidine HCl		250 mg
TRC-R142000	Reboxetine mesylate		10 mg
TRC-R142002	Reboxetine mesylate-D5		1 mg
THC-1375M	RCS-4 (1 mg/ml) in Methanol		1 mL
THC-1374M	RCS-8 (1 mg/ml) in Methanol		1 mL

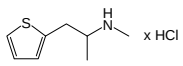
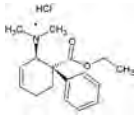
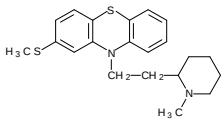
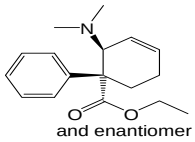
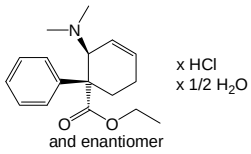
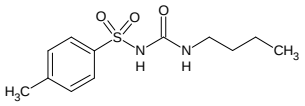
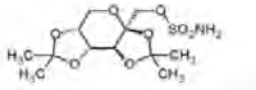
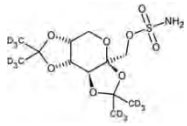
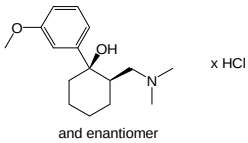
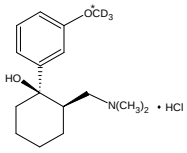
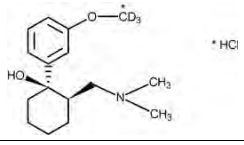
Drugs and metabolites of forensic and clinical interest

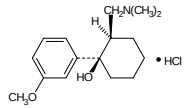
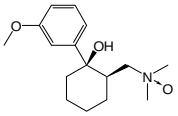
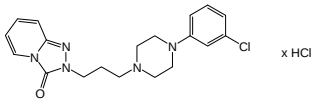
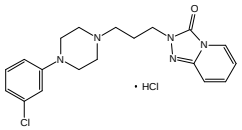
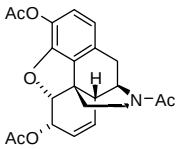
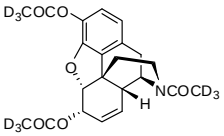
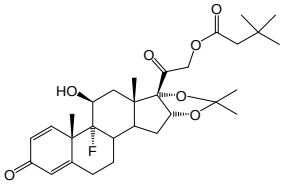
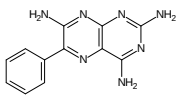
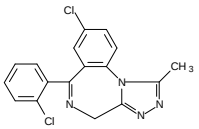
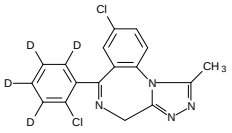
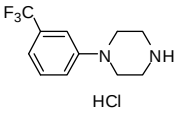
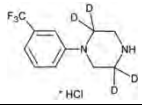
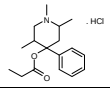
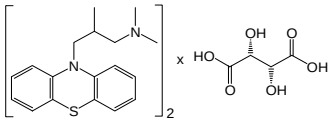
Code	Product		Unit
LGCFOR0542.00	Ribavirin		10 mg
LGCFOR0491.00	Risperidone		10 mg
CERR-006	Risperidone (1.0 mg/ml) in Methanol		1 mL
TRC-R525002	Risperidone-D4		2.5 mg
CERR-013	Risperidone-D4 (0.1 mg/ml) in Methanol		1 mL
LGCFOR1031.04	Ritalinic Acid		10 mg
CERR-014	(±)-threo-Ritalinic acid-D10 HCl (0.1 mg/ml) (as free base) in Methanol		1 mL
TRC-R535000	Ritonavir		10 mg
TRC-R535002	Ritonavir-D6		0.5 mg
TRC-R535003	Ritonavir-13C3		0.5 mg
LGCFOR0381.00	Salbutamol Sulphate		10 mg
LGCFOR0045.00	Salicylic Acid		10 mg
CERS-019	Salicylic acid (1.0 mg/mL) in Acetonitrile		1 mL
TRC-S088127	Salicylic acid-D4		5 mg
TRC-S135000	Saquinavir mesylate		10 mg
TRC-S135002	Saquinavir-D9		1 mg
CERS-002	Secobarbital (1.0 mg/ml) in Methanol		1 mL
CERS-001	Secobarbital-D5 (0.1 mg/ml) in Methanol		1 mL
NMIAD822	Selegiline HCl		50 mg
CERS-004	Selegiline-D8 (0.1 mg/ml) in Methanol		1 mL
CERS-003	R(-)-Selegiline ((-)-Deprenyl) (1.0 mg/ml) in Methanol		1 mL

Code	Product		Unit
LGCFOR0317.00	Sertraline		10 mg
LGCFOR0317.01	Sertraline HCl		10 mg
CERS-021	Sertraline HCl (1.0 mg/mL) (as free base) in Methanol		1 mL
CERS-026	Sertraline-D3 HCl (0.1 mg/ml) (as free base) in Methanol		1 mL
LGCFOR0254.09	Sildenafil		10 mg
LGCFOR0254.00	Sildenafil citrate		10 mg
CERS-010	Sildenafil (1.0 mg/ml) in Methanol		1 mL
EJ-191-0631	Sildenafil-D8		unit
LGCFOR0254.04	Sildenafil N-Oxide		10 mg
CERS-015	Sirolimus (Rapamycin) (1.0 mg/mL) in Acetonitrile		1 mL
TRC-S685250	Stavudine		10 mg
TRC-S685252	Stavudine-D3		1 mg
CERS-008	Sufentanil citrate (0.1 mg/ml) (as free base) in Methanol		1 mL
CERS-018	Sufentanil-D5 (0.1 mg/ml) in Methanol		1 mL
LGCFOR0051.00	Sulpiride		10 mg

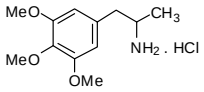
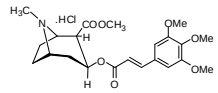
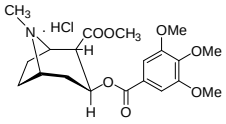
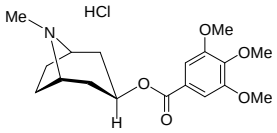
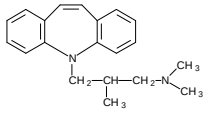
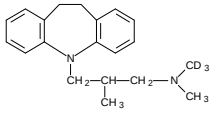
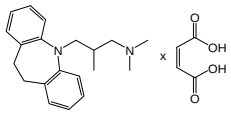
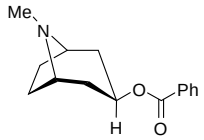
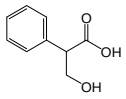
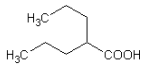
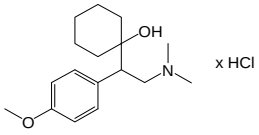
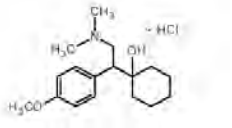
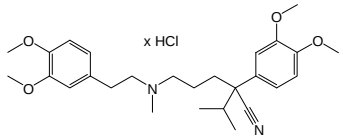
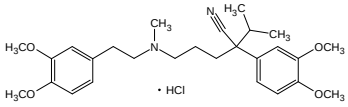
Code	Product		Unit
CERT-049	Tacrolimus (1.0 mg/mL) in Acetonitrile		1 mL
CERT-072	Tadalafil (1.0 mg/ml) in Acetonitrile		1 mL
CERT-058	Tapentadol HCl (1.0 mg/mL (as free base) in Methanol		1 mL
CERT-060	Tapentadol-beta-D-glucuronide (0.1 mg/ml) 1:1 Acetonitrile:Water		1 mL
CERT-067	Tapentadol-D3-beta-D-glucuronide (0.1 mg/ml) in 1:1 Acetonitrile:Water		1 mL
CERT-061	Tapentadol-O-sulfate (0.1 mg/ml) (as free acid) in Methanol		1 mL
CERT-907	Temazepam (1.0 mg/ml) in Methanol		1 mL
CERT-902	Temazepam-D5 (0.1 mg/ml) in Methanol		1 mL
CERT-912	Temazepam-D5 (1.0 mg/ml) in Methanol		1 mL
CERT-050	Temazepam glucuronide lithium salt (0.1 mg/ml) (as free acid) in Methanol		1 mL
TRC-T018500	Tenofovir		5 mg
TRC-T018502	Tenofovir-D6		1 mg
TRC-T018510	Tenofovir diphosphate		1 mg
LGCFOR0323.00	Testosterone		10 mg
LGCFOR0493.00	Testosterone Benzoate		10 mg
LGCFOR0863.00	Testosterone Isocaproate		10 mg

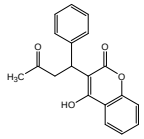
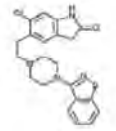
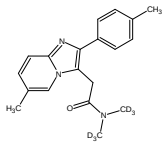
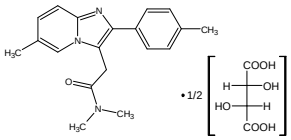
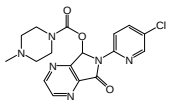
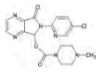
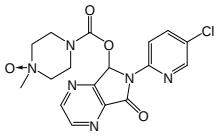
Code	Product	Unit
LGCFOR0897.00	Testosterone Propionate 	10 mg
LGCFOR0703.00	Tetramisole Hydrochloride 	10 mg
LGCFOR0091.00	Tetrazepam 	10 mg
TRC-T444900	Tipranavir	1 mg
TRC-T444902	Tipranavir-D4	1 mg
CERT-033	Exo-THC (1.0 mg/ml) (delta 9(11)-Tetrahydrocannabinol) in Methanol 	1 mL
CERT-032	(-)-delta 8-THC (1.0 mg/ml) in Methanol 	1 mL
THC-004	(-)-delta 9 THC (Dronabinol) (0.1mg / mL) in Methanol	1 mL
CERT-005	(-)-delta 9-THC (Dronabinol) (1.0 mg/ml) in Methanol 	1 mL
CERT-003	(-)-delta 9-THC-D3 (0.1 mg/ml) (Dronabinol) in Methanol 	1 mL
THC-1298-5	THCA-A (1-hydroxy-6,6,9-trimethyl-3-pentyl-6a,7,8,10a-tetrahydro-6H-benzo[c]chromene-2-carboxylic acid)	5 mg
THC-1298M	THCA-A (Tetrahydrocannabinolic acid A) (1.0 mg / ml) in Methanol	1 mL
NMIAD731B	Thebaine free base 	20 mg
NMIAD715	Thebaol 	5 mg
LGCFOR0577.00	Theobromine 	10 mg
CERT-013	Theobromine (0.1 mg/ml) in Methanol 	1 mL
LGCFOR0176.00	Theophylline 	10 mg
TRC-T345600	Thienyl fentanyl HCl	1 mg

Code	Product		Unit
TRC-T345602	Thienyl fentanyl-D3 HCl		1 mg
LGCFOR1275.59	1-(Thiophen-2-yl)-2-methylaminopropane Hydrochloride (Methiopropamine Hydrochloride, MPA HCl)		10 mg
CERT-068	Tilidine (1.0 mg/ml) in Methanol		1 mL
CERT-905	Thioridazine (1.0 mg/ml) in Methanol		1 mL
LGCFOR0134.05	Tilidine		10 mg
LGCFOR0134.00	Tilidine HCl hemihydrate		10 mg
CERT-036	Tolbutamide (1.0 mg/mL) in Acetonitrile		1 mL
CERT-039	Topiramate (1.0 mg/ml) in Methanol		1 mL
CERT-041	Topiramate-D12 (0.1 mg/mL) in Methanol		1 mL
CERT-062	Tox screen test kit (test mix-9 and internal standard mix-3) containing the following components in Methanol: Chlorpromazine-D3 Maleate Haloperidol-D4 Prazepam-D5 Amiodarone HCl (±)-Amphetamine Codeine Caffeine Diazepam Doxepin HCl Furosemide Haloperidol Morphine in Methanol		1.2 mL
LGCFOR0007.00	Tramadol HCl		10 mg
CERT-029	Tramadol-13C, D3 HCl (0.1 mg/ml) (as free base) in Methanol		1 mL
CERT-020	Tramadol-13C, D3 HCl (1.0 mg/mL) (as free base) in Methanol		1 mL

Code	Product		Unit
CERT-027	cis-Tramadol HCl (1.0 mg/ml) in Methanol		1 mL
LGCFOR0007.11	Tramadol N-Oxide	 and enantiomer	10 mg
LGCFOR0421.00	Trazodone HCl		10 mg
CERT-030	Trazodone HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
NMIAD863	Triacetylnormorphine		5 mg
NMIAD894	Triacetylnormorphine-D9		5 mg
LGCFOR0306.00	Triamcinolone Hexacetonide		10 mg
CERT-014	Triamterene		100 mg
CERT-910	Triazolam (1.0 mg/ml) in Methanol		1 mL
CERT-908	Triazolam-D4 (0.1mg/ml) in Methanol		1 mL
NMIAD906	m-Trifluoromethylphenylpiperazine HCl		50 mg
CERT-045	Trifluoromethylphenylpiperazine (TFMPP) HCl (as free base) (1.0 mg/ml) in Methanol		1 mL
CERT-920	Trifluoromethylphenylpiperazine-D4 (TFMPP) HCl (0.1 mg/ml) in Methanol		1 mL
NMIAM605	Trimeperidine HCl		20 mg
LGCFOR0958.00	Trimeprazine Tartrate		10 mg

Drugs and metabolites of forensic and clinical interest

Code	Product		Unit
NMIAD778	(±)-3,4,5-Trimethoxyamphetamine HCl (TMA)		20 mg
NMIAD864	trans-3,4,5-Trimethoxycinnamoyl cocaine HCl (in progress)		unit
NMIAD855	3,4,5-Trimethoxycocaine HCl		20 mg
NMIAD858	3,4,5-Trimethoxytropacocaine HCl		10 mg
CERT-904	Trimipramine (1.0 mg/ml) in Methanol		1 mL
CERT-903	Trimipramine-D3 (0.1 mg/ml) in Methanol		1 mL
LGCFOR0240.00	Trimipramine maleate		10 mg
NMIAD846	Tropacocaine HCl		20 mg
LGCFOR0601.03	Tropic Acid		10 mg
CERV-006	Valproic acid (0.1 mg/ml) in Methanol		1 mL
LGCFOR0393.00	Venlafaxine HCl		10 mg
CERV-004	Venlafaxine HCl (1.0 mg/ml) in Methanol		1 mL
CERV-009	Venlafaxine-D6 HCl (0.1 mg/ml) (as free base) in Methanol		1 mL
LGCFOR0022.00	Verapamil Hydrochloride		10 mg
CERV-002	Verapamil HCl (1.0 mg/ml) (as free base) in Methanol		1 mL
THC-1274-M	Pravadoline (WIN 48,098) (1 mg/ml) in Methanol		1 mL
THC-1276-10	WIN 55,212-2		10 mg
THC-1276-M	WIN 55,212-2 (1 mg/ml) in Methanol		1 mL

Code	Product		Unit
CERW-003	Warfarin (1.0 mg/ml) in Acetonitril		1 mL
TRC-Z140000	Zalcitabine		10 mg
TRC-Z145000	Zaleplon		100 mg
TRC-Z145002	Zaleplon-D5		1 mL
CERZ-002	Ziprasidone (1.0 mg/ml) in 1,2-Dimethoxyethane		1 mL
CERZ-001	Zolpidem-D6 (0.1 mg/ml) in Methanol		1 mL
CERZ-901	Zolpidem L-(+)-hemitartrate (1 mg/ml) (as free base) in Methanol		1 mL
LGCFOR0149.00	Zopiclone		10 mg
CERZ-003	Zopiclone (1.0 mg/mL) in Methanol		1 mL
LGCFOR0149.01	Zopiclone Oxide		10 mg

Explosives

Code	Product	Unit
CERB-002	1,2,4-Butanetriol trinitrate 100 µg/mL in Acetonitrile	1 mL
CERB-003	1,2,4-Butanetriol-1,4-dinitrate 100 µg/mL in Acetonitrile	1 mL
CERD-002	1,2-Dinitroglycerin 100 µg/mL in Acetonitrile	1 mL
CERD-003	1,3-Dinitroglycerin 100 µg/mL in Acetonitrile	1 mL
CERERD-148S	Dinitroethylene glycol 1000 µg/mL in Acetonitrile	1.2 mL
CERD-004	Dinitroethylene glycol (EGDN) 100 µg/mL in Acetonitrile	1 mL
CERD-010	1,2-Dinitroglycerin 1000 µg/mL in Acetonitrile	1 mL
CERD-011	1,3-Dinitroglycerin 1000 µg/mL in Acetonitrile	1 mL
CERERA-017	2-Amino-4,6-dinitrotoluene (3,5-Dinitro-2-methylaniline)	100 mg
CERERA-018	4-Amino-2,6-dinitrotoluene (3,5-Dinitro-4-methylaniline)	100 mg
CERERA-022S	2-Amino-4,6-dinitrotoluene 1000 µg/mL in Acetonitrile	1.2 mL
CERERA-023S	4-Amino-2,6-dinitrotoluene 1000 µg/mL in Acetonitrile	1.2 mL
CERERD-032S	1,3-Dinitrobenzene 1000 µg/mL in Acetonitrile	1.2 mL
CERERD-033S	2,4-Dinitrotoluene 1000 µg/mL in Acetonitrile	1.2 mL
CERERD-152S	2,4-Dinitrotoluene 10 mg/mL in Acetonitrile	5 mL
CERERD-034S	2,6-Dinitrotoluene 1000 µg/mL in Acetonitrile	1.2 mL
CERERD-109S	3,4-Dinitrotoluene 1000 µg/mL in Methanol	1.2 mL
CERERD-079	2,2'-Dinitrodiphenylamine	250 mg
CERERD-138	2,4-Dinitrodiphenylamine	250 mg
CERERD-080	2,4'-Dinitrodiphenylamine	250 mg
CERERD-081	4,4'-Dinitrodiphenylamine	250 mg
CERERD-115S	Diphenylamine 5000 µg/mL in Methanol	1.2 mL
CERERE-032S	Ethyl centralite 500 µg/mL in Methanol	1.2 mL
CERERR-001S	Hexogen (RDX) 1000 µg/mL in Acetonitrile	1.2 mL
CERERN-004S	Nitrobenzene 1000 µg/mL in Acetonitrile	1.2 mL
CERERN-005S	2-Nitrotoluene 1000 µg/mL in Acetonitrile	1.2 mL
CERERN-007S	4-Nitrotoluene 1000 µg/mL in Acetonitrile	1.2 mL
CERERT-021S	Tetryl 1000 µg/mL in Acetonitrile	1.2 mL
CERERT-022S	2,4,6-Trinitrotoluene 1000 µg/mL in Acetonitrile	1.2 mL
CERERT-023S	1,3,5-Trinitrobenzene 1000 µg/mL in Acetonitrile	1.2 mL
CERM-001	1-Mononitroglycerin 100 µg/mL in Acetonitrile	1 mL
CERM-002	2-Mononitroglycerin 100 µg/mL in Acetonitrile	1 mL
CERM-077	1-Mononitroglycerin 1000 µg/mL in Acetonitrile	1 mL
CERM-078	2-Mononitroglycerin 1000 µg/mL in Acetonitrile	1 mL
CERERH-004S	Octogen (HMX) 1000 µg/mL in Acetonitrile	1.2 mL
CERP-037	Nitropenta 1000 µg/mL in Acetonitrile	1 mL
CERERG-006	Single based gun propellant surveillance standard (nine components in Acetonitrile)	unit
CERT-002	Trinitroglycerin 1000 µg/mL in Acetonitrile	1 mL
CERT-021	Trinitroglycerin 1% w/w in Propylene glycol	1 mL
CERT-022	Trinitroglycerin 1% w/w in Propylene glycol	5 x 0.25 mL
CERERE-011	Method 8330 Calibration Standard Solution A 100 µg/mL of each analyte in Acetonitrile 2-Amino-4,6-dinitrotoluene 1,3-Dinitrobenzene 2,4-Dinitrotoluene Hexogen (RDX) Nitrobenzene Octogen (HMX) 1,3,5-Trinitrobenzene 2,4,6-Trinitrotoluene (TNT)	1.2 mL
CERERE-012	Method 8330 Calibration Standard Solution B 100 µg/mL of each analyte in Acetonitrile 4-Amino-2,6-dinitrotoluene 2,6-Dinitrotoluene 2-Nitrotoluene 3-Nitrotoluene 4-Nitrotoluene Tetryl	1.2 mL

Code	Product		Unit
CERERE-021	Method 8330 Stock Solution		1.2 mL
	200 µg/mL of each analyte in Acetonitrile		
	2-Amino-4,6-dinitrotoluene	2-Nitrotoluene	
	4-Amino-2,6-dinitrotoluene	3-Nitrotoluene	
	1,3-Dinitrobenzene	4-Nitrotoluene	
	2,4-Dinitrotoluene	Octogen (HMX)	
	2,6-Dinitrotoluene	Tetryl	
	Hexogen (RDX)	1,3,5-Trinitrobenzene	
	Nitrobenzene	2,4,6-Trinitrotoluene (TNT)	
CERERE-042	Method 529 Explosives Stock Standard		1.2 mL
	2000 µg/mL of each analyte in Ethyl acetate		
	2-Amino-4,6-dinitrotoluene	2-Nitrotoluene	
	4-Amino-2,6-dinitrotoluene	3-Nitrotoluene	
	3,5-Dinitroaniline	4-Nitrotoluene	
	1,3-Dinitrobenzene	1,3,5-Trinitrobenzene	
	2,4-Dinitrotoluene	2,4,6-Trinitrotoluene (TNT)	
	2,6-Dinitrotoluene	RDX	
	Nitrobenzene	Tetryl	

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- Ephedra
- Ginseng
- Kava Kava
- Reishi Mushroom
- Rosemary
- Soysaponins
- St. John's Wort
- Tribulus Terrestris
- Valerian
- ... and many more

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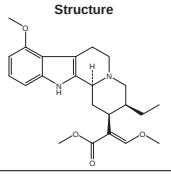
Certificate of Analysis

PRODUCT	Mitragynine
PART NUMBER	00013890
STANDARD TYPE	Primary (P)
LOT NUMBER	00013890-1741
REPORT NUMBER	CDXA-RSS-XXXX
CDXA NUMBER	CDXA-08-1741
DATE OF SAMPLE	07/30/2008
DATE OF REPORT	09/29/2008

Structure



NAME	Mitragynine
OTHER NAME	16,17-Didehydro-9,17-dimethoxy-17,18-seco-20-α-yohimban-16-carboxylic acid methyl ester; Methyl (E)-2-[(2S,3S,12bS)-3-ethyl-8-methoxy-1,2,3,4,6,7,12,12b-octahydroindolo[3,2-h]quinolizin-2-yl]-3-methoxyprop-2-enoate
CHEMICAL FORMULA	$C_{23}H_{30}N_2O_4$
MOLECULAR WEIGHT (MW)	398.50
PUBLISHED MELTING POINT	102-106 °C
CAS NUMBER	[4098-40-2]
EINECS	NA
CHEMICAL FAMILY	Alkaloids
FROM	NA

ANALYTICAL RESULTS

TEST	METHOD	SPECIFICATION	RESULT
Adjusted Purity	NA	NA	94.3%
HPLC	CDXA-CPM-056-00	NA	99.1%
NMR	99.1-CD-1.0-000122	Conforms	Conforms
Mass Spectrum	Direct Infusion, ESI (+)	Conforms	Conforms
Residual Solvent	99.1-CD-2.0-000115	NA	Isopropyl alcohol – 3.6% Methanol – 0.1%
Water	99.1-CDXA-1.0-000094	NA	1.1%
Appearance	NA	NA	White Powder

ADJUSTED PURITY: 94.3% IS BASED ON (100% - 1.1% WATER - 3.7% SOLVENTS) X 99.1% HPLC

STORAGE CONDITIONS

STORAGE	-20 °C in a dry place.
EXPIRATION DATE	07/2013 under the above conditions.

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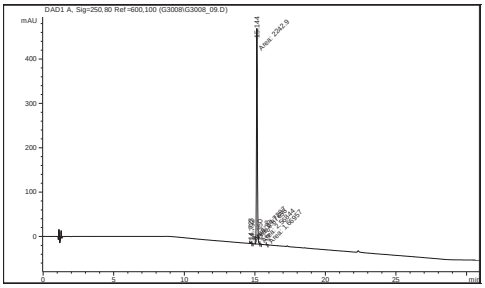
ANALYTICAL CONDITIONS

INSTRUMENT	AGILENT 1100 HPLC UV-VIS (DAD) DETECTOR (YOUNG), FINNIGAN LCQ-DECA (CURIE)
COLUMN	Phenomenex Luna C18(2) 150 x 2.00 mm, 5 µm particle size; S/N 412618-4
MOBILE PHASE	A - 0.1% Trifluoroacetic acid in Milli-Q water, B - Acetonitrile; Isocratic 5% B for 5 minutes, then increasing to 95% B over 20 minutes. Hold at 95% B for 5 minutes.
COLUMN TEMP.	60 °C
FLOW RATE	0.4 mL/minute
INJECTION VOL.	0.5 µL
INJECTION CONC.	0.7 mg/mL in methanol
DETECTION	250 ± 40 nm

HPLC CHROMATOGRAM OF MITRAGYNINE (CDXA-08-1741)



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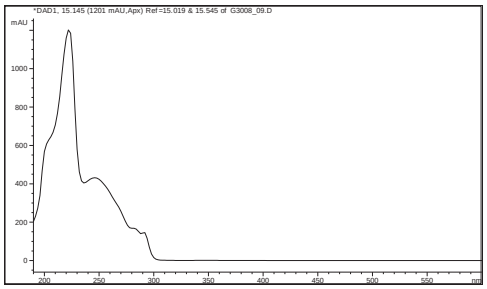
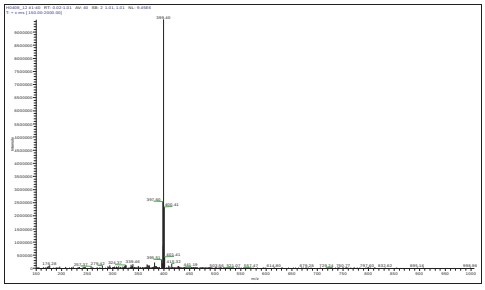
UV SPECTRUM AT RT = 15.1 MINUTES



MASS SPECTRUM OF MITRAGYNINE (CDXA-08-1741)



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Page 3 of 4

ChromaDex™ setting THE standard
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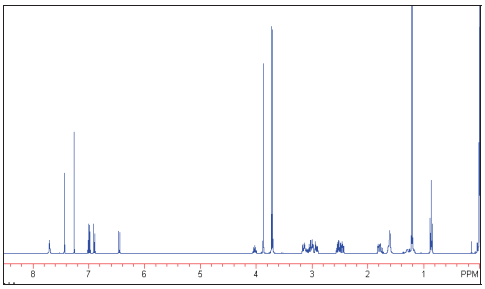
NMR SPECTRUM OF MITRAGYNINE (CDXA-08-1741) IN CHLOROFORM



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Page 4 of 4

Phytos

Code	Product	Unit
CDX-00001339-005	Aconite standards kit contains: Aconitine Bulleyaconitine A Hypaconitin Lappaconitine	4 x 5 mg
CDX-00024920-010	7-Xylotaxol	10 mg
CDX-00025010-005	Yangonin	5 mg
CDX-00025010-010	Yangonin	10 mg
CDX-00025509-010	Yohimbine HCl	10 mg
CDX-00025509-025	Yohimbine HCl	25 mg
CDX-00025510-025	Yohimbine HCl	25 mg
CDX-00025512-010	alpha-Yohimbine HCl (Rauwolscine HCl)	10 mg
CDX-00025512-025	alpha-Yohimbine HCl (Rauwolscine HCl)	25 mg
CDX-00001006-010	L-Abrine	10 mg
CDX-00001006-050	L-Abrine	50 mg
CDX-00001151-005	13-acetyl-9-dihydrobaccatin III	5 mg
CDX-00001151-010	13-acetyl-9-dihydrobaccatin III	10 mg
CDX-00001121-005	7-Acetylbaccatin III	5 mg
CDX-00001121-010	7-Acetylbaccatin III	10 mg
CDX-00001302-005	2'-Acetyltaxol	5 mg
CDX-00001302-010	2'-Acetyltaxol	10 mg
CDX-00001303-005	2',7-Bis-Acetyltaxol	5 mg
CDX-00001303-010	2',7-Bis-Acetyltaxol	10 mg
CDX-00001304-005	7-Acetyltaxol	5 mg
CDX-00001339-010	Aconite standards kit contains: Aconitine Bulleyaconitine A Hypaconitin Lappaconitine	4 x 10 mg
CDX-00001340-005	Aconitine	5 mg
CDX-00001340-010	Aconitine	10 mg
CDX-00001492-050	Ajmalicine HCl	50 mg
CDX-00001491-010	Ajmalicine	10 mg
CDX-00001491-050	Ajmalicine	50 mg
CDX-00001495-010	Ajmaline	10 mg
CDX-00001495-025	Ajmaline	25 mg
CDX-00001645-001	alpha-Amanitin	1 mg
CDX-00001645-010	alpha-Amanitin	10 mg
CDX-00001747-005	beta-Amyrin acetate	5 mg
CDX-00001740-010	a-Amyrin	10 mg
CDX-00001745-010	B-Amyrin	10 mg
CDX-00001671-005	Anisatin	5 mg
CDX-00011002-005	Aristolochic acid A	5 mg
CDX-00011002-010	Aristolochic acid A	10 mg
CDX-00011012-005	Aristolochic acid B	5 mg
CDX-00011012-010	Aristolochic acid B	10 mg
CDX-00011004-005	Aristolochic acid C	5 mg
CDX-00001099-005	Aristolochic acid standards kit contains: Aristolochic acid A Aristolochic acid B Aristolochic acid C	3 x 5 mg

Code	Product	Unit
CDX-00001099-010	Aristolochic acid standards kit contains: Aristolochic acid A Aristolochic acid B Aristolochic acid C	3 x 10 mg
CDX-00011074-010	Atropine sulfate	10 mg
CDX-00011074-025	Atropine sulfate	25 mg
CDX-00011075-001	Atropine sulfate	1 g
CDX-00011075-010	Atropine sulfate	10 mg
CDX-00002003-005	Baccatin I1-Hydroxy	5 mg
CDX-00002003-010	Baccatin I1-Hydroxy	10 mg
CDX-00002004-005	Baccatin III	5 mg
CDX-00002004-010	Baccatin III	10 mg
CDX-00002059-010	Belladonna standards kit contains: Homatropine L-Hyoscyamine Atropine sulfate Scopolamine HBr Tropine	5 x 10 mg
CDX-00002170-010	N-Benzyloxymethylphenylisoserine ethylester	10 mg
CDX-00002170-025	N-Benzyloxymethylphenylisoserine ethylester	25 mg
CDX-00002171-010	N-Benzyloxymethylphenylisoserine methylester	10 mg
CDX-00002171-025	N-Benzyloxymethylphenylisoserine methylester	25 mg
CDX-00002201-010	Berberine chloride	10 mg
CDX-00002201-025	Berberine chloride	25 mg
CDX-00002200-005	Berberine chloride	5 mg
CDX-00002200-010	Berberine chloride	10 mg
CDX-00002469-005	Bulleyaconitine A	5 mg
CDX-00002469-010	Bulleyaconitine A	10 mg
CDX-00003360-005	Cephalomannine	5 mg
CDX-00003360-010	Cephalomannine	10 mg
CDX-00004462-005	7-Epi-Cephalomannine	5 mg
CDX-00004462-010	7-Epi-Cephalomannine	10 mg
CDX-00003396-005	Chelerythrine Chloride	5 mg
CDX-00003396-010	Chelerythrine chloride	10 mg
CDX-00003395-005	Chelerythrine Chloride	5 mg
CDX-00003400-010	(+)-Chelidonine Hcl	10 mg
CDX-00003406-010	(+)-Chelidonine	10 mg
CDX-00003406-025	(+)-Chelidonine	25 mg
CDX-00003405-010	(+)-Chelidonine	10 mg
CDX-00003405-025	(+)-Chelidonine	25 mg
CDX-00003735-005	DL-Coniine HCl	5 mg
CDX-00003735-025	DL-Coniine HCl	25 mg
CDX-00003730-025	DL-Coniine	25 mg
CDX-00003746-010	Convallatoxin	10 mg
CDX-00003745-010	Convallatoxin	10 mg
CDX-00003745-025	Convallatoxin	25 mg
CDX-00003765-010	Coptisine chloride	10 mg
CDX-00003770-005	Coptisine chloride	5 mg
CDX-00003770-010	Coptisine chloride	10 mg
CDX-00003812-010	Corynanthine (Rauhimbine)	10 mg
CDX-00003812-025	Corynanthine (Rauhimbine)	25 mg
CDX-00003813-025	Corynanthine HCl	25 mg
CDX-00003983-005	Cyclopamine	5 mg
CDX-00031065-005	Cytisine (Laburnin)	5 mg

Code	Product	Unit
CDX-00031065-010	Cytisine (Laburnin)	10 mg
CDX-00004024-005	Danshen Tanshinone standards kit contains: Cryptotanshinone Tanshinone I Tanshinone IIA Dihydrotanshinone	4 x 5 mg
CDX-00004024-010	Danshen Tanshinone standards kit contains: Cryptotanshinone Tanshinone I Tanshinone IIA Dihydrotanshinone	4 x 10 mg
CDX-00004060-005	10-Deacetyl-7-xylotaxol	5 mg
CDX-00004060-010	10-Deacetyl-7-xylotaxol	10 mg
CDX-00004066-010	10-Deacetylbaccatin V	10 mg
CDX-00004065-005	10-Deacetylbaccatin-III	5 mg
CDX-00004065-010	10-Deacetylbaccatin-III	10 mg
CDX-00004080-005	7-(Triethylsil)-10-deacetylbaccatin-III	5 mg
CDX-00004080-010	7-(Triethylsil)-10-deacetylbaccatin-III	10 mg
CDX-00004075-005	13-Deacetyltaxchinin I	5 mg
CDX-00004075-010	13-Deacetyltaxchinin I	10 mg
CDX-00004078-005	10-Deacetyltaxol B	5 mg
CDX-00004078-010	10-Deacetyltaxol B	10 mg
CDX-00004079-005	10-Deacetyltaxol C	5 mg
CDX-00004079-010	10-Deacetyltaxol C	10 mg
CDX-00004059-005	10-Deacetyltaxol	5 mg
CDX-00004059-010	10-Deacetyltaxol	10 mg
CDX-00004077-005	7-Epi-10-deacetyltaxol	5 mg
CDX-00004077-010	7-Epi-10-deacetyltaxol	10 mg
CDX-00004076-005	7-Epi-10-oxo-10-deacetyltaxol	5 mg
CDX-00004076-010	7-Epi-10-oxo-10-deacetyltaxol	10 mg
CDX-00004236-005	Desmethoxyyangonin	5 mg
CDX-00004236-010	Desmethoxyyangonin	10 mg
CDX-00004461-005	2"",3""-Dihydrocephalomannine	5 mg
CDX-00004461-010	2"",3""-Dihydrocephalomannine	10 mg
CDX-00004476-005	Dihydrokavain	5 mg
CDX-00004476-010	Dihydrokavain	10 mg
CDX-00004477-010	Dihydromethysticin	10 mg
CDX-00004477-005	Dihydromethysticin	5 mg
CDX-00005018-020	Echimidine	20 mg
CDX-00005115-005	7-Epitaxol C	5 mg
CDX-00005115-010	7-Epitaxol C	10 mg
CDX-00005114-010	2'-Epitaxol	10 mg
CDX-00005114-025	2'- Epitaxol	25 mg
CDX-00005117-010	7-Epitaxol solution (2.4 mg/ml)	10 mL
CDX-00005116-005	7-Epitaxol	5 mg
CDX-00005116-010	7-Epitaxol	10 mg
CDX-00007241-025	Glaucine HBr	25 mg
CDX-00007241-100	Glaucine HBr	100 mg
CDX-00008041-001	Harmaline HCl	1 g
CDX-00008041-100	Harmaline HCl	100 mg
CDX-00008040-001	Harmaline	1 g
CDX-00008040-100	Harmaline	100 mg
CDX-00008051-500	Harmine HCl	500 mg
CDX-00008050-025	Harmine HCl	25 mg

Code	Product	Unit
CDX-00008050-100	Harmine HCl	100 mg
CDX-00008046-100	Harmine	100 mg
CDX-00008046-500	Harmine	500 mg
CDX-00008045-025	Harmine	25 mg
CDX-00008045-100	Harmine	100 mg
CDX-00008326-025	Homatropine	25 mg
CDX-00008326-010	Homatropine	10 mg
CDX-00008624-005	7-hydroxymitragynine	5 mg
CDX-00008720-010	3'-P-Hydroxytaxol	10 mg
CDX-00008876-010	Hyoscyamine Sulfate	10 mg
CDX-00008875-010	L-Hyoscyamine	10 mg
CDX-00008875-050	L-Hyoscyamine	50 mg
CDX-00008900-005	Hypaconitine	5 mg
CDX-00008900-010	Hypaconitine	10 mg
CDX-00009025-002	Ibotenic Acid	2 mg
CDX-00030964-005	Japanese star anis (Illicium anisatum) fruit VBRM	5 g
CDX-00010200-010	Jervine	10 mg
CDX-00010200-050	Jervine	50 mg
CDX-00011310-005	Kava Kava standards kit contains: Desmethoxyyangonin Dihydrokavain Dihydromethysticin DL-Kavain Methysticin Yangonin	6 x 5 mg
CDX-00011310-010	Kava Kava standards kit contains: Desmethoxyyangonin Dihydrokavain Dihydromethysticin DL-Kavain Methysticin Yangonin	6 x 10 mg
CDX-00011300-005	DL-Kavain	5 mg
CDX-00011300-010	DL-Kavain	10 mg
CDX-00011305-001	DL-Kavain	1 g
CDX-00031085-001	Kratom Balinese (Mitragyna speciosa) leaf BRM	1 g
CDX-00031086-250	Kratom Dominican (Mitragyna speciosa) leaf BRM	250 mg
CDX-00012073-005	Lappaconitine	5 mg
CDX-00012073-010	Lappaconitine	10 mg
CDX-00013860-005	Methysticin	5 mg
CDX-00013860-010	Methysticin	10 mg
CDX-00013890-005	Mitragynine	5 mg
CDX-00013890-010	Mitragynine	10 mg
CDX-00013889-005	Mitragynine	5 mg
CDX-00013889-010	Mitragynine	10 mg
CDX-00013955-005	Mitraphylline	5 mg
CDX-00013955-010	Mitraphylline	10 mg
CDX-00013907-005	Muscimol	5 mg
CDX-00013935-100	Myristicin	100 mg
CDX-00013935-010	Myristicin	10 mg
CDX-00014378-005	Nitine (Benzyl analog of Taxol)	5 mg
CDX-00014378-010	Nitine (Benzyl analog of Taxol)	10 mg
CDX-00016011-001	Paclitaxel C13 labeled for non-human use only	1 mg
CDX-00016011-005	Paclitaxel C13 labeled for non-human use only	5 mg
CDX-00016010-005	Paclitaxel	5 mg

Code	Product	Unit
CDX-00016010-010	Paclitaxel	10 mg
CDX-00016316-005	Protoveratrine A	5 mg
CDX-00016318-005	Protoveratrine A und B	5 mg
CDX-00016317-005	Protoveratrine B	5 mg
CDX-00001499-010	Rauwolfia Standards Kit contains: Ajmalicine Ajmaline Corynanthine (Rauhimbine) Reserpine Reserpinic acid HCl Rescinnamine alpha-Yohimbine HCl (Rauwolcine HCl)	7 x 10 mg
CDX-00030622-005	Rauwolfia Root BRM	5 g
CDX-00018050-001	Rescinnamine	1 g
CDX-00018050-010	Rescinnamine	10 mg
CDX-00018041-010	Reserpinic acid HCl	10 mg
CDX-00018041-025	Reserpinic acid HCl	25 mg
CDX-00018040-010	Reserpine	10 mg
CDX-00018040-025	Reserpine	25 mg
CDX-00018295-005	Ricin (Ricinus communis) VBRM	5 g
CDX-00019039-010	Salvinorin A	10 mg
CDX-00019039-025	Salvinorin A	25 mg
CDX-00019042-001	Salvinorin B	1 g
CDX-00019047-005	Salvinorin B	5 mg
CDX-00019047-010	Salvinorin B(P)	10 mg
CDX-00019050-010	Sanguinarine chloride	10 mg
CDX-00019045-010	Sanguinarine chloride	10 mg
CDX-00019089-010	Scopolamine HBr (RG)	10 mg
CDX-00019089-250	Scopolamine HBr	250 mg
CDX-00019135-005	Senecionine	5 mg
CDX-00019135-010	Senecionine	10 mg
CDX-00019140-005	Seneciphyllin	5 mg
CDX-00019140-010	Seneciphyllin	10 mg
CDX-00019139-005	Senkirkin (Renardine)	5 mg
CDX-00030965-005	Star anis (Illicium verum) fruit VBRM	5 g
CDX-00019373-250	Strychnine	250 mg
CDX-00019373-100	Strychnine	100 mg
CDX-00020042-005	Tanshinone I	5 mg
CDX-00020042-010	Tanshinone I	10 mg
CDX-00020043-005	Tanshinone IIA	5 mg
CDX-00020043-010	Tanshinone IIA	10 mg
CDX-00020041-005	Crypto-Tanshinone	5 mg
CDX-00020041-010	Crypto-Tanshinone	10 mg
CDX-00020075-0SM	Taxane (Taxol) standard mixture (13 compound mix)	500 µL
CDX-00020062-005	Taxayuntin C	5 mg
CDX-00020062-010	Taxayuntin C	10 mg
CDX-00020064-005	Taxcultine	5 mg
CDX-00020064-010	Taxcultine	10 mg
CDX-00020067-005	Taxinine M	5 mg
CDX-00020067-010	Taxinine M	10 mg
CDX-00020070-005	Taxol C	5 mg
CDX-00020070-010	Taxol C	10 mg
CDX-00020071-005	Taxol side chain diol	5 mg
CDX-00020071-010	Taxol side chain diol	10 mg

Code	Product	Unit
CDX-00020072-005	Taxol side chain methylester	5 mg
CDX-00020072-010	Taxol side chain methylester	10 mg
CDX-00020484-010	Triptolide Standards Kit contains, Triptolide(P), Epitriptolide(P), Triptonide(P), Triptophenolide(P)	4 x 10 mg
CDX-00020480-010	Triptolide	10 mg
CDX-00020480-050	Triptolide	50 mg
CDX-00020481-010	Epi-Triptolide	10 mg
CDX-00020481-050	epi-Triptolide	50 mg
CDX-00020482-010	Triptonide	10 mg
CDX-00020482-050	Triptonide	50 mg
CDX-00020483-010	Triptophenolide	10 mg
CDX-00020483-050	Triptophenolide	50 mg
CDX-00020491-010	Tropine	10 mg
CDX-00020491-100	Tropine	100 mg
CDX-00022460-005	Veratrine HCl	5 mg
CDX-00022460-010	Veratrine HCl	10 mg
CDX-00024921-005	7-Xylotaxol C	5 mg
CDX-00024921-010	7-Xylotaxol C	10 mg
CDX-00024920-005	7-Xylotaxol	5 mg

Antifungal drugs

Code	Product	Unit
TRC-A511450	Albaconazole	10 mg
TRC-A511452	Albaconazole-D3	1 mg
TRC-B690272	rac Butoconazole-D5 nitrate	1 mg
TRC-B690273	Butoconazole nitrate	10 mg
TRC-D288790	2-Desbutyl-2-isopentyl-5-methyl itraconazole	1 mg
TRC-F421000	Fluconazole	100 mg
TRC-F421002	Fluconazole-D4	1 mg
TRC-H943600	Hydroxy itraconazole	1 mg
TRC-H943602	Hydroxy Itraconazole-D5	1 mg
TRC-H943603	Hydroxy Itraconazole-D8	1 mg
TRC-I937500	Itraconazole	50 mg
TRC-I937502	Itraconazole-D5	1 mg
TRC-K186000	Ketoconazole	500 mg
TRC-K186002	Ketoconazole-D8	2.5 mg
TRC-K195000	Keto itraconazole	1 mg
TRC-L174500	Lanoconazole	10 mg
TRC-L174502	Lanoconazole-D3	1 mg
TRC-O846800	Oxiconazole nitrate	10 mg
TRC-P689600	Posaconazole	1 mg
TRC-P689602	Posaconazole-D5	1 mg
TRC-V760000	Voriconazole	10 mg
TRC-V760002	Voriconazole-D3	1 mg
TRC-V760010	Voriconazole N-oxide	1 mg
TRC-V760012	Voriconazole-D3 N-oxide	0.5 mg

Antiviral drugs

Code	Product	Unit
TRC-A105000	Abacavir sulfate	5 mg
TRC-A105002	Abacavir-D4	1 mg
TRC-A105010	Abacavir 5-beta-D-glucuronide	1 mg
TRC-A628917	Adefovir-D4, diethyl ester	2.5 mg
TRC-A634400	Amprenavir	5 mg
TRC-A634402	Amprenavir-D4	1 mg
TRC-A790051	Atazanavir	5 mg
TRC-A790052	Atazanavir-D5	1 mg
TRC-D193500	Darunavir	5 mg
TRC-D193502	Darunavir-D9	1 mg
TRC-D230625	Delavirdine	10 mg
TRC-D230630	Delavirdine mesylate	10 mg
TRC-D288690	6-Desamino 6-chloro etravirine	5 mg
TRC-D297430	Desthiazolylmethyloxycarbonyl ritonavir	5 mg
TRC-D297450	Desthiazolylmethyl ritonavir	5 mg
TRC-D440950	2í,3í-Dideoxyinosine	10 mg
TRC-D440952	2í,3í-Dideoxyinosine-15N4	0.5 mg
TRC-E425000	Efavirenz	10 mg
TRC-E555600	Enfuvirtide acetate	100 mg
TRC-E425002	rac-Efavirenz-D4	1 mg
TRC-E425005	ent Efavirenz	2.5 mg
TRC-E525000	Emtricitabine	10 mg
TRC-E525002	Emtricitabine-13C,15N2	0.5 mg
TRC-E558902	Entecavir-15N3	5 mg
TRC-E937000	Etravirine	5 mg
TRC-E937002	Etravirine-13C3	1 mg
TRC-E937003	Etravirine-D8	1 mg
TRC-F335002	Fialuridine-15N2,13C	10 mg
TRC-H941820	rac 7-Hydroxy efavirenz	1 mg
TRC-H941825	rac 8-Hydroxy efavirenz	1 mg
TRC-I525000	Indinavir sulphate	5 mg
TRC-I525002	Indinavir-D6	1 mg
TRC-L172500	Lamivudine	10 mg
TRC-L172502	Lamivudine-15N2,13C	1 mg
TRC-L469480	Lopinavir	10 mg
TRC-L469482	Lopinavir-D8	1 mg
TRC-L469485	Lopinavir metabolite M-1	1 mg
TRC-L469490	Lopinavir metabolite M-3/M-4	1 mg
TRC-M193000	Maraviroc	2.5 mg
TRC-M193002	Maraviroc-D6	1 mg
TRC-M325963	N-Methylritonavir bicarbonate	5 mg
TRC-N389750	Nelfinavir mesylate	10 mg
TRC-N389752	Nelfinavir-D3	1 mg
TRC-N391275	Nevirapine	5 mg
TRC-N391277	Nevirapine-D5	1 mg
TRC-P681000	Podophyllotoxin, 98%	500 mg
TRC-R100300	Raltegravir potassium salt	5 mg
TRC-R100302	Raltegravir-D3, potassium salt	1 mg
TRC-R100310	Raltegravir beta-D-glucuronide	1 mg

Antiviral drugs

Code	Product	Unit
TRC-R414475	Ribavirin	100 mg
TRC-R414477	Ribavirin-13C5	1 mg
TRC-R414500	Ribavirin 5í-monophosphate, dilithium salt	5 mg
TRC-R517000	Rimantadine HCl	10 mg
TRC-R517002	Rimantadine-D4 HCl	1 mg
TRC-R535000	Ritonavir	10 mg
TRC-R535002	Ritonavir-D6	0.5 mg
TRC-R535003	Ritonavir-13C3	0.5 mg
TRC-R701700	Rupintrivir	2.5 mg
TRC-S135000	Saquinavir mesylate	10 mg
TRC-S135002	Saquinavir-D9	1 mg
TRC-T016000	Telbivudine	10 mg
TRC-T018500	Tenofovir	5 mg
TRC-T018502	Tenofovir-D6	1 mg
TRC-T018510	Tenofovir diphosphate	1 mg
TRC-T412000	Thymidine	25 g
TRC-T412003	Thymidine-13C,15N2	1 mg
TRC-T412002	Thymidine, methyl-D3	2.5 mg
TRC-T412152	Thymine, methyl-D3	10 mg
TRC-T444902	Tipranavir-D4	1 mg
TRC-T444910	Tipranavir beta-D-glucuronide	1 mg
TRC-T444912	Tipranavir-D4 beta-D-glucuronide	0.5 mg
TRC-Z148000	Zanamivir	1 mg
TRC-Z148002	Zanamivir-D3	5 mg
TRC-A825000	Zidovudine (3'-Azido-3'-deoxythymidine)	250 mg
TRC-A825002	Zidovudine methyl-D3 (3'-Azido-3'-deoxythymidine,mMethyl-D3)	1 mg

Molecular biology products

NIST-2372 — Human DNA quantitation standard — set (3)

This material is intended primarily for use in the value assignment of human genomic deoxyribonucleic acid (DNA) forensic quantitation materials. NIST-2372 consists of three well-characterized human genomic DNA materials solubilized in 10 mmol/L Tris HCl and 0.1 mmol/L disodium EDTA) using deionized water adjusted to pH 8.0 (TE-4, pH 8.0 buffer). The three component genomic DNA materials, labeled A, B, and C, are respectively derived from a single male donor, multiple female donors, and multiple male and female donors. Each unit of NIST-2372 consists of one sterile 2-mL vial of each component, each vial containing approximately 110 ¼L of DNA solution. Certified values for decadic attenuance (D10) are provided for the three components at five wavelengths. Information values for the conventional DNA mass concentrations are also provided.

Certfied value

Wavelength (nm)	Component A	Component B	Component C
230	0.458 ± 0.024	0.445 ± 0.024	0.446 ± 0.025
260	1.049 ± 0.017	1.073 ± 0.031	1.086 ± 0.018
270	0.859 ± 0.016	0.875 ± 0.021	0.893 ± 0.016
280	0.562 ± 0.014	0.571 ± 0.016	0.585 ± 0.015
330	0.005 + 0.006	0.005 ± 0.005	0.005 + 0.009
	- 0.005		-0.005

NIST-2390 — DNA profiling standard — set

This material is intended for (1) standardization of forensic and paternity quality assurance procedures for Restriction Fragment Length Polymorphisms (RFLP) testing using HaeIII restriction enzymes, and (2) instructional law enforcement or nonclinical research purposes. It is not intended for any human/animal clinical diagnostic use.

This new certificate of the material updates the band size values of the original SRM 2390 certification to reflect the evolution of forensic practice from 1991 to 1998.

Each unit consists of 20 components. Quantitative allelic band sizes are provided for human DNA from two sources: (1) the female cell line K562, and (2) the male source “TAW.” Three different forms of material from the two sources are provided: (1) cell pellet, (2) extracted genomic DNA, and (3) a HaeIII restriction digest “pre-cut” DNA. The remaining components are well-characterized consumable materials required for qualitative evaluation of the HaeIII RFLP measurement process. These components include standards for quantifying extracted DNA by use of yield gels, a DNA ladder for band size determination, materials for labeling the DNA size ladder, a viral DNA marker for assessment of electrophoretic separation, and agarose that is compatible with all DNA components.

Code	Product	Unit
NIST-2391B	PCR based DNA profiling This material is intended primarily for use in the standardization of forensic and paternity quality assurance procedures for Polymerase Chain Reaction (PCR)-based genetic testing and for instructional law enforcement or non-clinical research purposes. This material can also be used for quality assurance when assigning values to in-house control materials. It is not intended for any human or animal clinical diagnostic use. Note that NIST-2391b is slightly modified from NIST-2391, in that there is more emphasis on Short Tandem Repeats (STRs) and less emphasis on D1S80 [1,2] reflecting the growing interest and utility of STRs. It is composed of well-characterized human deoxyribonucleic acid (DNA) in two forms: genomic DNA and DNA to be extracted from cells spotted onto filter paper. Each unit is composed of 12 frozen components packaged in one box.	set (12)
NIST-2392	Mitochondrial DNA sequencing This material is intended to provide quality control when performing the polymerase chain reaction (PCR) and sequencing of human mitochondrial DNA (mtDNA) for forensic identifications, medical diagnosis, or mutation detection. It may also be used as a control when amplifying (PCR) and sequencing any DNA. It can also be used for quality assurance when assigning values to in-house control materials. It is certified for the sequences of the entire human mtDNA (16 569 base pairs) from two lymphoblastoid cell culture lines (CHR and GM09947A) from apparently normal individuals, plus the cloned HV1 region of CHR containing a C-stretch which is difficult to sequence. The SRM is packaged in a single box containing three components: (1) extracted DNA from cell culture line CHR (tube contains 60 µL of DNA at a concentration of 1 ng/µL); (2) extracted DNA from cell culture line GM09947A (tube contains 60 µL of DNA at a concentration of 1 ng/µL); and (3) cloned DNA from the CHR HV1 region containing the C-stretch (tube contains 10 µL of DNA at a concentration of 100 ng/µL).	box
NIST-2392-I	Mitochondrial DNA sequencing (Human HL-60 DNA) This material is intended to provide quality control when performing the polymerase chain reaction (PCR) and sequencing of human mitochondrial DNA (mtDNA) for forensic identification, medical diagnosis, or mutation detection. It may also serve as a control when amplifying (PCR) and sequencing any DNA. it can also be used for quality assurance when assigning values to in-house control materials. It is certified for the sequences of the entire human mtDNA (16 569 base pairs) from a promyelocytic cell line (HL-60) prepared from the peripheral blood leukocytes from an individual with acute promyelocytic leukemia. Each unit consists of 65 µL of extracted DNA from cell culture line HL-60 at a nominal concentration of 1.4 ng/µL, which is contained in a vial packaged in a protective plastic box. For details please ask for the data sheet.	box
NIST-2394	Heteroplasmic Mitochondrial DNA Mutation Detection Standard (set of 10 tubes) This material is composed of human mitochondrial DNA mixtures which simulate different levels of heteroplasmy and is intended to provide quality control benchmarks for forensic, medical, and DNA scientists to assess the detection sensitivity of low-frequency mutations, single nucleotide polymorphisms (SNPs) in either mitochondrial DNA (mtDNA) or in pooled nuclear DNA samples, or heteroplasmic sites in mtDNA. The product is packaged in a single protective plastic box containing ten tubes: one tube containing the 100 % (by mass) polymorphic DNA, one tube containing the 100 % (by mass) CRS DNA, and eight tubes containing different mass percentages of the polymorphic/CRS mtDNA mixtures (mass % polymorphic levels are 1 %, 2.5 %, 5 %, 10 %, 20 %, 30 %, 40 % and 50 %). Each vial contains 25 µL of DNA at a concentration of 8 ng/µL in 10 mM Tris-HCl, pH 8.5.	set (10)
NIST-2395	Human Y-Chromosome DNA Profiling Standard This material is intended primarily for use in the standardization of forensic and paternity quality assurance procedures for Polymerase Chain Reaction (PCR)-based genetic testing and for instructional law enforcement or non-clinical research purposes that involve the human Y-chromosome. It can also be used for quality assurance when assigning values to in-house control materials. It is not intended for any human or animal clinical diagnostic use. It is composed of well-characterized human genomic deoxyribonucleic acid (DNA) in liquid form. Each unit is composed of 6 frozen components packaged in one box, five male samples and one female sample.	box
NIST-2396	Oxidative DNA Damage Mass Spectrometry Standard (set of 12 vials) This material is intended for use in the measurement of oxidative DNA damage by gas chromatography/mass spectrometry (GC/MS), and liquid chromatography/mass spectrometry (LC/MS), using the isotope-dilution technique for quantification in both cases. Each unit is a set of twelve stable isotope-labeled components (ten analogues of oxidatively modified DNA bases, one analog of an oxidatively modified nucleoside and one analog of a normal DNA nucleoside) contained in a protective plastic box. Each vial of contains 0.2 mL of a designated component at a specified concentration.	set (12)
NIST-2399	Fragile X Human DNA Triplet Repeat Standard This material is intended to provide quality control by serving as a positive control to clinical laboratories that test human samples for Fragile X and who need to determine the number of CGG trinucleotide repeats present in samples. It is composed of human deoxyribonucleic acid (DNA) from fragile X cell lines or patient samples that have been amplified using polymerase chain reaction (PCR) techniques. Each unit consists of a single box containing 9 vials, designated A through I. Each vial contains 20 µL of a frozen PCR product with a different number of CGG repeats suspended in a buffer (10 mM Tris-Cl pH 8.5). The American College of Medical Genetics Guidelines requires a positive control for all genetic testing. In addition to medical diagnoses, the ability to detect the correct number of triplet repeats will help in genetic counseling and genetic research in the area of triplet repeats.NIST-2399 will also help to ensure the accuracy and comparability of results from different laboratories.	set (9)
IRMM/IFCC-490	PLASMID DNA for prothrombin wildtype (homozygous) This material is intended to be used as a negative control material (wildtype sequence) in PCR reactions for the identification of the Factor II (prothrombin) G20210A mutation by diagnostic PCR-derived methods. Each polypropylene vial contains approximately 1 ng plasmid DNA (pIRMM-0001) in a volume of 50 µL of a Tris/EDTA solution (10 mmol/L Tris, 1 mmol/L EDTA, pH 8.0). This solution was obtained after dilution of the stock of 1390 ± 29 µg/mL (concentration ± standard deviation) in Tris/EDTA buffer. The plasmid pIRMM-0001 is a pUC18 vector containing a 609-bp fragment of the human prothrombin gene from nucleotide 26302 to nucleotide 26910 (wildtype sequence) in the GeneBank database (accession number M17262). Certified property: $p < 3 \times 10^{-6}$	vial

Code	Product	Unit
IRMM/IFCC-491	PLASMID DNA for prothrombin mutation (homozygous) Each polypropylene vial contains approximately 1 ng plasmid DNA (pIRMM-0002) in a volume of 50 µL of a Tris/EDTA solution (10 mmol/L Tris, 1 mmol/L EDTA, pH 8.0). This solution was obtained after dilution of the stock of 1823 ± 29 µg/mL (concentration ± standard deviation) in Tris/EDTA buffer. The plasmid pIRMM-0002 is a pUC18 vector containing a 609-bp fragment of the human prothrombin gene from nucleotide 26302 to nucleotide 26910 (G->A point mutation at position 26784 in the GeneBank database (accession number M17262)). Another point mutation (A->G) is present at position 26628, but does not influence the genotyping. Certified property: $p < 3 \times 10^{-6}$	vial
IRMM/IFCC-492	PLASMID DNA for prothrombin mutation (homozygous) Each polypropylene vial contains approximately 1 ng plasmid DNA (pIRMM-0001 and pIRMM-0002) in a volume of 50 µL of a Tris/EDTA solution (10 mmol/L Tris, 1 mmol/L EDTA, pH 8.0). This solution was obtained after dilution of the stocks (concentration ± standard deviation) of IRMM/IFCC-490 of 1390 ± 29 µg/mL and IRMM/IFCC-491 of 1823 ± 29 µg/mL in Tris/EDTA buffer. The plasmids pIRMM-0001 and pIRMM-0002 are pUC18 vectors containing a 609-bp fragment of the human prothrombin gene from nucleotide 26302 to nucleotide 26910 in the GeneBank database (accession number M17262). They were mixed in equal volumes of identical mass concentrations (wildtype and G20210A point mutation sequences) to mimic a heterozygous control. Certified property: $p < 3 \times 10^{-6}$	vial

Forensic applications – matrix materials

LGC Standards

Excellence through measurement

CERTAN®

The ampoule in a bottle

Unopened glass ampoules are ideal for storing volatile standards, but once opened they are no longer suitable for storage. The alternative use of screw cap bottles can result in evaporation through the thread. There is also a risk of contamination from the cap.

The CERTAN® bottle is a sample container with a capillary-opening. It has been specifically developed for use with organic reference solutions. Using the CERTAN® bottle makes the problems of storing volatile solutions a thing of the past. The bottles come in a range of sizes to meet your needs.

Advantages of CERTAN®

- Minimal change in concentration, even when open
- Totally secure, free of losses
- Less risk of contamination
- Aliquots easily removed using a standard GC syringe
- Proven usability from -30°C to +50°C
- Almost impossible to spill.

Applications for CERTAN®

- Supply of standard solutions
- Long term storage for solutions from ampoules
- Storage of stock solution
- Archiving of production samples
- Holding challenging samples, such as BTEX aromatics
- Transport and storage of ring-test samples.

For further information on these products or to receive any one of our catalogues, please contact your local office or visit our website.

LGC Standards

Excellence through measurement

Matrix materials - drugs in blood, hair, serum, urine

Anticonvulsant drugs

Code	Product	Unit
NIST-1599	Anticonvulsant drug level assay standard This material is certified for mass concentrations of two anticonvulsant drugs (valproic acid and carbamazepine) in processed human serum base. It is intended for use in the calibration and standardisation of procedures employed in clinical laboratories for the determination of these drugs in serum. It can also be used for critical evaluation of working or secondary reference solutions prepared either in-house or supplied commercially. This material is supplied as a set of four different freeze-dried preparations, three different mass concentrations and a blank.	4 x 5 mL

Analytes	low	medium	high
Valproic acid	14.5 ± 0.3	69.1 ± 4.2	142.5 ± 4.1 µg/mL
Carbamazepine	2.8 ± 0.4	8.8 ± 0.3	19.4 ± 0.9 µg/mL

Code	Product	Unit
NIST-900	Antiepilepsy drug level assay standard This material is certified for mass concentrations of four antiepilepsy drugs (phenytoin, ethosuximide, phenobarbital and primidone) in a processed human serum base. It is intended for use in the calibration and standardisation of procedures employed in clinical laboratories for the determination of these drugs in serum, and for the critical evaluation of working or secondary reference solutions prepared either in-house or supplied commercially. One set contains four bottles with freeze-dried human serum, including a blank (0 µg / mL) and three different concentration levels.	4 x 5 mL

Analytes	toxic µg/mL	therapeutic µg/mL	sub-therapeutic µg/mL
Phenytonin	60.7 ± 0.9	16.7 ± 0.3	4.2 ± 0.1
Ethosuximide	174.7 ± 0.6	75.9 ± 0.5	11.8 ± 0.4
Phenobarbital	103.6 ± 0.3	21.6 ± 0.2	5.3 ± 0.2
Primidone	18.6 ± 0.7	8.1± 0.2	3.6 ± 0.1

Currently not available

Antidepressiva

Code	Product	Unit
AC-SE015.040.020.001	TDM Antidepressiva in serum, lyophilised TDMD 3/10-A SE for in vitro diagnostic use This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human serum with Antidepressants. The concentrations of the drugs and metabolites lie within the expected treatment ranges. The target values were released by the coordinator of proficiency testing of the GTFCh.	6 x 4 mL

Analytes	Target value
Duloxetine	29,4 µg/L
Fluoxetine	104,2 µg/L
Fluvoxamine	100,8 µg/L
Mianserine	25,4 µg/L
Mirtazapine	45,7 µg/L
Paroxetine	20,7 µg/L
Reboxetine	76,5 µg/L
Sertraline	77,0 µg/L
Venlafaxine	216,3 µg/L
Desmethylvenlafaxine	217,0 µg/L

Code	Product	Unit
AC-SE015.040.020.002	TDM Antidepressiva in serum, lyophilised TDMD 3/10-B SE for in vitro diagnostic use This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human serum with Antidepressants. The concentrations of the drugs and metabolites lie within the expected treatment ranges. The target values were released by the coordinator of proficiency testing of the GTFCh.	6 x 4 mL

Analytes	Target value [µg/L]
Duloxetine	71,3 µg/L
Fluoxetine	413,5 µg/L
Fluvoxamine	218,7 µg/L
Mianserine	121,5 µg/L
Mirtazapine	148,8 µg/L
Paroxetine	62,1 µg/L
Reboxetine	161,7µg/L
Sertraline	202,0 µg/L
Venlafaxine	357,6 µg/L
Desmethylvenlafaxine	389,2 µg/L

Code	Product	Unit

Antiepileptics

AC-SE015.040.009.001 — TDM Antiepileptics in serum, lyophilised TDMB 3/10-B SE for in vitro diagnostic use — 6 x 4 mL

This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human serum with antiepileptics. The concentrations of the drugs and metabolites lie within the expected treatment ranges. The target values were released by the coordinator of proficiency testing of the GTFCh.

Analytes	target values
Carbamazepine	2,87 mg/L
Felbamate	15,50 mg/L
Gabapentine	3,90 mg/L
Levetiracetam	4,71 mg/L
Oxcarbazepine	1,56 mg/L
10-OH-Carbazepine	5,04 mg/L
Pregabaline	2,06 mg/L
Tiagabine	47,40 mg/L
Topiramate	2,47 mg/L
Vigabatrine	4,84 mg/L

Barbiturates in serum

ME 44401 — Thiopental serum control with target values (Medidrug Thiopental S) — 2 x 2.5 mL

Human seum control with target values for accuracy and precision monitoring of thiopental determinations from serum.

Thiopental ..... 20.95 mg/L

Benzodiazepines

ME 41217 — Benzodiazepines in human serum, control with certified values (Medidrug BZF 1/06 A S-plus) — 10 x 2.5 mL

Lyophilised control serum prepared from human serum for accuracy and precision monitoring of benzodiazepines determinations from human serum. The assay values and confidence ranges were established by a large number of independent institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry)

Analytes

Bromazepam	110.70 µg/L	Diazepam	462.50 µg/L
Clonazepam	71.30 µg/L	Nordiazepam	204.50 µg/L

ME 41221 — Benzodiazepines, human serum control with reference values (Medidrug BZF 1/09-A S-plus) — 10 x 3 mL

Lyophilised control serum prepared from human serum for accuracy and precision monitoring of benzodiazepines determinations from human serum. The assay values and confidence ranges were established by a large number of independent institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh

Analytes

Bromazepam	117.10 µg/L	Diazepam	410.40 µg/L	Temazepam	114.60 µg/L
Clonazepam	93.80 µg/L	Nordiazepam	307.20 µg/L	Zolpidem	70.20 µg/L

ME 41222 — Benzodiazepines, human serum control with reference values (Medidrug BZF 1/09-B S-plus) — 10 x 3 mL

Lyophilised control serum prepared from human serum for accuracy and precision monitoring of benzodiazepines determinations from human serum. The assay values and confidence ranges were established by a large number of independent institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh

Analytes

7-Aminoflunitrazepam	33.60 µg/L	Norflunitrazepam	21.90 µg/L
Flunitrazepam	27.80 µg/L	Oxazepam	333.30 µg/L
Midazolam	106.40 µg/L	Zopiclon	45.30 µg/L

AC-SE015.040.005.003 — TDM Benzodiazepine in serum, lyophilised BZF 3/10-A SE for in vitro diagnostic use — 6x 3 mL

This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human serum with benzodiazepines. The concentrations of the drugs and metabolites lie within the expected treatment ranges. The target values were released by the coordinator of proficiency testing of the GTFCh.

Analytes	target value		
Alprazolamx		Clonazepam	40,9 µg/L
Bromazepam	78,6 µg/L	Temazepam	134,1 µg/L
Diazepam	223,8 µg/L	Zolpidem	98,9 µg/L
Nordiazepam	268,3 µg/L		

Code	Product	Unit
AC-SE015.040.005.004	TDM Benzodiazepine in serum, lyophilised BZF 3/10-B SE for in vitro diagnostic use	6x 3 mL

This product is intended for use as a control material as part of a This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human serum with benzodiazepine. The concentrations of the drugs and metabolites lie within the expected treatment ranges. The target values were released by the coordinator of proficiency testing of the GTFCh.

Analytes	target value	Analytes	target value
Flunitrazepam	11,3 µg/L	Midazolam	418,5 µg/L
Norflunitrazepam	16,5 µg/L	Oxazepam	108,4 µg/L
7-Aminoflunitrazepam	46,0 µg/L	Zopiclone	37,1 µg/L
Lorazepam	x		

Code	Product	Unit
AC-SE015.040.005.005	TDM Benzodiazepine in serum, lyophilised BZF 1/11– A SE for in vitro diagnostic use	6x 3 mL

This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human serum with benzodiazepine. The concentrations of the drugs and metabolites lie within the expected treatment ranges. The target values were released by the coordinator of proficiency testing of the GTFCh.

Analytes	target value
Alprazolam	36,0 µg/L
Bromazepam	141,8 µg/L
Diazepam	348,3 µg/L
Nordiazepam	315,0 µg/L
Clonazepam	87,10 µg/L
Temazepam	118,6 µg/L
Zolpidem	77,1 µg/L

Code	Product	Unit
AC-SE015.040.005.006	TDM Benzodiazepine in serum, lyophilised BZF 1/11– B SE for in vitro diagnostic use	6x 3 mL

This product is intended for use as a control material as part of a This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human serum with benzodiazepine. The concentrations of the drugs and metabolites lie within the expected treatment ranges. The target values were released by the coordinator of proficiency testing of the GTFCh.

Analytes	target value	Analytes	target value
Flunitrazepam	14,2 µg/L	Midazolam	108,3 µg/L
Norflunitrazepam	18,4 µg/L	Oxazepam	241,2/L
7-Aminoflunitrazepam	25,6 µg/L	Zopiclone	43,9 µg/L
Lorazepam	120,9 µg/L		

Code	Product	Unit
ME 41703	Benzodiazepines in human serum, level 1	10 x 2.5 mL

Lyophilised human serum control with mean values for accuracy or precision control of benzodiazepines determinations from serum. The concentration values have been determined by independent laboratories of forensic medicine.

Analytes		Analytes	
7-Aminoflunitrazepam	10 µg/L	Flunitrazepam	10 µg/L
Bromazepam	100 µg/L	Lorazepam	20 µg/L
Clonazepam	20 µg/L	Midazolam	50 µg/L
Nordiazepam	100 µg/L	Oxazepam	100 µg/L
Diazepam	100 µg/L		

Code	Product	Unit
ME 41704	Benzodiazepines in human serum, level 2	10 x 2.5 mL

Lyophilised human serum control with mean values for accuracy or precision control of benzodiazepines determinations from serum. The concentration values have been determined by independent laboratories of forensic medicine.

Analytes		Analytes	
7-Aminoflunitrazepam	50 µg/L	Flunitrazepam	50 µg/L
Bromazepam	400 µg/L	Lorazepam	100 µg/L
Clonazepam	100 µg/L	Midazolam	200 µg/L
Nordiazepam	600 µg/L	Oxazepam	600 µg/L
Diazepam	600 µg/L		

Benzoylecgonine

Code	Product	Unit
NIST-1508A	Benzoylecgonine (cocaine metabolite) in freeze-dried urine	4 x 10 mL

This material is intended primarily for the determination of benzoylecgonine (cocaine metabolite) in human urine. It consists of four bottles of freeze dried urine, one bottle each of three different levels of benzoylecgonine plus one bottle of blank freeze dried urine (not detected).

Analyte	low	medium	high
Benzoylecgonine	78.1 ± 4.0	161 ± 6.8	315 ± 15 ng/mL

Code	Product	Unit

Buprenorphines

ME 40011	Buprenorphines in human serum level 2 (Medidrug Buprenorphin S) Lyophilised human serum controls with mean values of two buprenorphines for accuracy or precision control of buprenorphines determinations from serum. The concentration values have been determined by independent laboratories of forensic medicine. Analytes Buprenorphine .....2.0 µg/L Norbuprenorphine.....5.0 µg/L	2 x 2.5 mL
ME 40012	Buprenorphines in human serum, level 2 (Medidrug Buprenorphin S) Lyophilised human serum controls with mean values of two buprenorphines for accuracy or precision control of buprenorphines determinations from serum. The concentration values have been determined by independent laboratories of forensic medicine. Analytes Buprenorphine .....13.05µg/L Norbuprenorphine.....12.87µg/L	2 x 2.5 mL
ME 40051	Buprenorphine in human urine cal 1 (1 ng/mL) (Medidrug BUP U-cal) Assayed value .....1.03 ng/mL	2 x 2.5 mL
ME 40052	Buprenorphine in human urine cal 2 (5 ng/L) (Medidrug BUP U-cal) Assayed value .....5.47 ng/mL	2 x 2.5 mL
ME 40053	Buprenorphine in human urine cal 3 (10 ng/L) (Medidrug BUP U-cal) Assayed value .....10.69 ng/mL	2 x 2.5 mL
ME 40054	Buprenorphine in human urine cal 4 (20 ng/L) (Medidrug BUP U-cal) Assayed value .....22.53 ng/mL	2 x 2.5 mL
ME 40055	Buprenorphine in human urine 5 (80 ng/L) (Medidrug BUP U-cal) Assayed value .....83.52 ng/mL	2 x 2.5 mL
ME 40056	Buprenorphine in human urine cal 6 (200 ng/L) (Medidrug BUP U-cal) Assayed value .....223.74 ng/mL	2 x 2.5 mL
ME 40131	Buprenorphines in human urine, level 1 new, lot 10802 (Medidrug BUP U) Lyophilised human urine control in two different concentrations for accuracy control of Buprenorphine determinations from urine. The concentration values have been determined by independent laboratories of forensic medicine. Analytes Buprenorphine .....4.76 µg/mL Norbuprenorphine.....10.65 µg/mL	2 x 2.5 mL
ME 40132	Buprenorphines in human urine, level 2 (Medidrug BUP U) Lyophilised human urine control in two different concentrations for accuracy control of Buprenorphine determinations from urine. The concentration values have been determined by independent laboratories of forensic medicine. Analytes Buprenorphine .....18.99 ng/mL Norbuprenorphine.....78.17 ng/mL	2 x 2.5 mL

Cannabinoids

NIST-1507B	THC-COOH in freeze dried urine This material is intended primarily for verifying the accuracy of methods used for the determination of 11-nor-delta-9-tetrahydrocannabinol-9-carboxylic acid (THC-9-COOH) in human urine. It consists of three bottles of freeze-dried urine: two bottles, each containing a different certified concentration of THC-9-COOH and one bottle of a urine blank (X_D: <1). The contents of each bottle must be reconstituted with 20.0 mL of organic-free or HPLC-grade water. Analyte low medium THC-9-COOH .....11.7 ± 1.4 .....24.1 ± 1.3 ng/mL	set (3)

CDT

REC-21014	CDT (carbohydrate deficient transferrin) - test solution	15 mL

Code	Product	Unit

Cotinine

NIST-RM 8444 — Cotinine in human urine — 4 x 5 mL

This standard is intended primarily for use in validating methods for the determination of cotinine in human urine. One set consists of four vials, each containing cotinine in 5 ml human urine, which has been freeze dried. Two vials are “blank” concentration levels, typical for non-smokers without exposure to cigarette smoke, one vial is a “low” concentration level corresponding to non-smokers with passive exposure to side-stream smoke, and one vial is a “high” level, typical of smokers.

Analyte	blank ng/mL	low ng/mL	high ng/mL
Cotinine	0.8	54	488

Meperidine

ME 43303 — Medidrug MEP SF 1/09-NI S-plus — 2 x 2.5 mL

Liquid serum control with reference values (SFTA) prepared from human blood with constituents of human origin and Meprobamate for accuracy and precision monitoring of Meprobamate determinations from serum.

Meprobamate ..... 19.9 µg/mL

ME 43304 — Medidrug MEP SF 1/09-NII S-plus — 2 x 2.5 mL

Liquid serum control with reference values (SFTA) prepared from human blood with constituents of human origin and Meprobamate for accuracy and precision monitoring of Meprobamate determinations from serum.

Meprobamate ..... 116.6 µg/mL

Metabolites and substrates in urine

ME 41079 — Ethylglucuronide, human urine control with reference values (Medidrug ETG 1/08-B U-plus) — 10 x 2.5 mL

Lyophilised serum control prepared from human urine for accuracy and precision monitoring of ethyl glucuronide and ethyl sulfate determinations in urine. The reference value ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh.

	reference value
Ethyl glucuronide	0.350 mg/L

ME 41080 — Ethylglucuronide, human urine control with reference values (Medidrug ETG 2/09-B U-plus) — 10 x 2.5 mL

Lyophilised serum control prepared from human urine for accuracy and precision monitoring of ethyl glucuronide and ethyl sulfate determinations in urine. The reference value ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh.

	reference value
Ethyl glucuronide	3.020 mg/L
Ethyl sulfate	1.750 mg/L

ME 41081 — Ethylglucuronide, human urine control with reference values (Medidrug ETG 1/10-B U-plus) — 10 x 2.5 mL

Lyophilised serum control prepared from human urine for accuracy and precision monitoring of ethyl glucuronide and ethyl sulfate determinations in urine. The reference value ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh.

	reference value
Ethyl glucuronide	0.878 mg/L
Ethyl sulfate	0.920 mg/L

Neuroleptics

AC-SE015.040.015.001 — Neuroleptica in serum, lyophilised TDMA 3/10-A SE for in vitro diagnostic use — 6x 3 mL

This product is intended for use as a control material as part of a laboratory’s internal quality assurance processes. The control is prepared by spiking human serum with Neuroleptics. The concentrations of the drugs and metabolites lie within the expected treatment ranges. The target values were released by the coordinator of proficiency testing of the GTFCh.

Analytes	Target value
Clozapine	249,2 µg/L
Desmethyclozapine	236,6 µg/L
Olanzapine	17,9 µg/L
Quetiapine	74,3 µg/L
Amisulpride	157,2 µg/L

AC-SE015.040.015.002 — Neuroleptica in serum, lyophilised TDMA 3/10-B SE for in vitro diagnostic use — 6x 3 mL

This product is intended for use as a control material as part of a laboratory’s internal quality assurance processes. The control is prepared by spiking human serum with Neuroleptics. The concentrations of the drugs and metabolites lie within the expected treatment ranges. The target values were released by the coordinator of proficiency testing of the GTFCh.

Analytes	Target value
Clozapine	749,6 µg/L
Desmethyclozapine	700,6 µg/L
Olanzapine	62,0 µg/L
Quetiapine	305,1 µg/L
Amisulpride	387,4 µg/L

Code	Product	Unit
AC-SE015.040.015.003	Neuroleptica in serum, lyophilised TDMA 3/10-C SE for in vitro diagnostic use	6x 3 mL

This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human serum with Neuroleptics. The concentrations of the drugs and metabolites lie within the expected treatment ranges. The target values were released by the coordinator of proficiency testing of the GTFCh.

Analytes	Target value
Perazine	51,50 µg/mL
Risperidone	4,83 µg/mL
9-OH-Risperidone	24,3 µg/mL
Ziprasidone	48,80 µg/mL
Citalopram	49,90 µg/mL

Code	Product	Unit
AC-SE015.040.015.004	Neuroleptica in serum, lyophilised TDMA 3/10-D SE for in vitro diagnostic use	6x 3 mL

This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human serum with Neuroleptics. The concentrations of the drugs and metabolites lie within the expected treatment ranges. The target values were released by the coordinator of proficiency testing of the GTFCh.

Analytes	Target value
Perazine	323,5 µg/mL
Risperidone	10,25 µg/mL
9-OH-Risperidone	100,3 µg/mL
Ziprasidone	125,3 µg/mL
Citalopram	253,2 µg/mL

Code	Product	Unit
AC-SE015.040.015.005	Neuroleptica in serum, lyophilised TDMC 3/10-A SE for in vitro diagnostic use	6 x 4 mL

This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human serum with neuroleptics. The concentrations of the drugs and metabolites lie within the expected treatment ranges. The target values were released by the coordinator of the proficiency testing of the GTFCh.

Analytes	Target value]
Aripiprazol	50,80 µg/L
Flupentixol	2,22 µg/L
Fluphenazine	1,70 µg/L
Haloperidol	4,23 µg/L
Sertindol	12,50 µg/L
Sulpiride	133,40 µg/L
Zotepine	40,00 µg/L

Code	Product	Unit
AC-SE015.040.015.006	Neuroleptica in serum, lyophilised TDMC 3/10-B SE for in vitro diagnostic use	6 x 4 mL

This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human serum with neuroleptics. The concentrations of the drugs and metabolites lie within the expected treatment ranges. The target values were released by the coordinator of the proficiency testing of the GTFCh.

Analytes	Target value
Aripiprazol	175,90 µg/L
Flupentixol	8,30 µg/L
Fluphenazine	6,13 µg/L
Haloperidol	24,20 µg/L
Sertindol	72,90 µg/L
Sulpiride	525,10 µg/L
Zotepine	125,00 µg/L

Opiates

Code	Product	Unit
NIST-2381	Morphine and codeine in urine	set (4)

This material is intended primarily for verifying the accuracy of methods used for the determination of morphine and codeine in human urine. One set consists of four bottles of freeze-dried urine: one bottle each of three different analyte levels plus one bottle of blank urine (X_D: < 1).

Analytes	low ng/mL	medium ng/mL	high ng/mL
Morphine	134 ±14	295 ±12	580 ± 18
Codeine	130 ± 5	282 ± 9	560 ± 23

Code	Product	Unit
NIST-2382	Morphine glucuronide in freeze dried urine	set (4)

This material is intended primarily for verifying the accuracy of methods used for the determination of morphine that is present as a glucuronide in human urine. One set consists of four bottles of freeze-dried urine: one bottle each of three different analyte levels plus one bottle of blank urine (X_D: <1). The certified mass concentrations for morphine glucuronide in the reconstituted urine are given below as free morphine.

Analyte	low	medium	high
Morphine	209 ± 20	437 ± 21	853 ± 39 ng/mL

Code	Product	Unit

Drugs used in opiate substitution therapies

ME 44505 — Replacement drugs in human serum, certified reference control (Medidrug STM 2/09-A S-plus) — 2 x 2.5 mL

Lyophilised human serum control with reference values for accuracy and precision monitoring of replacement drugs determinations in serum. The reference values ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry).

Analytes

Buprenorphine	1.8 µg/L	EDDP	119.6 µg/L
Norbuprenorphine	22.0 µg/L	Methadone	51.0 µg/L

AC-SE015.040.001 — Drugs of substitution STM 3/10-A SE serum — 6 x 2.5 ml

This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human serum with drugs and metabolites associated with opiate replacement therapies. The concentrations of the drugs and metabolites lie within the expected treatment ranges.

Analytes	target value		
Burprenorphine	3,40 µg/mL	EDDP	47,40 µg/mL
Norbuprenotphine	11,80 µg/mL	(2-Ethyliden-1,5-dimethyl-3,3-diphenylpyrrolidin / 2-ethylidene-1,5-dimethyl-3,3-diphenyl-pyrrolidine)	
Methadon	115,30 µ/mL		

AC-SE015.040.002 — Drugs of substitution STM 3/11-A SE serum — 6 x 2.5 ml

This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human serum with drugs and metabolites associated with opiate replacement therapies. The concentrations of the drugs and metabolites lie within the expected treatment ranges.

Analytes	target value
Burprenorphine	2,5 µg/mL
Norbuprenotphine	16,7 µg/mL
Methadon	94,0 µg/mL
EDDP	60,5 µg/mL

ME 44103 — Replacement drugs in human urine, certified reference control (Medidrug STM 1/06-B U-plus) — 2 x 2.5 mL

Lyophilised human urine control with values certified by proficiency testing for accuracy and precision monitoring of replacement drugs determinations in urine. Each control lot has been produced especially for the external quality controls organised by the GFTCh. The nominal values have been determined by interlaboratory test.

Analytes

Buprenorphine	11.20 µg/L	EDDP	199.50 µg/L
Norbuprenorphine	25.90 µg/L	Methadone	263.80 µg/L

ME 44104 — Replacement drugs in human urine, certified reference control (Medidrug STM 2/09-B U-plus) — 2 x 2.5 mL

Lyophilised human urine control with reference values for accuracy and precision monitoring of replacement drugs determinations in urine. The reference values ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry).

Analytes

Buprenorphine	11.0 µg/L	EDDP	120.60 µg/L
Norbuprenorphine	26.7 µg/L	Methadone	246.50 µg/L

AC-UR015.040.001 — Drugs of substitution STM 3/10-B UR urine for in vitro diagnostic use — 6 x 2.5 ml

This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human urine with drugs and metabolites associated with opiate replacement therapies. The concentrations of the drugs and metabolites lie within the expected treatment ranges.

Analytes	target value
Burprenorphine	12,60 µg/mL
EDDP	127,00 µg/mL
Norbuprenotphine	26,50 µg/mL
Methadon	99,90 µg/mL

AC-UR015.040.002 — Drugs of substitution STM 1/11-B UR urine for in vitro diagnostic use — 6 x 2.5 ml

This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human urine with drugs and metabolites associated with opiate replacement therapies. The concentrations of the drugs and metabolites lie within the expected treatment ranges.

Analytes	target value
Burprenorphine	14,0 µg/mL
Norbuprenotphine	35,2 µg/mL
Methadon	107,4 µg/mL
EDDP	162,1 µg/mL

Code	Product	Unit

Therapeutic drug monitoring

Seronorm pharmaca
(serum controls for clinical chemistry)

The Seronorm Pharmaca materials are intended for checking precision of methods routinely used for therapeutic drug monitoring. It is available at two levels (L-1 and L-2), containing an animal-based matrix spiked with more than 30 drugs. No stabilisers or preservatives are added. Unopened vials can be stored for three years at 2-8 °C. After opening, the material is stable for seven days at 2-8 °C. The materials can be frozen in small portions.

Components:

Amikacin	Digoxin	Methotrexate	Quinidine
Amiodarone	Disopyramide	Netilmicin (only L-1)	Salicylate
Caffeine	Ethosuximide	Nortriptyline	Theophylline
Carbamezepine	Flecainide	Paracetamol	Tobramycin
Chloramphenicol	Gentamycin	Phenobarbital	Valproic Acid
Clonazepam	Haloperidol	Phenytoin	Vancomycin
Cyklosporine	Imipramine	Primidone	
Desipramine	Lidocaine	Procainamide	
Diazepam	Lithium	Propanolol	

SERO101405	Seronorm Pharmaca L-1 (serum control for clinical chemistry)	10 x 5 mL
SERO101505	Seronorm Pharmaca L-2 (serum control for clinical chemistry)	10 x 5 mL

ME 41413 — Therapeutic drug monitoring, human serum control with reference values (Medidrug TDMA 2/09-A S-plus) — 5 x 3 mL

Lyophilised human serum control with reference values for accuracy and precision control for therapeutic drug monitoring in serum. The reference values ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry) and released by the GTFCh.

Analytes

Amisulprid	126.0 µg/L	Olanzapine	21.0 µg/L
Clozapine	115.3 µg/L	Quetiapine	51.9 µg/L
N-Desmethylclozapine	110.1 µg/L		

ME 41414 — Therapeutic drug monitoring, human serum control with reference values (Medidrug TDMA 2/09-B S-plus) — 5 x 3 mL

Lyophilised human serum control with reference values for accuracy and precision control for therapeutic drug monitoring in serum. The reference values ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry) and released by the GTFCh.

Analytes

Amisulprid	325.3 µg/L	Olanzapine	27.7 µg/L
Clozapine	411.8 µg/L	Quetiapine	181.4 µg/L
N-Desmethylclozapine	334.9 µg/L		

ME 41415 — Therapeutic drug monitoring, human serum control with reference values (Medidrug TDMA 2/09-C S-plus) — 5 x 3 mL

Lyophilised human serum control with reference values for accuracy and precision control for therapeutic drug monitoring in serum. The reference values ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry) and released by the GTFCh.

Analytes

Citalopram	47.0 µg/L	9-Hydroxy-risperidone	25.6 µg/L
Perazine	90.4 µg/L	Ziprasidone	31.8 µg/L
Risperidone	4.7 µg/L		

ME 41416 — Therapeutic drug monitoring, human serum control with reference values (Medidrug TDMA 2/09-D S-plus) — 5 x 3 mL

Lyophilised human serum control with reference values for accuracy and precision control for therapeutic drug monitoring in serum. The reference values ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry) and released by the GTFCh.

Analytes

Citalopram	167.3 µg/L	9-Hydroxy-risperidone	102.3 µg/L
Perazine	297.8 µg/L	Ziprasidone	90.1 µg/L
Risperidone	9.1 µg/L		

ME 41430 — Therapeutic drug monitoring, human serum control with reference values (Medidrug TDMC 2/09-A S-plus) — 5 x 4 mL

Lyophilised human serum control with reference values for accuracy and precision control for therapeutic drug monitoring in serum. The reference values ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry) and released by the GTFCh.

Analytes

Aripiprazol	59.9 µg/L	Sertinol *	20.0 µg/L
Flupentixol	2.4 µg/L	Sulpirid	113.9 µg/L
Fluphenazine	2.1 µg/L	Zotepine*	45.0 µg/L
Haloperidol	7.6 µg/L	*) can be used as precision control, only	

Code	Product	Unit
ME 41431	Therapeutic drug monitoring, human serum control with reference values (Medidrug TDMC 2/09-B S-plus) Lyophilised human serum control with reference values for accuracy and precision control for therapeutic drug monitoring in serum. The reference values ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry) and released by the GTFCh. Analytes Aripiprazol 195.5 µg/L; Flupentixol 6.0 µg/L; Fluphenazine 6.7 µg/L; Haloperidol 19.7 µg/L; Sertinol * 65.0 µg/L; Sulpirid 454.8 µg/L; Zotepine* 130.0 µg/L *) can be used as precision control, only	5 x 4 mL
ME 41470	Therapeutic drug monitoring, human serum control, with reference values (Medidrug TDMD 2/09-A S-plus) Lyophilised human serum control with reference values for accuracy and precision control for therapeutic drug monitoring in serum. The reference values ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry) and released by the GTFCh. Analytes Duloxetine 34.5 µg/L; Fluoxetine 142.4 µg/L; Fluvoxamine 83.8 µg/L; Mianserine 50.4 µg/L; Mirtazepine 29.6 µg/L; Paroxetine 34.9 µg/L; Reboxetine 76.1 µg/L; Sertraline 45.6 µg/L; Venlafaxin 243.0 µg/L; Desmethylvenlafaxin 164.6 µg/L	5 x 4 mL
ME 41471	Therapeutic drug monitoring, human serum control, with reference values (Medidrug TDMD 2/09-B S-plus) Lyophilised human serum control with reference values for accuracy and precision control for therapeutic drug monitoring in serum. The reference values ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry) and released by the GTFCh. Analytes Duloxetine 55.8 µg/L; Fluoxetine 420.0 µg/L; Fluvoxamine 168.3 µg/L; Mianserine 138.1 µg/L; Mirtazepine 119.5 µg/L; Paroxetine 79.3 µg/L; Reboxetine 126.7 µg/L; Sertraline 161.3 µg/L; Venlafaxin 371.2 µg/L; Desmethylvenlafaxin 362.3 µg/L	5 x 4 mL
ME 41472	Therapeutic drug monitoring, human serum control, with reference values (Medidrug TDMD 2/09-A S-plus) Lyophilised human serum control with reference values for accuracy and precision control for therapeutic drug monitoring in serum. The reference values ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry) and released by the GTFCh. Analytes Duloxetine 68.60 µg/L; Fluoxetine 418.60 µg/L; Fluvoxamine 226.70 µg/L; Mianserine 127.70 µg/L; Mirtazepine 148.30 µg/L; Paroxetine 59.60 µg/L; Reboxetine 217.10 µg/L; Sertraline 174.90 µg/L; Venlafaxin 368.80 µg/L; Desmethylvenlafaxin 330.80 µg/L	5 x 4 mL

Tricyclic antidepressants

Code	Product	Unit
ME 42916	Tricyclic antidepressants in serum, certified reference control (Medidrug TCA 1/06-B S-plus) Lyophilised serum control prepared from human serum for accuracy and precision monitoring of tricyclic antidepressant determinations in serum. The assay values and confidence ranges were established by a large number of independent institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh Analytes Amitriptyline 354.30 µg/L; Doxepine 368.80 µg/L; Nordoxepine 306.90 µg/L; Nortriptyline 213.60 µg/L	10 x 2.5 mL
ME 42919	Tricyclic antidepressants, human serum control with reference values (Medidrug TCA 2/07-A S-plus) Lyophilised human serum control for accuracy and precision monitoring of tricyclic antidepressant determinations in serum. The reference values were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry). Analyte Amitriptyline 81.2 µg/L; Doxepine 62.5 µg/L; Nordoxepine 113.7 µg/L; Nortriptyline 80.5 µg/L	10 x 2.5 mL
ME 42920	Tricyclic antidepressants, human serum control with reference values (Medidrug TCA 2/07-B S-plus) Lyophilised human serum control for accuracy and precision monitoring of tricyclic antidepressant determinations in serum. The reference values were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry). Analyte Amitryptilin 299.3 µg/L; Doxepin 158.9 µg/L; Nordoxepin 205.6 µg/L; Nortryptilin 185.9 µg/L	10 x 2.5 mL

Code	Product	Unit
ME 42921	Tricyclic antidepressants, human serum control with reference values (Medidrug TCA 1/10-A S-plus) Lyophilised human serum control for accuracy and precision monitoring of tricyclic antidepressant determinations in serum. The reference values were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry). Analyte Amitryptilin .....83.00 µg/L Doxepin.....70.60 µg/L Nordoxepin ..... 118.90 µg/L Nortryptilin ..... 84.70 µg/L Trimipramine.....72.40 µg/L	10 x 2.5 mL
ME 42922	Tricyclic antidepressants, human serum control with reference values (Medidrug TCA 1/10-C S-plus) Lyophilised human serum control for accuracy and precision monitoring of tricyclic antidepressant determinations in serum. The reference values were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry). Analyte Clomipramine.....67.60 µg/L Desipramine.....138.10 µg/L Imipramine..... 146.30 µg/L Norclomipramine ..... 78.20 µg/L Maprotiline .....88.60 µg/L	10 x 2.5 mL

Various drugs of abuse

Code	Product	Unit
ME 42606	Drugs of abuse in human whole blood, control with reference values (Medidrug BTMF 3/09-C VB-Plus) Lyophilised human blood control prepared from human blood with constituents of drugs of abuse. With reference values for accuracy and precision monitoring of drugs of abuse determinations from human whole blood. The reference values ranges were established by institutions of forensic medicine within the bounds of external proficiency testing and released by the GTFCh. Analytes Amphetamine.....98.4 µg/L MDA.....76.9 µg/L MDE (MDEA).....56.4 µg/L MDMA (Ecstasy).....56.7 µg/L Methamphetamine.....126.9 µg/L MBDB.....63.1 µg/L Cocaine.....51.4 µg/L Benzoylecgonine .....145.8 µg/L Ecgoninmethylester .....43.0 µg/L Morphine .....33.7 µg/L Codeine.....149.0 µg/L Dihydrocodeine .....168.0 µg/L Δ^{9}-THC .....2.9 µg/L 11-Hydroxy-Δ^{9}-THC.....2.5 µg/L 11-Nor-Δ^{9}-THC COOH .....44.2 µg/L	10 x 2.5 mL
LGCFOR9887.01	Drugs of abuse in human hair - DHF 2/10 Accuracy control for the internal quality assurance in the laboratory. The control is prepared of ground human hair spiked with drugs of abuse. The target values are in practice-oriented ranges. The target values were determined within the proficiency test *DHF 2 / 10 - drugs in hair* of the GTFCh under the organizational management of ARVECON GmbH. Requirements for sample preparation and analysis method were not prescribed. Analyses were performed by the participants with GC/MS (/MS) and LC/MS(/MS). The target values were released by the coordinator of the proficiency testing of the GTFCh Analyte — target value Δ^{9}-Tetrahydrocannabinol .....0.68 ng/mg Cannabinol.....0.68 ng/mg Cannabidiol.....0.63 ng/mg Amphetamine.....1.41 ng/mg Methamphetamine.....1.02 ng/mg MDMA.....3.07 ng/mg MDA.....0.98 ng/mg MDEA.....0.60 ng/mg Cocaine.....2.80 ng/mg Benzoylecgonine.....3.69 ng/mg Morphin .....1.06 ng/mg 6-Monoacetylmorphine .....0.26 ng/mg Methadone .....2.77 ng/mg EDDP .....0.63 ng/mg	250 mg
AC-HA015.045.002	Drugs of abuse in human hair -DHF 3/10-A HA Accuracy control for the internal quality assurance in the laboratory. The control is prepared of ground human hair spiked with drugs of abuse.The target values are in practice-oriented ranges. Before any analysis no washing steps should be done, as this can lead to a decrease of the concentration of the analytes. Considering this restriction the control material can be prepared like a patient sample. The target values were released by the coordinator of the proficiency testing of the GTFCh. Analytes — target value Amphetamine.....1,14 ng/mg Methamphetamine.....0,71 ng/mg MDMA.....1,78 ng/mg MDA.....0,43 ng/mg MD(E)A .....0,59 ng/mg Cocaine.....3,17 ng/mg Benzoylecgonine .....2,93 ng/mg Morphine.....0,82 ng/mg MAM 6-Monoacetylmorphine.....1,20 ng/mg Methadone.....1,80 ng/mg ED .....0,49 ng/mg THC∆9-Tetrahydrocannabinol.....0,43 ng/mg CBN Cannabinol.....0,81 ng/mg CBD Cannabidiol .....0,73 ng/mg Tramadol.....1,33 ng/mg	250 mg

Code	Product	Unit

NIST-2379 — Drugs of abuse in human hair I — 100 mg

This Standard Reference Material (SRM) is intended primarily for use in validating methods for determining cocaine (COC), benzoylecgonine (BZE), cocaethylene (CE), amphetamine (AMP), methamphetamine (MAMP), and phencyclidine (PCP) in human hair and similar materials. This SRM can also be used for quality assurance when assigning values to in-house control materials. The SRM is a drug-free human hair material, to which drugs of abuse have been incorporated. A unit of SRM 2379 consists of one bottle containing approximately 100 mg of hair segments.

Certified concentrations (mass fraction)

Analytes

Amphetamine	6.00 ± 0.32 ng/mg
Benzoylecgonine	4.01 ± 0.31 ng/mg
Cocaethylene	2.67 ± 0.24 ng/mg
Cocaine	7.45 ± 0.40 ng/mg
Methamphetamine	5.20 ± 0.27 ng/mg
Phencyclidine	6.24 ± 0.42 ng/mg

Currently not available

NIST-2380 — Drugs of abuse in human hair II — 100 mg

This standard reference material is intended primarily for use in validating methods for determining morphine (MOR), codeine (COD), 6-monoacetylmorphine (MAM), and tetrahydrocannabinol (THC) in human hair and similar materials. This material can also be used for quality assurance when assigning values to in-house control materials. The standard is a drug-free human hair material, to which drugs of abuse have been incorporated. A unit consists of one bottle containing approximately 100 mg of hair segments.

Certified concentrations (mass fraction)

Analyte

Codeine	9.82 ± 0.70 ng/mg
Morphine	10.54 ± 0.68 ng/mg
6-Monoacetylmorphine	2.71 ± 0.30 ng/mg
Tetrahydrocannabinol	0.99 ± 0.10 ng/mg

Currently not available

ME 41652 — Drugs of abuse in human serum, human serum control with reference values (BMTF 1/10-B S-plus) — 10 x 2.5 mL

Lyophilised human serum control prepared from human blood with constituents of drugs of abuse. With reference values for accuracy and precision monitoring of drugs of abuse determinations from serum. The reference values ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry) and released by the GTFCh.

Analytes

Amphetamine	24.30 µg/L	Ecgoninmethylester	12.00 µg/L
MDA	26.20 µg/L	Morphine	11.40 µg/L
MDE (MDEA)	24.60 µg/L	Codeine	10.60 µg/L
MDMA (Ecstasy)	24.80 µg/L	Dihydrocodeine	47.30 µg/L
Methamphetamine	26.00 µg/L	Δ9-THC	1.10 µg/L
MBDB	25.40 µg/L	11-Hydroxy-Δ9-THC	1.10 µg/L
Cocaine	14.10 µg/L	11-Nor-Δ9-THC COOH	13.50 µg/L
Benzoylecgonine	46.20 µg/L		

ME 41653 — Drugs of abuse in human serum, human serum control with reference values (BTMF 2/10-B S-plus) — 10 x 2.5 mL

Lyophilised human serum control prepared from human blood with constituents of drugs of abuse. With reference values for accuracy and precision monitoring of drugs of abuse determinations from serum. The reference values ranges were established by institutions of forensic medicine within the bounds of external proficiency testing by the GTFCh (Association of Toxicological and Forensic Chemistry) and released by the GTFCh.

Analytes

Amphetamine	143,70 µg/L
MDA	104,20 µg/L
MDE (MDEA)	148,80 µg/L
MDMA (Ecstasy)	143,40 µg/L
Methamphetamine	154,60 µg/L
MBDB	91,50 µg/L
Cocaine	90,20 µg/L
Benzoylecgonine	462,00 µg/L
Ecgoninmethylester	66,70 µg/L
Morphine	91,30 µg/L
Codeine	101,30 µg/L
Dihydrocodeine	199,90 µg/L
Δ9-THC	17,50 µg/L
11-Hydroxy-Δ9-THC	9,20 µg/L
11-Nor-Δ9-THC COOH	135,90 µg/L

Code	Product	Unit
AC-SE015.015.001	Drugs of abuse in serum, lyophilized - BTMF 3/10-C for in vitro diagnostic use	10 x 2.5 mL

This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human serum with drugs of abuse. The concentrations of the drugs and metabolites lie within the expected treatment ranges. The target values were released by the coordinator of proficiency testing of the GTFCh.

Analytes	target value
Amphetamine	23,5 µg/L
Methamphetamine	23,8 µg/L
MDMA	24,3 µg/L
MDA	4,1 µg/L
MDEA	24,1 µg/L
MBDB	23,5 µg/L
Cocaine	11,1 µg/L
Benzoylecgonine	47,9 µg/L
Ecgoninemethyl ester	10,6 µg/L
Codeine	10,6 µg/L
Morphine	9,6 µg/L
Dihydrocodeine	47,2 µg/L
∆9-Tetrahydrocannabinol	1,1 µg/L
11-OH-∆9-Tetrahydrocannabinol	1,1 µg/L
11-nor-∆9-THC carbonic acid	9,5 µg/L

Code	Product	Unit
AC-SE015.015.003	Drugs of abuse in serum, lyophilized - BTMF 1/11-B SE for in vitro diagnostic use	10 x 2.5 mL

This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human serum with drugs of abuse. The concentrations of the drugs and metabolites lie within the expected treatment ranges. The target values were released by the coordinator of proficiency testing of the GTFCh.

Analytes	target value		
Amphetamine	140,3 µg/L	Ecgoninemethyl ester	98,9 µg/L
Methamphetamine	140,9 µg/L	Codeine	95,8 µg/L
MDMA	147,4 µg/L	Morphine	99,3 µg/L
MDA	97,3 µg/L	Dihydrocodeine	185,3 µg/L
MDEA	146,0 µg/L	∆9-Tetrahydrocannabinol	19,9 µg/L
MBDB	93,4 µg/L	11-OH-∆9-Tetrahydrocannabinol	9,8 µg/L
Cocaine	100,4 µg/L	11-nor-∆9-THC carbonic acid	135,9 µg/L
Benzoylecgonine	412,7 µg/L		

Code	Product	Unit
ME 40531	Drugs and medicaments, cut-off - 25 % human urine screening control with target values	9 x 5 mL

Lyophilised human urine control (Medidrug U-Screen) prepared from human urine with target values intended for the use as quality control to monitor the performance of urine toxicology confirmatory procedures by determination of drugs of abuse and drugs.

Analyte	cut off	- 25% cut off
Amphetamine	500	375 ng/ml
Benzoylecgonine	300	225 ng/ml
Morphine	300	225 ng/ml
Oxazepam	200	150 ng/ml
Secobarbital	200	150 ng/ml
11-Nor-Δ^9-THC COOH	50	37.50 ng/ml
Phencyclidine (PCP)	25	18.75 ng/ml
LSD	1	0.75 ng/ml
Methadone	300	225 ng/ml
EDDP	300	225 ng/m
Methaqualone	300	225 ng/ml
Propoxyphen	300	225 ng/ml
Buprenorphine	5	3.75 ng/ml

Code	Product	Unit
ME 40532	Drugs and medicaments, cut-off + 25 % human urine screening control with target values	9 x 5 mL

Lyophilised human urine control (Medidrug U-Screen) prepared from human urine with target values intended for the use as quality control to monitor the performance of urine toxicology confirmatory procedures by determination of drugs of abuse and drugs.

Analyte	cut off	+ 25% cut off
Amphetamine	500	625 ng/ml
Benzoylecgonine	300	375 ng/ml
Morphine	300	375 ng/ml
Oxazepam	200	250 ng/ml
Secobarbital	200	250 ng/ml
11-Nor-Δ^9-THC COOH	50	62.5 ng/ml
Phencyclidine (PCP)	25	31.25 ng/ml
LSD	1	1.25 ng/ml
Methadone	300	375 ng/ml
EDDP	300	375 ng/ml
Methaqualone	300	375 ng/ml
Propoxyphen	300	375 ng/ml
Buprenorphine	5	6.25 ng/ml

Code	Product	Unit
ME 40572	Drug U-confirmation, cut-off + 25 % drugs and medicaments urine confirmation control with target values Lyophilised urine control (Medidrug U-Confirmation) prepared from human urine containing drugs and medicaments with target values. It is intended for the use as quality control to monitor the performance of urine toxicology confirmatory procedures by determination of drugs of abuse and drugs.	9 x 5 mL

Analyte	cut off	+ 25% cut off
Amphetamine	200	250 ng/mL
d-Methamphetamine	200	250 ng/mL
MDA (3,4-Methylendioxyamphetamine)	200	250 ng/mL
MDEA (3,4-Methylendioxy-N-ethylamphetamine)	200	250 ng/mL
MDMA ("Ecstasy") (3,4-Methylendioxymethamphetamine)	200	250 ng/mL
MBDB (N-Methyl-1-(3,4-Methylendiodyphenyl)-2-butanamine)	200	250 ng/mL
Benzoylecgonine	150	187.5 ng/mL
Ecgoninmethylester	150	187.5 ng/mL
Morphine	300	375 ng/mL
Morphin-3-β-D-glucuronide	300	375 ng/mL
Codeine	300	375 ng/mL
Dihydrocodeine	300	375 ng/mL
6-Monoacetylmorphine (6-MAM)	10	12.5 ng/mL
7-Aminoflunitrazepam	200	125 ng/mL
Bromazepam	100	125 ng/mL
Oxazepam	100	125 ng/mL
Nordiazepam	100	125 ng/mL
Zolpidem	100	125 ng/mL
Secobarbital	150	187:5 ng/mL
THC COOH (11-Nor-Δ^{9}-THC carboxylic acid)	15	18:75 ng/mL
Phencyclidine (PCP)	25	31.25 ng/mL
LSD (Lysergic acid diethylamide)	1	1.25 ng/mL
Methadone	250	312:5 ng/mL
EDDP (2-Ethylen-1,5-dimethyl-3,3-diphenyl-pyrrolidine)	250	312:5 ng/mL
Methaqualone	300	375 ng/mL
Propoxyphene	300	375 ng/mL
Buprenorphine	5	6.25 ng/mL
Norbuprenorphine	5	6.25 ng/mL

Code	Product	Unit
ME 40571	Drug U-confirmation, cut-off - 25 % drugs and medicaments urine confirmation control with target values Lyophilised urine control (Medidrug U-Confirmation) prepared from human urine containing drugs and medicaments with target values. It is intended for the use as quality control to monitor the performance of urine toxicology confirmatory procedures by determination of drugs of abuse and drugs.	9 x 5 mL

Analyte	cut off	- 25% cut off
Amphetamine	200	150 ng/mL
d-Methamphetamine	200	150 ng/mL
MDA (3,4-Methylendioxyamphetamine)	200	150 ng/mL
MDEA (3,4-Methylendioxy-N-ethylamphetamine)	200	150 ng/mL
MDMA ("Ecstasy") (3,4-Methylendioxymethamphetamine)	200	150 ng/mL
MBDB (N-Methyl-1-(3,4-Methylendiodyphenyl)-2-butanamine)	200	150 ng/mL
Benzoylecgonine	150	112.5 ng/mL
Ecgoninmethylester	150	112.5 ng/mL
Morphine	300	225 ng/mL
Morphin-3-β-D-glucuronide	300	225 ng/mL
Codeine	300	225 ng/mL
Dihydrocodeine	300	225 ng/mL
6-Monoacetylmorphine (6-MAM)	10	7.5 ng/mL
7-Aminoflunitrazepam	200	75 ng/mL
Bromazepam	100	75 ng/mL
Oxazepam	100	75 ng/mL
Nordiazepam	100	75 ng/mL
Zolpidem	100	75 ng/mL
Secobarbital	150	112.5 ng/mL
THC-COOH (11-Nor-Δ^{9}-THC carboxylic acid)	15	11.25 ng/mL
Phencyclidine (PCP)	25	18.75 ng/mL
LSD (Lysergic acid diethylamide)	1	0.75 ng/mL
Methadone	250	187.5 ng/mL
EDDP (2-Ethylen-1,5-dimethyl-3,3-diphenyl-pyrrolidine)	250	187.5 ng/mL
Methaqualone	300	225 ng/mL
Propoxyphene	300	225 ng/mL
Buprenorphine	5	3.75 ng/mL
Norbuprenorphine	5	3.75 ng/mL

Code	Product	Unit

AC-UR015.050.003 — Drugs and alcohol in urine, lyophilized (FDT -25%) for in vitro diagnostic use — 5 x 5 mL

This product is intended for use as a control material as part of laboratory's internal quality assurance processes. Accuracy control for the internal quality assurance in the laboratory for forensic analytics and for the execution of alcohol and drug screenings within the framework of the MPU (German medical psycological assessment), by using the new generally valid evaluation criteria regarding the German driving aptitude test. The target values lie +/ – 25% above/below the defined cut-off-values of the Federal Highway Research Institute (BASt). The control material consists of urine on a human basis to which narcotics, drugs, and alcohol consumption markers have been added.

Analytes	target concentration	Analytes	target concentration
Amphetamine	37,5 µg/L	Bromazepam	37,5 µg/L
d-Methamphetamine	37,5 µg/L	Nordiazepam	37,5 µg/L
MDMA 3,4-Methylenedioxymethamphetamine	37,5 µg/L	Oxazepam	37,5 µg/L
MDA 3,4-Methylenedioxyamphetamine	37,5 µg/L	Zolpidem	37,5 µg/L
MD(E) A3,4-Methylenedioxyethylamphetamine	37,5 µg/L	Lorazepam	37,5 µg/L
Benzoylecgonine	22,5 µg/L	THC-COOH (11-nor-Δ^9-THC carbonic acid)	7,5 µg/L
Morphine	18,75 µg/L	Buprenorphine	1,75 µg/L
Codeine	7,5 µg/L	Norbuprenorphine	1,75 µg/L
Dihydrocodeine	7,5 µg/L	Methadone	37,5 µg/L
6-MAM 6-Monoacetylmorphine	3,75 µg/L	EDDP	37,5 µg/L
7-Aminoflunitrazepam	37,5 µg/L	2-ethylidene-1,5-dimethyl-3,3-diphenyl-pyrrolidine	
Alprazolam	37,5 µg/L	GHB gamma-Hydroxybutyric acid	7500 µg/L
Diazepam	37,5 µg/L	Ethylglucuronide	75 µg/L
Flunitrazepam	37,5 µg/	Ethylsulfate	75 µg/L

AC-UR015.050.004 — Drugs and alcohol in urine, lyophilized (FDT + 25%) for in vitro diagnostic use — 5 x 5 mL

This product is intended for use as a control material as part of laboratory's internal quality assurance processes. Accuracy control for the internal quality assurance in the laboratory for forensic analytics and for the execution of alcohol and drug screenings within the framework of the MPU (German medical psycological assessment), by using the new generally valid evaluation criteria regarding the German driving aptitude test. The target values lie +/ – 25% above/below the defined cut-off-values of the Federal Highway Research Institute (BASt). The control material consists of urine on a human basis to which narcotics, drugs, and alcohol consumption markers have been added.

Analytes	target concentration	Analytes	target concentration
Amphetamine	62,5 µg/L	Bromazepam	62,5 µg/L
d-Methamphetamine	62,5 µg/L	Nordiazepam	62,5 µg/L
MDMA 3,4-Methylenedioxymethamphetamine	62,5 µg/L	Oxazepam	62,5 µg/L
MDA 3,4-Methylenedioxyamphetamine	62,5 µg/L	Zolpidem	62,5 µg/L
MD(E) A3,4-Methylenedioxyethylamphetamine	62,5 µg/L	Lorazepam	62,5 µg/L
Benzoylecgonine	37,5 µg/L	THC-COOH (11-nor-Δ^9-THC carbonic acid)	12,5 µg/L
Morphine	31,25 µg/L	Buprenorphine	2,25 µg/L
Codeine	12,5 µg/L	Norbuprenorphine	2,25 µg/L
Dihydrocodeine	12,5 µg/L	Methadone	62,5 µg/L
6-MAM 6-Monoacetylmorphine	6,25 µg/L	EDDP	62,5 µg/L
7-Aminoflunitrazepam	62,5 µg/L	2-ethylidene-1,5-dimethyl-3,3-diphenyl-pyrrolidine	
Alprazolam	62,5 µg/L	GHB gamma-Hydroxybutyric acid	12500 µg/L
Diazepam	62,5 µg/L	Ethylglucuronide	125 µg/L
Flunitrazepam	62,5 µg/L	Ethylsulfate	125 µg/L

NIST-1511 — Multi-drugs of abuse in freeze-dried urine — 3 x 25 mL

This material is intended primarily for verifying the accuracy of methods used for the determination of morphine, codeine, cocaine, (benzoylecgonine), and marijuana metabolite (THC-9-COOH) and phencyclidine in human urine. One set consists of three bottles of freeze-dried urine with all of the analytes included in each bottle. There is no blank urine with this set.

Analytes		Analytes	
Morphine	309 ± 20 ng/mL	THC-9-COOH	14.1 ± 0.8 ng/mL
Codeine	288 ± 11 ng/mL	Phencyclidine	20.7 ± 2.0 ng/mL
Benzoylecgonine	162 ± 8 ng/mL		

AC-WH015.015.001 — Drugs of abuse in whole blood, lyophilized - BTMF 3/10-B WH for in vitro diagnostic use — 10 x 2.5 mL

This product is intended for use as a control material as part of a laboratory's internal quality assurance processes. The control is prepared by spiking human whole blood with drugs of abuse. The concentrations of the drugs and metabolites lie within the expected treatment ranges. The target values were released by the coordinator of proficiency testing of the GTFCh

Analytes	target values
Amphetamine	90,2 µg/L
Methamphetamine	103,1 µg/L
MDMA	54,6 µg/L
MDA	66,0 µg/L
MD(E)A	45,3 µg/L
MBDB	57,1 µg/L
Cocaine	47,9 µg/L
Benzoylecgonine	145,2 µg/L
Ecgoninemethyl ester	37,0 µg/L
Codeine	144,3 µg/L
Morphine	30,0 µg/L
Dihydrocodeine	147,9 µg/L µg/L
delta 9 Tetrahydrocannabinol	3,1 µg/L
11-OH- delta 9-Tetrahydrocannabinol	2,6 µg/L
11-nor- delta 9-THC carbonic acid	40,5 µg/L

Sports drugs and steroids

LGC Standards

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Reference materials for sports drugs analysis from NMIA

National Measurement Institute of Australia (NMIA) produces some 200 state-of-the-art certified reference materials for sports drugs applications.

- Synthetic steroids and their metabolites
- Endogenous steroids and their metabolites
- Prohormones and their metabolites
- Growth promotants and their metabolites
- Various other substances of interest

NMIA has a third party accreditation as a reference materials producer operating to ISO Guide 34. Its reference materials are supplied with a comprehensive analysis report that includes:

- Certified property values with uncertainty statements
- Homogeneity and stability studies on all materials
- Traceability of assigned values to the international system of units

www.lgcstandards.com

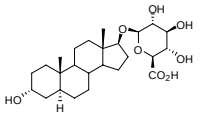
Australian Government

National Measurement Institute

REFERENCE MATERIAL ANALYSIS REPORT

Report ID: S002.2011.02

Compound Name: **5α-Androstan-3α, 17β-diol-17β-glucuronide**
Description: White solid
Collection No: S002
Chemical Formula: $C_{25}H_{40}O_8$
CAS No: 95237-44-8
Batch No: 09-S-06
Molecular Weight: 468.6
Batch production completed: June 2011
Structure:



Synonyms: (3α,5α, 17β)-Hydroxyandrostan-17yl-β-D-glucopyranosiduronic acid
3α-Hydroxy-5α-androstan-17β-yl-glucosiduronic acid
5α-Androstane-3α-ol-17β-*O*-glucuronide
Androstane β-D-glucopyranosiduronic acid derivative

Purity (mass fraction): 88.1 ± 2.1 % (95 % coverage interval)

Purity estimate obtained from a combination of traditional analytical techniques and quantitative nuclear magnetic resonance (QNMR). The purity estimate by traditional analytical techniques was obtained by subtraction from 100 % of total impurities by HPLC with ELS detection, thermogravimetric analysis, Karl Fischer analysis and ^{1}H NMR. The purity estimate by QNMR was obtained using a certified internal standard of maleic acid. Supporting evidence is provided by headspace GC-MS analysis of occluded solvent and elemental microanalysis.

Warning: This material has shown signs of long term instability in methanol solution. While not confirmed, we believe this to be the result of esterification to the methyl ester.

HPLC:	Column:	Symmetry C18, 5 µm (4.6 mm × 150 mm)
	Mobile Phase:	Methanol/water with formic acid pH 2.3 (70:30)
	Flow Rate:	1.0 mL/min
	Column oven:	40 °C
	Detector:	ELSD
	Retention time:	5.4 min.
	Relative peak area response of main component:	
	Initial analysis:	Mean = 99.6%, s = 0.1 (7 sub samples in duplicate, June 2011)
Karl Fischer analysis:		Moisture content 11.5% mass fraction (June 2011)
QNMR:	Instrument:	Bruker Avance DMX-600
	Field strength:	600 MHz Solvent: CD_3OD
	Internal standard:	Maleic acid (98.7% m/m)
	Initial analysis:	Mean (4.4 ppm) = 88.1%, s = 0.9% (6 sub samples in duplicate, June 2011)
	Initial analysis:	Mean (4.0 ppm) = 88.1%, s = 1.0% (6 sub samples in duplicate, June 2011)

Spectroscopic and other characterisation data

ESI-MS:	Instrument	Micromass Quatro LC Micro
	Operation:	Negative ion mode, direct infusion at 10 µL/min
	Ionisation:	ESI spray voltage at 3.0 kV negative ion
	EM voltage:	650 V
	Cone voltage	20 V
	Peak:	467.3 ($M\text{-}H^+$) m/z
HS-GC-MS:	Instrument:	Agilent 6890/5973/G1888
	Column:	DB-624, 30 m x 0.25 mm I.D. x 1.4 µm
	Program:	50 °C (5 min), 7 °C/min to 120 °C, 15 °C/min to 220 °C (8.3 min)
	Injector:	150 °C Transfer line temp: 280 °C
	Carrier:	Helium, 1.2 mL/min Split ratio: 50/1
	Solvents detected:	No solvents detected.
TLC:	Conditions:	Kieselgel $60F_{254}$. Chloroform/methanol (2/1). Single spot observed, R_f = 0.8. Visualisation with vanillin.
IR:	Instrument:	Biorad FTS300MX FT-IR
	Range:	4000-400cm^{-1}, KBr powder
	Peaks:	3406, 3319, 2914, 1728, 1448, 1354, 1253, 1165, 1059, 1031, 1003 cm^{-1}
^{1}H NMR:	Instrument:	Bruker Avance DMX-600
	Field strength:	600 MHz Solvent: CD_3OD (3.31 ppm)
	Spectral data:	δ 0.76 (1H, m), 0.82 (3H, s), 0.83 (3H, s), 0.90-1.02 (2H, m), 1.14-1.70 (17H, m), 1.96-2.02 (2H, m), 3.20 (1H, dd, *J* = 7.9, 9.2 Hz), 3.35 (1H, t, *J* = 9.1 Hz), 3.51 (1H, t, *J* = 9.6 Hz), 3.67 (1H, t, *J* = 8.6 Hz), 3.73 (1H, d, *J* = 9.8 Hz), 3.95 (1H, m), 4.37 (1H, d, *J* = 7.8 Hz) ppm
^{13}C NMR:	Instrument:	Bruker Avance DMX-600
	Field strength:	150 MHz Solvent: d_6-DMSO (39.5 ppm)
	Spectral data:	δ 11.1, 11.4, 19.9, 22.8, 28.2, 28.5, 28.6, 31.4, 32.0, 34.9, 35.7, 35.8, 36.9, 38.6, 42.7, 50.4, 54.1, 64.1, 71.5, 73.4, 75.7, 76.1, 87.7, 103.5, 170.4 ppm
Melting point:		256-257 °C
Microanalysis:		Found: C = 57.0 %; H = 9.0 % Calc: C = 64.1 %; H = 8.6 % (Calculated for $C_{25}H_{40}O_8$) Calc: C = 57.1 %; H = 8.9 % (Calculated for $C_{25}H_{40}O_8$ + 11.0 % H_2O)

Expiration of certification
The property values are valid till 28th June 2014, i.e. three years from the date of certification provided the **unopened** material is handled and stored in accordance with the recommendations below. The material as issued in the unopened container and stored as recommended below should be suitable for use beyond this date, subject to confirmation of batch stability from the issuing body.

The expiry date/shelf life does not apply to sample bottles that have been opened. In such cases, it is recommended that the end-user conduct their own in-house stability trials.

The long-term stability of the compound in solution has not been examined.

This material has been given a shelf life of three years from the date of certification. The material will be re-tested on an annual basis to ensure that the property values are still valid. In the event a product fails the stability trial, notification will be sent to all impacted customers.

In the absence of stability data the measurement uncertainty at the 95% confidence interval has been expanded to accommodate any potential change in the property value. The stability component has been estimated from stability trials conducted on similar materials by NMI Australia over the last 10 years.

Homogeneity assessment
The homogeneity of the material was assessed using purity assay by HPLC with ELS detection on seven randomly selected 1-2 mg sub samples of the material. The material was judged to be homogeneous at this level of sampling as the variation in analysis results between samples was not significantly different at a 95% confidence level from that observed on repeat analysis of the same sample.

Recommended storage
When not in use, this material should be stored at or below 4 ºC in a closed container in a dry, dark area.

Intended Use
For ***in vitro*** laboratory analysis only.

Caution
Treat as hazardous substance. Use appropriate work practices when handling to avoid skin or eye contact, ingestion or inhalation of dust.

Legal notice
Neither NMI nor any person acting on NMI's behalf assumes any liability with respect to the use of, or for damages resulting from the use of, this reference material or the information contained in this certificate.

Authorised by:

S. R. Davies

Dr Stephen R. Davies,
Team Leader,
Chemical Reference Materials, NMI.
Dated: 3 August, 2011.

Characterisation data and property values specified in this report were first issued on 1st August 2011.

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TECHNICAL COMPETENCE

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Sports drugs and steroids

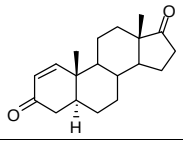
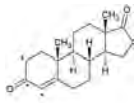
Ordering of certified reference materials for sports drugs analysis

Because of its partnership, as a government laboratory, with the regulatory bodies (e.g. WADA - World Anti Doping Agency) controlling the use of performance-enhancing materials in sport, NMIA places restrictions on the distribution of all its sports drugs.

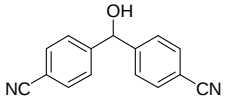
Your local LGC Standards office will provide information about the rules and regulations for sports drugs pertaining to your country, and assist you throughout the ordering process.

Anabolic steroid reference materials

1-Androstendione

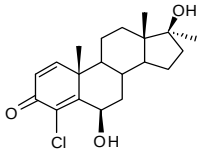
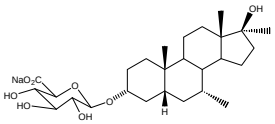
Code	Product		Unit
NMIAD845	1-Androstendione (5alpha-Androst-1-en-3,17-dione) ° (for WADA labs, only)		1 mg
CERA-084	Androstene-3,17-dione-2,3,4-13C3 (0.1 mg/ml) in Acetonitrile		1 mL

Aromatase inhibitors

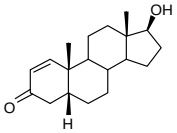
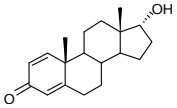
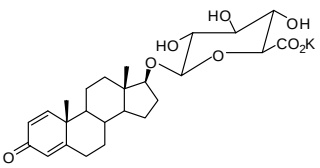
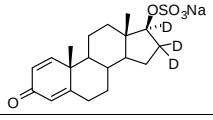
NMIAD909	Bis-(4-cyanophenyl)methanol (Letrazole metabolite) °		1 mg

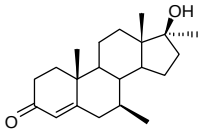
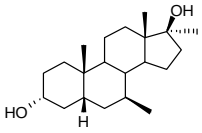
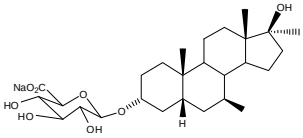
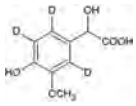
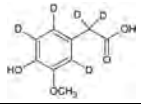
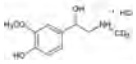
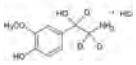
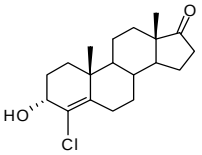
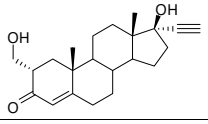
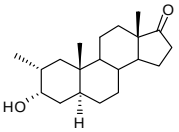
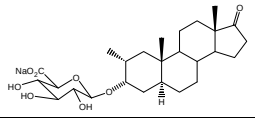
Selective estrogen receptor modulators (SERMs)

Bolasterone metabolites

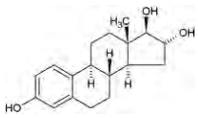
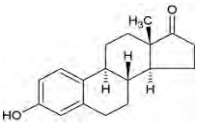
NMIAD614	7alpha,17alpha-Dimethyl-5beta-androstane-3alpha,17beta-diol °		1 mg
NMIAD628	7alpha,17alpha-Dimethyl-5beta-androstane-3alpha,17beta-diol glucuronide °		1 mg

Boldenone and metabolites

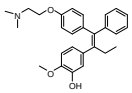
NMIAD564	5beta-Androst-1-en-17beta-ol-3-one °		1 mg
NMIAD935	5beta-Androst-1-en-17beta-ol-3-one glucuronide, free acid °		1 mg
NMIAD582	17alpha-Boldenone (Epiboldenone) °		1 mg
NMIAD581	17beta-Boldenone-D3 °		1 mg
NMIAD862	17-beta-Boldenone glucuronide potassium salt °		1 mg
NMIAD931	17beta-Boldenone sulfate (triethylamine salt)		5 mg
NMIAD811	17beta-Boldenone sulfate-D3 °		1 mg

Code	Product		Unit
Calusterone and metabolites			
NMIAD618	Calusterone °		1 mg
NMIAD624	7beta,17alpha-Dimethyl-5beta-androstane-3alpha,17beta-diol °		1 mg
NMIAD629	7beta,17alpha-Dimethyl-5beta-androstane-3alpha,17beta-diol glucuronide °		1 mg
Catecholamines			
CERC-109	Catecholamine Mix 1 (Epinephrines) (1.0 mg/ml) in Methanol		1 mL
CERC-110	Catecholamine Mix 2 (Metanephrines) (1.0 mg/mL)(as free base) of each component in Methanol		1 mL
CERC-111	Catecholamine Metabolites Mix(1.0 mg/ml) of each component in Methanol		1 mL
CERH-091	(±)-4-Hydroxy-3-methoxymandelic Acid-D3 (ring-D3) (VMA-D3) (0.1 mg/ml) in Methanol		1 mL
CERH-092	4-Hydroxy-3-methoxyphenyl-D3-acetic-D2 Acid (HVA-D5) (0.1 mg/ml) in Methanol		1 mL
CERM-148	(±)-Metanephrine-D3 HCl (0.1 mg/ml) (as free base) in Methanol		1 mL
CERN-068	(±)-Normetanephrine-D3 HCl(0.1 mg/ml) (as free base) in Methanol		1 mL
Clostebol metabolite			
NMIAD563	4-Chloro-4-androsten-3alpha-ol-17-one °		1 mg
Danazol metabolite			
NMIAD920	2alpha-Hydroxymethylethisterone °		1 mg
Drostanolone metabolites			
NMIAD567	2alpha-Methyl-5alpha-androstan-3alpha-ol-17-one °		1 mg
NMIAD601	2alpha-Methyl-5alpha-androstan-3alpha-ol-17-one glucuronide °		1 mg
Endogenous steroids			
CERC-106	Cortisol (1.0 mg/ml) in Methanol		1 mL
CERD-061	11-Deoxycortisol (1.0 mg/ml) in Methanol		1 mL

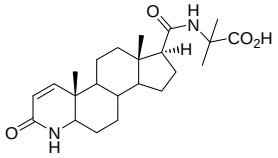
Sports drugs and steroids

Code	Product		Unit
CERD-062	21-Deoxycortisol (0.1 mg/ml) in Methanol		1 mL
CERE-074	Estriol (1.0 mg/ml) in Methanol		1 mL
CERE-075	Estrone (1.0 mg/ml) in Methanol		1 mL

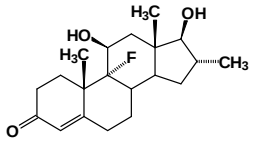
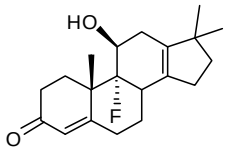
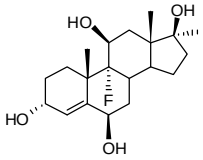
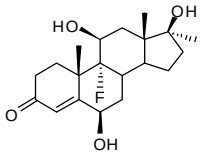
Estrogen antagonist

NMIAD921	3-Hydroxy-4-methoxytamoxifen		1 mg

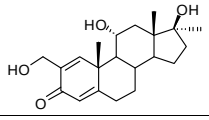
Finasteride metabolite

NMIAD910	Carboxy finasteride		1 mg

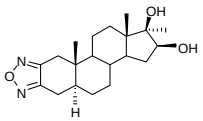
Fluoxymesterone and metabolites

CERF-909	Fluoxymesterone (1.0 mg/mL) in Dimethoxyethane		1 mL
NMIAD571	9alpha-Fluoro-17,17-dimethyl-18-nor-androstan-4,13-diene-11beta-ol-3-one °		1 mg
NMIAD616	9alpha-Fluoro-17alpha-methyl-4-androsten-3alpha, 6beta,11beta, 17beta-tetra-ol °		1 mg
NMIAD617	6beta-Hydroxyfluoxymesterone °		1 mg

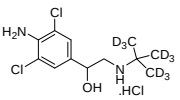
Formebolone metabolite

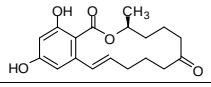
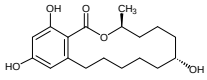
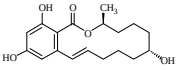
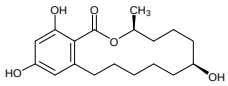
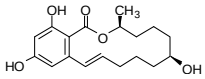
NMIAD622	2-Hydroxymethyl-17alpha-methylandrostadiene-11alpha,17beta-diol-3-one °		1 mg

Furazabol metabolite

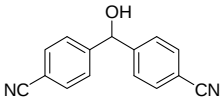
NMIAD602	16beta-Hydroxyfurazabol °		1 mg

Growth promotants and metabolites

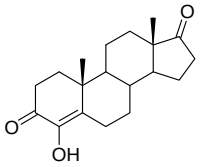
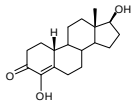
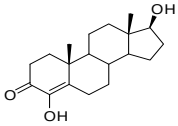
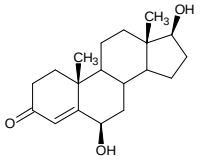
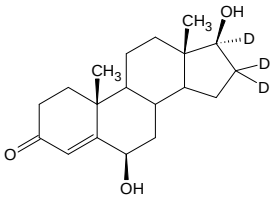
NMIAM954	Clenbuterol-D9 HCl		1 mg

Code	Product		Unit
NMIAP1787	Zearalenone		10 mg
B-MYC0610-1.2	Zearalenone (U-$^{13}C_{18}$) 25 µg/mL in Acetonitrile CERTAN®		1.2 mL
NMIAP1801	alpha-Zearalanol		5 mg
NMIAP1795	alpha-Zearalenol		5 mg
NMIAP1802	beta-Zearalanol		5 mg
NMIAP1796	beta-Zearalenol		5 mg
CERC-081	Clenbuterol-D9 HCl (0.1 mg/ml) as free base in Methanol		1 mL

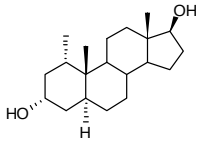
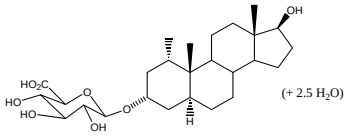
Aromatase inhibitors

NMIAD909	Bis-(4-cyanophenyl)methanol (Letrazole metabolite) °		1 mg

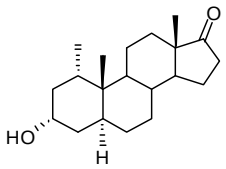
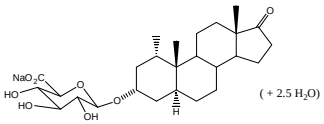
Hydroxysteroids

NMIAD852	4-Hydroxyandrostendione (Formestane) °		1 mg
NMIAD853	4-Hydroxynandrolone (Oxabolone) °		1 mg
NMIAD851	4-Hydroxytestosterone °		1 mg
CERH-059	6beta-Hydroxytestosterone (0.1 mg/mL) in Methanol		1 mL
CERT-034	6beta-Hydroxytestosterone-D3 (0.1 mg/ml) in Methanol		1 mL

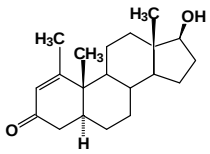
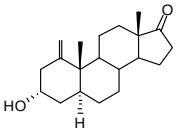
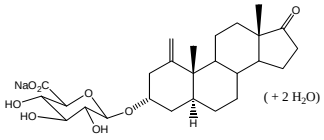
Mesterolone metabolites

NMIAD556	1alpha-Methyl-5alpha-androstan-3alpha,17beta-diol °		1 mg
NMIAD599	1alpha-Methyl-5alpha-androstan-3alpha,17beta-diol glucuronide °		1 mg

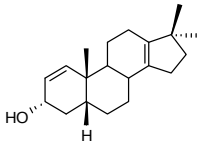
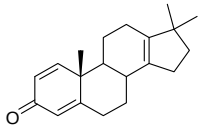
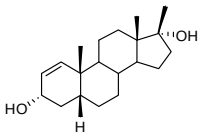
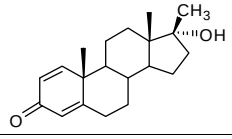
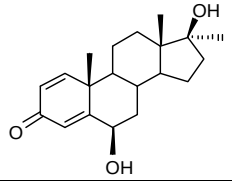
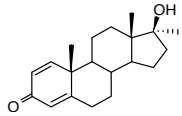
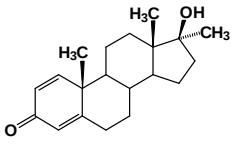
Sports drugs and steroids

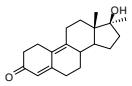
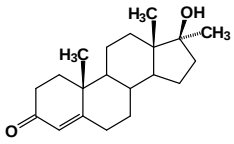
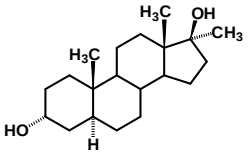
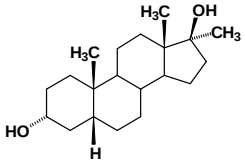
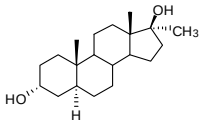
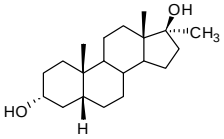
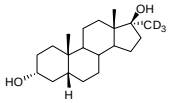
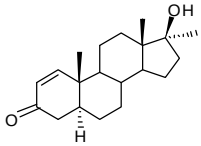
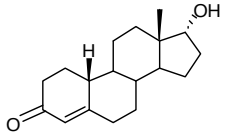
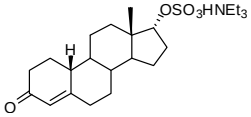
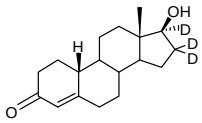
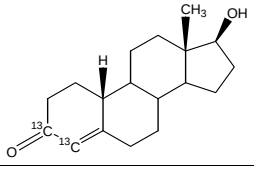
Code	Product		Unit
NMIAD557	1alpha-Methyl-5alpha-androstan-3alpha-ol-17-one °		1 mg
NMIAD598	1alpha-Methyl-5alpha-androstan-3alpha-ol-17-one glucuronide °		1 mg

Methenolone and metabolites

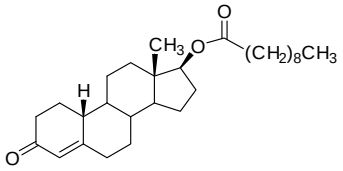
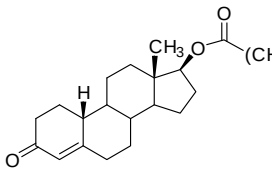
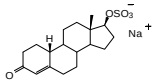
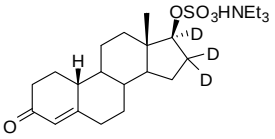
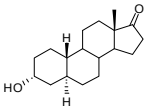
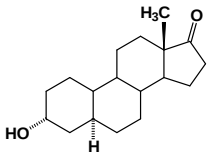
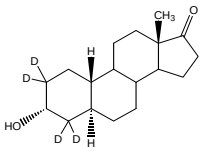
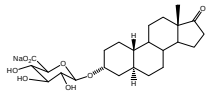
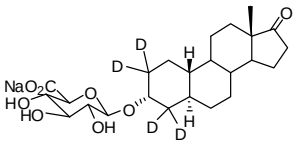
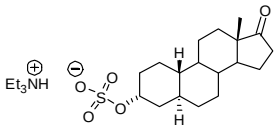
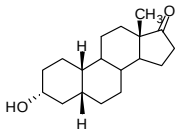
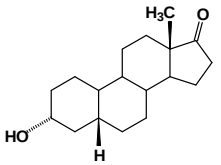
CERM-910	Methenolone (1.0 mg/mL) in 1,2-Dimethoxyethane		1 mL
NMIAD619	1-Methylene-5alpha-androstan-3alpha-ol-17-one °		1 mg
NMIAD597	1-Methylene-5alpha-androstan-3alpha-ol-17-one glucuronide °		1 mg

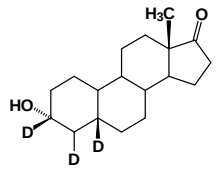
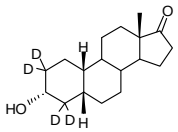
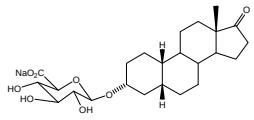
Methandienone and metabolites

NMIAD639	17,17-Dimethyl-18-nor-5beta-androsta-1,13-diene-3alpha-ol °		1 mg
NMIAD576	17,17-Dimethyl-18-norandrosta-1,4,13-trien-3-one °		5 mg
NMIAD638	Epimetendiol °		1 mg
NMIAD562	17-Epimethandienone °		1 mg
NMIAD565	6beta-Hydroxymethandienone °		1 mg
NMIAD630	Methandienone °		10 mg
CERM-912	Methandienone (1.0 mg/mL) in 1,2-Dimethoxyethane		1 mL

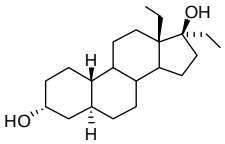
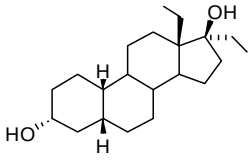
Code	Product		Unit
Methyldienolone			
NMIAD916	Methyldienolone °		1 mg
Methyltestosterone and metabolites			
CERM-906	17a-Methyltestosterone (1.0 mg/mL) in 1,2-Dimethoxyethane		1 mL
CERM-914	17a-Methyl-5a-androstane-3a,17ß-diol (1.0 mg/mL) in 1,2-Dimethoxyethane		1 mL
CERM-916	17a-Methyl-5b-androstane-3a,17ß-diol (1.0 mg/ml) in 1,2-Dimethoxyethane		1 mL
NMIAD560	17alpha-Methyl-5alpha-androstane-3alpha,17beta-diol °		1 mg
NMIAD561	17alpha-Methyl-5beta-androstane-3alpha,17beta-diol °		1 mg
NMIAD928	17alpha-Methyl-5beta-androstan-3alpha-17beta-diol-D3 °		1 mg
17alpha-Methyl-1-testosterore			
NMIAD904	17beta-Hydroxy-17alpha-methyl-5alpha-androst-1-ene-3-one		1 mg
Nandrolone and metabolites			
NMIAD722	17alpha-Nandrolone (Epinandrolone) °		1 mg
NMIAD783	17alpha-Nandrolone (Epi-nandrolone) sulfate °		5 mg
NMIAD583	17beta-Nandrolone-D3 °		5 mg
NMIAD679	17beta-Nandrolone-13C2 °		5 mg

Sports drugs and steroids

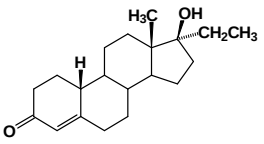
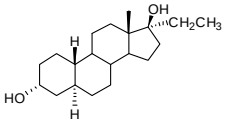
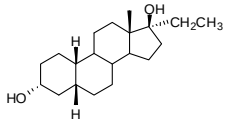
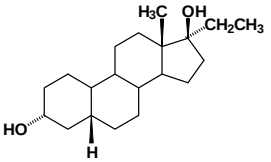
Code	Product		Unit
NMIAD684	17beta-Nandrolone decanoate °		10 mg
NMIAD861	17-beta-Nandrolone glucuronide potassium salt °		1 mg
NMIAD809	17beta-Nandrolone sulfate (Na+ salt)		1 mg
NMIAD782	17beta-Nandrolone sulfate-D3 (TEA Salt) °		1 mg
NMIAD555	19-Norandrosterone °		1 mg
CERE-910	5a-Estran-3a-ol-17-one (Norandrosterone) (1.0 mg/mL) in 1,2-Dimethoxyethane		1 mL
NMIAD584A	19-Norandrosterone-D4 °		1 mg
NMIAD596a	19-Norandrosterone glucuronide °		1 mg
NMIAD898	19-Norandrosterone glucuronide-D4 (Na+ salt) °		1 mg
NMIAD841	19-Norandrosterone sulfate ° (for WADA labs, only)		2 mg
NMIAD554	19-Noretiocholanolone °		1 mg
CERE-908	5ß-Estran-3a-ol-17-one (Noretiocholanolone) (1.0 mg/mL) in 1,2-Dimethoxyethane		1 mL

Code	Product		Unit
CERE-911	5ß-Estran-3a-ol-17-one-D3 (Noretiocholanolone) (100 µg/mL) in 1,2-Dimethoxyethane		1 mL
NMIAD926	5(10)-Estrene-3beta,17alfa-diol		1 mg
NMIAD742	19-Noretiocholanolone-D4 °		1 mg
NMIAD595a	19-Noretiocholanolone glucuronide °		1 mg

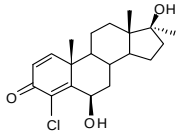
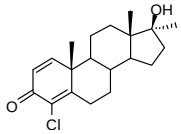
Norbolethone and metabolites

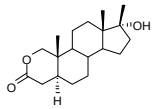
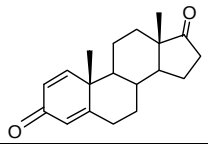
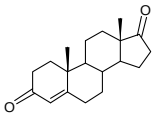
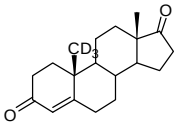
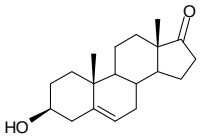
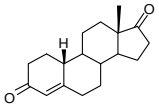
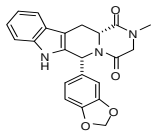
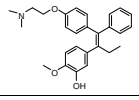
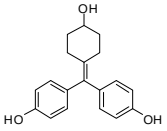
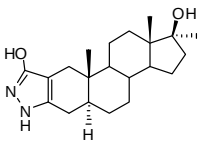
NMIAD825	Norbolethone (13beta,17alpha-Diethyl-gonan-4-ene-17beta-ol-3-one) °		1 mg
NMIAD820	13beta,17alpha-Diethyl-5alpha-gonane-3alpha, 17beta-diol (minor metabolite) °		1 mg
NMIAD818	13beta,17alpha-Diethyl-5beta-gonane-3alpha, 17beta-diol (major metabolite) °		1 mg

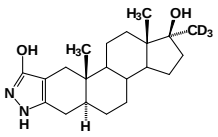
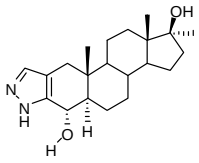
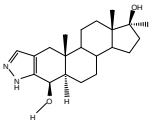
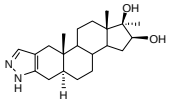
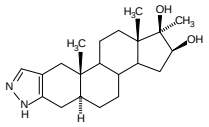
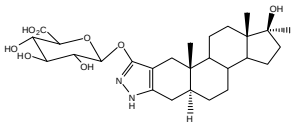
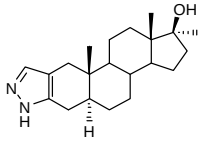
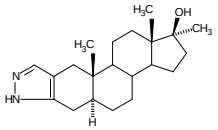
Norethandrolone and metabolites

CERN-914	Norethandrolone (1.0 mg/mL) in 1,2-Dimethoxyethane		1 mL
NMIAD558	17alpha-Ethyl-5alpha-estrane-3alpha,17beta-diol °		1 mg
NMIAD559	17alpha-Ethyl-5beta-estrane-3alpha,17beta-diol °		1 mg
CERE-905	17a-Ethyl-5ß-estrane-3a-17b-diol (100 µg/mL) in 1,2-Dimethoxyethane		1 mL

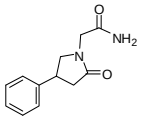
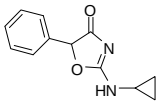
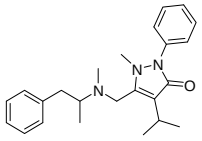
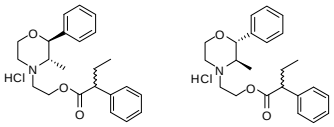
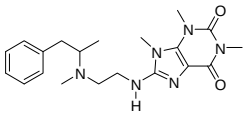
Oral turinabol and metabolites (dehydrochloromethyltestosterone)

NMIAD615	6beta-Hydroxy-oral turinabol °		1 mg
NMIAD613	Oral turinabol °		1 mg

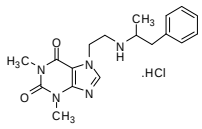
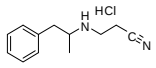
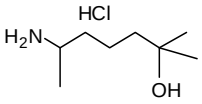
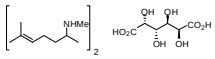
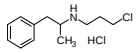
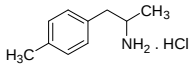
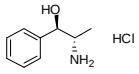
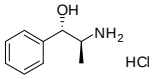
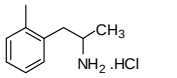
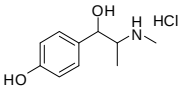
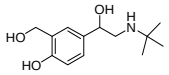
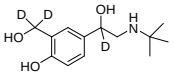
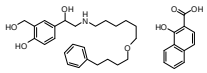
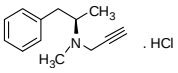
Code	Product		Unit
Oxandrolone metabolite			
NMIAD620	17-Epioxandrolone °		1 mg
Prohormones and metabolites			
NMIAD878	1,4-Androstadiene-3,17-dione (Boldendione)		1 mg
NMIAM955	Androstendione °		10 mg
NMIAD645	19-Androstendione-D3 °		1 mg
NMIAD796	Dehydroepiandrosterone (DHEA) °		10 mg
CERD-063	Dehydroepiandrosterone (DHEA) (1.0 mg/ml) in Methanol		1 mL
CERD-064	DHEA-D5 (Dehydroepiandrosterone-2,2,3,4,4-D5) (0.1 mg/ml)		1 mL
CERD-065	Dehydroepiandrosterone 3-sulfate sodium salt (DHEAS) (as free sulfate) (1.0 mg/ml) in Methanol		1 mL
CERD-066	Dehydroepiandrosterone-D5-3-sulfate sodium salt (DHEAS-D5) (2,2,3,4,4-D5) (O.1 mg/ml) in Methanol		1 mL
NMIAD721	19-Norandrostendione (Estrendione) °		10 mg
PDE-5 Inhibitors			
NMIAD941	Tadalafil		20 mg
Selective estrogen receptor modulators (SERMs)			
NMIAD921	3-Hydroxy-4-methoxytamoxifen		1 mg
Anti-estrogenic substances (others)			
NMIAD930	4-Hydroxycyclofenil		1 mg
Stanozolol and metabolites			
NMIAD577	3'Hydroxystanozolol °		1 mg

Code	Product		Unit
CERS-903	3'-Hydroxystanozolol-D3 (0.1 mg/mL) in 1,2-Dimethoxyethane		1 mL
NMIAD642	4alpha-Hydroxystanozolol °		1 mg
NMIAD641	4beta-Hydroxystanozolol °		0.5 mg
NMIAD621	16beta-Hydroxystanozolol ° (for qualitative analysis, only)		1 mg
CERH-915	16ß-Hydroxystanozolol (100 µg/mL) in 1,2-Dimethoxyethane		1 mL
NMIAD640	3'-Hydroxystanozolol glucuronide °		1 mg
NMIAD646	Stanozolol °		10 mg
CERS-906	Stanozolol (1.0 mg/ml) in 1,2-Dimethoxyethane		1 mL

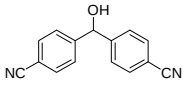
Stimulants

NMIAD891	Carphedrone °		10 mg
NMIAD914	Cyclazadone		10 mg
NMIAD893	Famprofazone		20 mg
NMIAD915	Fenbutrazate HCl		1 mg
NMIAD913	Fencamine		10 mg

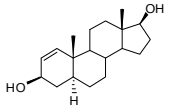
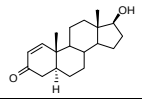
Sports drugs and steroids

Code	Product		Unit
NMIAD543	Fenetylline HCl		20 mg
NMIAD500	Fenproporex HCl		50 mg
NMIAM299	Heptaminol HCl °		50 mg
NMIAD940	Isometheptene mucate		20 mg
NMIAD283	Mefenorex HCl		50 mg
NMIAD895	(±)-4-Methylamphetamine HCl		10 mg
NMIAM296	Norephedrine HCl (Phenylpropanolamine) - DRUG PRECURSOR		100 mg
NMIAM297	(+)-Norpseudoephedrine HCl (Cathine)		50 mg
NMIAD912	Ortetamine HCl (1-(2-methylphenyl)-2-propylamine HCl)		10 mg
NMIAD892	Oxilofrine HCl		5 mg
NMIAM898	Salbutamol		10 mg
NMIAD939	Salbutamol-D3		1 mg
NMIAM904	Salmeterol hydroxynaphthoate		50 mg
NMIAD822	Selegiline HCl		50 mg

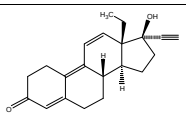
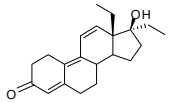
Suppressor of estrogen biosynthesis

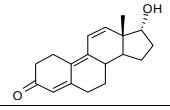
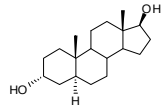
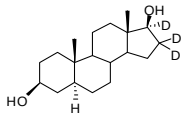
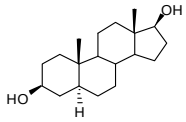
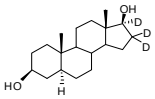
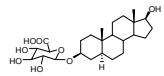
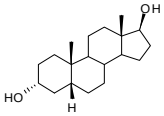
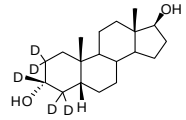
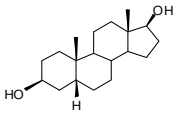
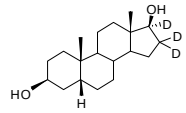
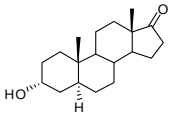
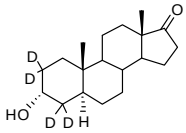
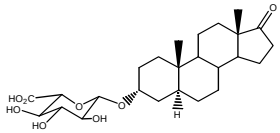
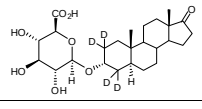
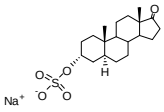
NMIAD909	Bis-(4-cyanophenyl)methanol (Letrazole metabolite) °		1 mg

1-Testosterone

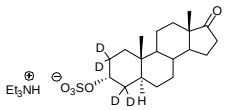
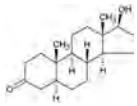
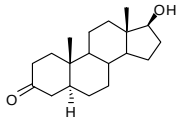
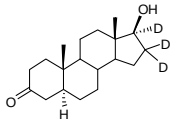
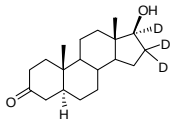
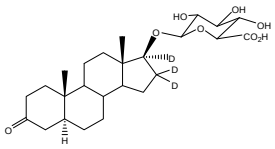
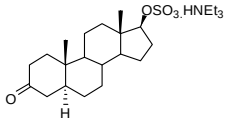
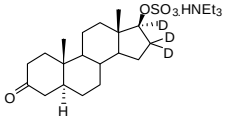
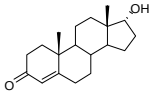
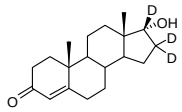
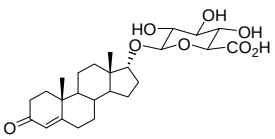
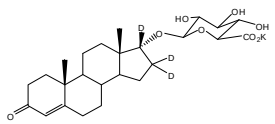
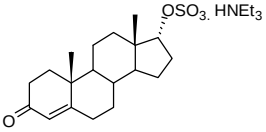
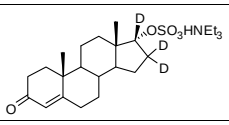
NMIAD871	5alpha-Androst-1-ene-3beta-17beta-diol °		1 mg
NMIAD767	1-Testosterone (5alpha-Androst-1-en-3-one-17beta-ol) °		1 mg

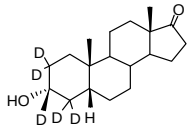
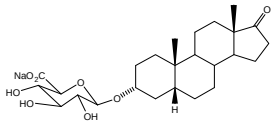
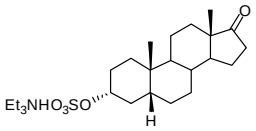
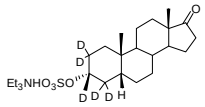
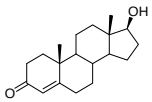
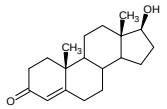
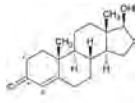
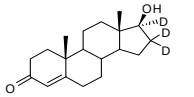
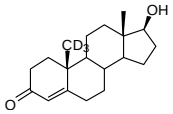
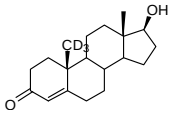
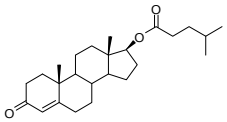
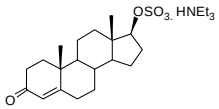
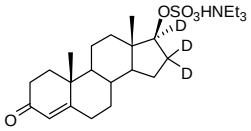
Tetrahydrogestrinone and precursors

NMIAD860	Gestrinone °		10 mg
NMIAD872	Tetrahydrogestrinone (THG) ° (for use in qualitative analysis only)		1 mg

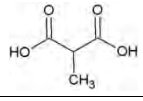
Code	Product		Unit
Trenbolone metabolite			
NMIAD708	17alpha-Trenbolone (Epitrenbolone) °		5 mg
Testosterone and metabolites			
NMIAD634	5alpha-Androstane-3alpha,17beta-diol °		1 mg
NMIAD593	5alpha-Androstane-3alpha,17beta-diol-D3 °		1 mg
NMIAD635	5alpha-Androstane-3beta,17beta-diol °		1 mg
NMIAD594	5alpha-Androstane-3beta,17beta-diol-D3 °		1 mg
NMIAD678	5alpha-Androstane-3beta,17beta-diol-3-glucuronide °		1 mg
NMIAD636	5beta-Androstane-3alpha,17beta-diol		1 mg
NMIAD580	5beta-Androstane-3alpha,17beta-diol-D5 °		1 mg
NMIAD637	5beta-Androstane-3beta,17beta-diol °		1 mg
NMIAD626	5beta-Androstane-3beta,17beta-diol-D3 °		1 mg
NMIAD550	Androsterone °		10 mg
NMIAD549	Androsterone-D4°		1 mg
NMIAD572	Androsterone glucuronide °		1 mg
NMIAD829	D4-Androsterone-beta-glucuronide (free acid)		1 mg
NMIAD610	Androsterone sulfate (Na+ salt) °		1 mg

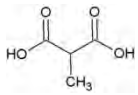
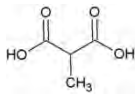
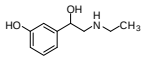
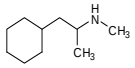
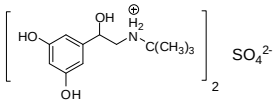
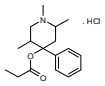
Sports drugs and steroids

Code	Product		Unit
NMIAD587	Androsterone sulfate-D4 °		1 mg
CERD-073	5a-Dihydrotestosterone (DHT) (1.0 mg/ml) in Methanol		1 mL
NMIAD680	5alpha-Dihydrotestosterone °		10 mg
NMIAD552	5alpha-Dihydrotestosterone-D3°		1 mg
NMIAD574	5alpha-Dihydrotestosterone glucuronide °		1 mg
NMIAD573	D3-5alpha-Dihydrotestosterone-beta-glucuronide (free acid)		1 mg
NMIAD609	5alpha-Dihydrotestosterone sulfate °		1 mg
NMIAD590	5alpha-Dihydrotestosterone sulfate-D3 °		1 mg
NMIAD547	Epitestosterone °		1 mg
NMIAD548	Epitestosterone-D3 °		1 mg
NMIAD603	Epitestosterone glucuronide °		1 mg
NMIAD604	Epitestosterone glucuronide-D3 °		1 mg
NMIAD605	Epitestosterone sulfate °		1 mg
NMIAD591	Epitestosterone sulfate-D3 °		1 mg
NMIAD551	Etiocholanolone °		1 mg

Code	Product		Unit
NMIAD528	Etiocholanolone-D5 °		1 mg
NMIAD607	Etiocholanolone glucuronide °		1 mg
NMIAD608	Etiocholanolone sulfate °		1 mg
NMIAD606	Etiocholanolone sulfate-D5 °		1 mg
TRC-M342000	Mibolerone		10 mg
NMIAM914	Testosterone		10 mg
CERT-037	Testosterone (1.0 mg/mL) in Acetonitrile		1 mL
CERT-070	Testosterone-2,3,4-13C3 (0.1 mg/mL) in Acetonitrile		1 mL
NMIAD546	16,16,17-Testosterone-D3 °		1 mg
NMIAD644	19-Testosterone-D3 °		1 mg
NMIAD683	Testosterone decanoate °		10 mg
NMIAD507	Testosterone glucuronide °		1 mg
NMIAD505	16,16,17-Testosterone glucuronide-D3 °		1 mg
NMIAD688	Testosterone isocaproate (4-methylpentanoate) °		10 mg
NMIAD508	Testosterone sulfate °		1 mg
NMIAD506	16,16,17-Testosterone sulfate-D3 °		1 mg

Others

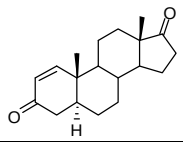
CERM-080	Methylmalonic acid (1.0 mg/ml) in Acetonitrile		1 mL

Code	Product	Unit
Commercial materials (not certified by NMIA)		
NMIAM558	Bupranolol HCl 	20 mg
NMIAD529	Dextromoramide tartrate	50 mg
NMIAM642	Dipipanone HCl 	20 mg
NMIAM880	Etilephrine HCl 	50 mg
NMIAM394	Propylhexedrine 	50 mg
NMIAM647	Terbutaline sulfate 	20 mg
NMIAM605	Trimeperidine HCl 	20 mg
Steroid matrix reference material		
NMIAMX002	19-Norandrosterone in Freeze Dried Human Urine (2.13 ng/g) (for WADA labs, only)	Amp.
NMIAMX003	19-Norandrosterone in 1,2-dimethoxyethane (221.4 ng/g) (for WADA labs, only)	Amp.
NMIAMX005	Testosterone Metabolites in Freeze Dried Human Urine: Testosterone glucuronide (39.9 ng/g) Epitestosterone glucuronide (10.66 ng/g) (for WADA labs, only)	Bottle
NMIAMX006	Testosterone (2.55 µg/g) and Epitestosterone (0,626 µg/g) in Methanol (for WADA labs, only)	Amp.

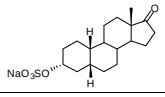
WADA funded sports drug testing materials

The production of these materials is funded by the World Anti-Doping Agency.
The products are restricted for issue to laboratories with WADA / IOC accreditation, only.

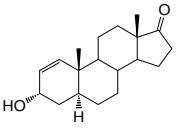
1-Androstendione

Code	Product		Unit
NMIAD845	1-Androstendione (5alpha-Androst-1-en-3,17-dione) ° (for WADA labs, only)		1 mg

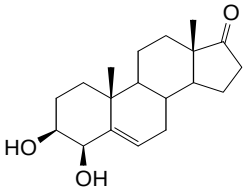
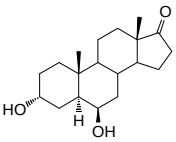
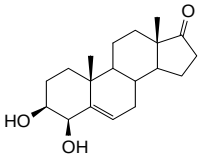
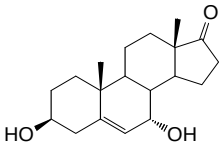
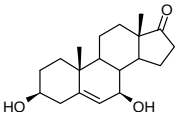
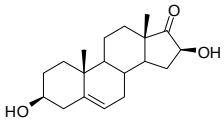
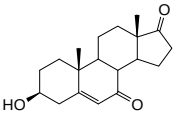
Nandrolone metabolites

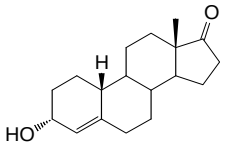
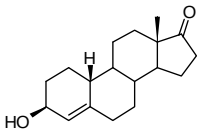
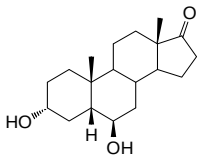
NMIAD849	19-Noretiocholanolone sulfate ° (for WADA labs, only)		1 mg

1-Testosterone

NMIAD832	5alpha-Androst-1-ene-3alpha-ol-17one (for WADA labs, only)		0.2 mg

Prohormones and metabolites

NMIAD843	16alpha-Hydroxyandrosterone ° (for WADA labs, only)		1 mg
NMIAD886	6beta-Hydroxyandrosterone ° (for WADA labs, only)		1 mg
NMIAD834	4beta-Hydroxy DHEA ° (for WADA labs, only)		1 mg
NMIAD875	7alpha-Hydroxy DHEA ° (for WADA labs, only)		1 mg
NMIAD865	7beta-Hydroxy DHEA ° (for WADA labs, only)		1 mg
NMIAD844	16beta-Hydroxy DHEA ° (for WADA labs, only)		1 mg
NMIAD833	7-Keto DHEA ° (for WADA labs, only)		10 mg

Code	Product		Unit
NMIAD873	3alpha-Hydroxy-4-estren-17-one ° (for WADA labs, only)		1 mg
NMIAD866	3beta-Hydroxy-4-estren-17-one ° (for WADA labs, only)		1 mg
NMIAD867	6beta-Hydroxyetiocholanolone ° (for WADA labs, only)		1 mg

Proficiency testing schemes

LGC Standards

Excellence through measurement

LGC Standards

Excellence through measurement

Higher-order reference materials

LGC Standards offers a range of certified reference materials (CRMs) to assist, e.g. manufacturers complying with the European *in vitro* diagnostics Directive 98/79/EC.

About higher-order reference materials

- Produced by metrological institutes and organisations
- Thoroughly characterised
- Results linked to high-level interlaboratory comparisons
- Smallest attainable uncertainties
- Accompanied by a detailed certificate of analysis
- Over 200 CRMs available.

Analyte categories:

- Blood gases and groupings
- Coagulation factors
- Drugs
- Enzymes
- Metabolites and substrates
- Non-electrolyte metals
- Proteins and nucleic acids
- ...and many more

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Proficiency testing schemes

Controlled drug proficiency testing schemes from the National Measurement Institute of Australia (NMIA)

The NMIA runs an accredited program of regular proficiency tests that includes the controlled drugs heroin, cocaine, amphetamines and amphetamine type substances (MDA, MDMA, MDEA).
Three rounds/year are organised, each focusing on a single drug. Participants are informed of the identity of the drug and so the PT schemes focus on quantitation.
A round includes 2 to 4 test samples consisting of 100 to 150 mg of powder. Samples are prepared from seizures of controlled drugs and typically contain between 10 and 80 % drug as the base. Samples will only be sent to laboratories authorised to hold controlled drugs.
Every year the following rounds are planned:

- March/April: Heroin
- August: Cocaine
- November: Amphetamine type substances

Performance assessment and reporting

Participants are instructed to perform the analysis using their routine procedures and report a single result for each sample, together with an associated uncertainty. In some cases the identity of any diluent may also be requested.
Participants' performance is assessed by comparing reported test results to the assigned value using both z-scores and En-scores. Evaluation is based on procedures described in the IUPAC International Harmonized Protocol for Proficiency Testing of (Chemical) Analytical Laboratories, ISO/IEC Guide 43 and ISO 13528.
To provide each participant with an early indication of performance, an interim report (distributed by e-mail as a PDF file) is issued within five working days of the due date for submission of results. A detailed final report is issued within eight weeks of the closing date for submission of results. Hard copy reports are posted to participants. The final reports are public documents and are published on the www.measurement.gov.au.

Confidentiality

The identity of participants is protected by means of a laboratory code, which is randomly assigned when a laboratory enrols in a PT round. These codes are confidential and are not disclosed to other persons.

Further information is available at www.measurement.gov.au (look for *Interlaboratory Chemical Proficiency Testing Program* under *Products and services*).

LGC Standards
Promoting excellence through proficiency testing

LGC Standards is an accredited international provider of proficiency testing (PT) services also known as External Quality Assessment (EQA). We have over twenty five years experience in all aspects of providing PT services to laboratories undertaking clinical, chemical, microbiological, and physical measurements.

LGC Standards operates 39 proficiency testing schemes serving more than 7,000 laboratories. We produce in excess of 100,000 test materials which are distributed to over 140 countries worldwide.

We offer an unprecedented breadth of clinical, chemical, microbiological and physical testing schemes across a wide range of industries including clinical and forensic, pharmaceutical and phytochemical sectors, meat, dairy and other food sectors, water, soil and other environmental sectors, brewing, distilling, malting, sugar and other beverage sectors, cosmetics, toys and other consumer safety sectors.

In addition to the variety of schemes offered, LGC Standards can also provide managed solutions for in-house proficiency testing providers and training for participants and their customers.

Aim of proficiency testing

Proficiency testing is defined in ISO/IEC 17043 as the evaluation of participant performance against pre-established criteria by means of interlaboratory comparisons. The terms “External Quality Assessment or EQA” are often used for proficiency testing in the medical/clinical area.

LGC Standards Proficiency Testing provides a wide range of schemes designed to improve the quality of analysis in those sectors covered. The schemes involve the regular distribution of test materials in order for participants to test for defined parameters, and to have their results statistically analysed. Participation provides laboratories with a means of assessing the accuracy and comparability of their results with peer laboratories over time.

When performed within the context of a comprehensive quality assurance programme, proficiency testing is an independent means of assuring the quality of test and calibration results, as described in ISO/IEC 17025 and ISO 15189.

Quality standards

LGC Standards Proficiency Testing is committed to continual improvement in quality and efficiency through procedures based upon quality assurance. This commitment is demonstrated through certification to ISO 9001 for all its activities and accreditation to ISO/IEC 17043 for the operation, management and design of proficiency testing schemes. LGC Standards Proficiency Testing is accredited by the United Kingdom Accreditation Service (UKAS, certificate number: 0001). Clinical schemes are currently accredited to the UK Clinical Pathology Accreditation (CPA) guidelines reference number 028/0054, 0028/0055, 028/0060, 028/0315. A copy of our current scope of accreditation is available on our website: www.lgcpt.com

Benefits of proficiency testing

Proficiency testing is an essential laboratory tool as it demonstrates a laboratory's commitment to good performance and enables participants to confirm their ability to perform tests competently; essential in the laboratory accreditation process.

Participation in proficiency testing will:

- Enable participants to measure their performance against others.
- Give an early indication of potential problems or training requirements.
- Encourage good performance and reinforce an interest in quality assurance.
- Demonstrate an ability to comply with international regulations.
- Provide a valuable source of information.
- Provide the means to measure consistency across a group of laboratories.

Who should participate in proficiency testing schemes?

Anyone who needs to independently demonstrate the quality of their analytical results should participate in PT/EQA schemes - because quality of results relates directly to quality of product, reputation in the market and, ultimately, brand value. Whether operating in the clinical, forensic, food, pharmaceutical, beverages, environmental monitoring or other sectors, many regulators view PT schemes as an essential part of quality monitoring and many laboratories link PT results to key performance indicators in the quality assurance process.

Who participates in LGC Standards proficiency testing schemes?

LGC Standards exports to laboratories in over 140 countries world-wide and our customer base ranges from single small enterprises to inspection organisations of global repute. Our customers include hospitals and clinics, pharmaceuticals companies, government agencies, major international food manufacturers, research organisations, commercial and contract laboratories. At present we have over 7,000 participants across the 39 schemes currently in operation.

LGC Standards manages a number of bespoke schemes for multi-national companies to meet their particular requirements. These special schemes cover up to 200 laboratories.

Why choose LGC Standards as your proficiency testing provider?

- Access to a wide range of schemes from a single supplier.
- Rapid turnaround of results.
- Access to expert support and advice.
- Local representation and support.

Why do I need proficiency testing?

Accreditation bodies strongly recommend that laboratories participate in appropriate PT schemes as they are the only quality tool which can assess the whole quality system. PT is a truly independent measure of laboratory performance and anonymously compares performance with peer laboratories. It allows the laboratory to compare and contrast the performance of analytical methods and can assist in the validation of new methods. Participation in a PT scheme is educational and can be used as a tool for staff training, allowing laboratories to learn from both positive and negative performance.

PT/EQA schemes for clinical and forensic toxicology

LGC Standards, recently acquired Cardiff Bioanalytical Services Ltd and now operates the range of HEATHCONTROL (EQA) schemes for laboratories and screening clinics covering:

- Therapeutic Drug Monitoring (TDM).
- Toxicology (TOX).
- Drugs of Abuse in Urine (DAU).
- Drugs in Oral Fluid (DOF).

The definitive aim of PT/EQA schemes in a clinical setting is improvement in analytical performance in support of improved patient care.

Benefits of participation in HEATHCONTROL PT/EQA schemes

HEATHCONTROL is a respected name in the field of EQA with over 450 participants in more than 36 countries.

By participating in the HEATHCONTROL schemes each participant gains the benefits of a global proficiency testing scheme:

- The schemes are a truly independent assessment of measurement quality, which enables laboratories to demonstrate their competence and compliance with respect to regulatory standards.
- Performance assessments obtained in the schemes are recognised as a demonstration of laboratory quality by a range of ‘third parties’, such as, customers, regulators and accreditation bodies.
- The comprehensive scheme reports provide invaluable feedback on laboratory performance and are widely used as a training tool for laboratory personnel.
- Performance assessment by method provides a mechanism for laboratories to compare their measurements with others using similar techniques and assists in the evaluation and development of methods and instrumentation.
- Wide variety of analytes from one supplier for all your needs.
- Significant numbers of participants worldwide means statistically robust results.

HEATHCONTROL – Therapeutic Drug Monitoring (TDM)

The Therapeutic Drug Monitoring (TDM) scheme is designed to provide an independent performance assessment for laboratories and clinics who are involved in the routine quantification of therapeutic drugs in serum. The TDM scheme is fully accredited in the U.K. by Clinical Pathology Accreditation (CPA).

TDM is the measurement of specific drug levels (concentrations) at timed intervals in patients, usually through blood samples, and is necessary where control of drug concentrations is required to achieve optimum treatment for the patient.

For most drugs, monitoring is not required as they have a wide therapeutic index i.e. the difference between a therapeutic and toxic concentration is large. Therefore, most individuals will be effectively treated without extreme side effects or symptoms of toxicity.

However, drugs with a narrow therapeutic index may result in a high or low serum concentration if not monitored and controlled. Drug concentrations in the bloodstream that are too high have the potential to exert adverse effects associated with toxic or even fatal consequences. Drug concentrations below the therapeutic index can lead to poor response to treatment. For some drugs, maintaining this steady state is not as simple as giving a standard dose of medication.

There are many factors which influence an individual's serum drug levels, these include but are not restricted to the age, sex, and weight of the patient; the route of administration of the drug; the drug's absorption rate, excretion rate, delivery rate, and dosage; other medications the patient is taking; pregnancy, temporary illness, infection, emotional and physical stress, trauma, and surgery; the patient's compliance regarding the drug treatment regimen; and the laboratory methods used to measure the drug. Effective TDM follows these changes and tailors the dosages to fit the current needs of the specific patient.

Drug concentrations in serum or whole blood are only meaningful if the correct procedures are followed regarding the timing of specimens. Failure to meet these requirements accounts for most errors in TDM. It is very important to note the exact time the sample is taken and when each dose of the drug is given as it allows for accurate interpretation of the measured levels and the patient's response to their dosing regimen.

Although serum drug concentrations and the therapeutic interval are useful in evaluating drug therapy, they should not be the only criteria on which treatment is based. Therapeutic drug monitoring is a multidisciplinary function, requiring collaboration between scientists, clinicians, nurses and pharmacists in order to ensure that best practice in TDM is achieved. The team must remember to always treat the patient, not the level.

The full range and availability of test materials in TDM is determined on an annual basis and further details can be found in the TDM application form and scheme information document.

Test material	Analytes
Human serum: Therapeutic 15 analyte drug mixture	Caffeine, Carbamazepine, Carbamazepine 10, 11-epoxide, Clonazepam, Digoxin, Ethosuximide, Gentamicin, Lamotrigine, Lithium, Phenobarbital, Phenytoin, Primidone, Theophylline, Valproate, Vancomycin.
Human serum: Anti-epileptic drugs	Clobazam / Norclobazam.
Human serum: Newer anti-epileptic drugs AE1 mixture	OH-oxcarbazepine, Gabapentin, Levetiracetam, Pregabalin.
Human serum: Newer anti-epileptic drugs AE2 mixture	Felbamate, Lacosamide, Rufinamide, Tiagabine, Topiramate, Vigabatrin, Zonisamide.
Human serum: Cardiac drugs mixture	Amiodarone, Desethylamiodarone, Flecainide.
Newborn calf serum or Human serum: Psychoactive drugs	Amitriptyline / nortriptyline, Clomipramine / norclomipramine, Clozapine / norclozapine, Imipramine / desipramine. Amisulpride, Aripiprazole / dehydroaripiprazole, Citalopram / norcitalopram, Dosulepin(dothiepin) / northiaden, Doxepin / nordoxepin, Fluoxetine / norfluoxetine, Fluphenazine, Fluvoxamine, Haloperidol, Maprotiline / normaprotiline, Mirtazapine / normirtazapine, Olanzapine, Paroxetine, Perphenazine, Quetiapine, Risperidone / HO-risperidone, Sertraline / norsertraline, Thioridazine, Trimipramine / nortrimipramine, Venlafaxine / norvenlafaxine, Zuclopenthixol.
Human serum: Anti-cancer drug	Methotrexate.
Human serum: Antibiotic drugs*	Amikacin, Chloramphenicol, Flucytosine, Gentamicin with vancomycin, Netilmicin, Teicoplanin, Tobramycin.
Human blood/plasma: Immunosuppressive drugs**	Cyclosporin, Everolimus, Mycophenolate, Sirolimus, Tacrolimus.

Note: Test materials and analytes may be added or removed, please see current application form.

*These analytes are produced in collaboration with UKNEQAS scheme for antibiotic drugs.

**Please note this is not a HEATHCONTROL scheme and as such is not covered by the LGC Standards scope of accreditation. It is managed and operated by ASI Ltd. Participants may subscribe to the scheme through LGC Standards.

CPA
Accredited EQA Scheme
Reference No:028/0055

HEATHCONTROL – Toxicology (TOX)

The Toxicology (TOX) scheme is designed to provide an independent performance assessment for laboratories and clinics that provide a pathology service, toxicological service, or forensic investigation service for drug and ethanol determination. The TOX scheme is fully accredited in the U.K. by Clinical Pathology Accreditation (CPA).

Drug and alcohol analyses may be undertaken for a variety of reasons which include but are not restricted to:

- Determine whether an individual is under the influence of alcohol and/or drugs that may require treatment or interfere with any medical care necessary (These analyses are usually required quickly in order to facilitate effective medical treatment).
- Determine whether an individual is under the influence of alcohol and/or drugs which may put their own life or that of others at risk whilst at work.
- Determine whether an individual may have been affected by alcohol and/or drugs whilst either a victim or a suspect in a criminal offence.
- Determine whether alcohol and/or drugs may be implicated in a death.

Toxicological analyses may be undertaken on a number of biological specimens, predominantly blood, serum and urine. In general, analyses are commonly undertaken for a range of prescription and non-prescription drugs, illegal drugs and alcohol. The aim of the analyses is to establish the identity of any substances present and at what quantity, and to then determine what effect the substance(s) identified may have had on the individual. The analytical findings would then be subject to interpretation by a suitably qualified individual.

CPA
Accredited EQA Scheme
Reference No:028/0054

The TOX scheme provides a range of test materials suitable for a variety of clinical and forensic settings:

- Serum, blood and urine. The blood and serum specimens contain ethanol, paracetamol and salicylate (the blood also contains carboxyhaemoglobin). The urine contains alcohol only. These are result driven samples and no interpretation is required.
- Case study. A case study is provided along with relevant serum and urine specimens. Participants analyse the specimens and submit the analytical findings along with the relevant interpretation, which is then marked by an independent scoring panel.
- Toxicological quantitative specimens. Blood test materials containing variable drugs and compounds that may be monitored in cases of possible drug overdose.

The full range and availability of test materials in TOX is determined on an annual basis and further details can be found in the TOX application form and scheme information document.

Test material	Analytes
Human serum	Ethanol, Paracetamol, Salicylate.
Blood	Carboxyhaemoglobin, Ethanol, Paracetamol, Salicylate.
Urine	Ethanol.
Human serum and urine	Various analytes with clinical or forensic scenario.
Blood toxicology analytes	Antipsychotics, Benzodiazepines, Opiates, Opioids, Selective Serotonin Re-uptake Inhibitors (SSRIs), Tricyclic antidepressants, and other drugs of interest.

Note: Test materials and analytes may be added or removed, please see current application form.

HEATHCONTROL – Drugs of Abuse in Urine (DAU)

The Drugs of Abuse in Urine (DAU) scheme is designed to provide an independent performance assessment of laboratories and clinics that provide routine services for detection of drugs of abuse in urine. The DAU scheme is fully accredited in the U.K. by Clinical Pathology Accreditation (CPA).

Human urine has been used for many years to detect the presence of frequently abused drugs. A urine drug test may be undertaken when ordered by a doctor to monitor a known or suspected substance abuse patient, and whenever a person has symptoms that suggest drug use. Urine drug tests may be requested for a variety of reasons, including occupational monitoring, insurance screening, legal and forensic purposes and in sports.

For most drugs of abuse testing, results of initial screening testing are compared with a predetermined cut-off. Anything below that cut-off is considered a negative result. A negative result does not necessarily mean that the person did not take a drug at some point, only that the drug was not present at a concentration greater than the reporting threshold. Anything above the cut-off is considered a positive result. If the sample is confirmed as positive after secondary testing then a “detected” finding is reported.

Drug testing is extremely accurate and reliable when all aspects of the testing process are carried out correctly. However, if poor procedures and inadequate testing methods are utilised, the information obtained may be very misleading and inaccurate. In order to minimise this risk, clinical laboratories should perform routine quality control tests and participate in suitable PT/EQA schemes.

The full range and availability of test materials in DAU is determined on an annual basis and further details can be found in the DAU application form and scheme information document.

Test material	Analytes
Urine test materials obtained from volunteers, patients and known drug users which regularly contain mixtures of drugs and their metabolites from six major classes	Amfetamines & stimulants, Cannabinoids, Cocaine & metabolites Minor tranquillizers, Non-opiate narcotics, Opiates.

Note: Test materials and analytes may be added or removed, please see current application form.

CPA
Accredited EQA Scheme
Reference No:028/0060

HEATHCONTROL – Drugs in Oral Fluid (DOF)

The Drugs in Oral Fluid (DOF) scheme is designed to provide an independent performance assessment of laboratories and clinics that provide analytical services for drugs in oral fluid. The DOF scheme is fully accredited in the U.K. by Clinical Pathology Accreditation (CPA).

Drug abuse is a global problem affecting many in society. Advances in technology have enabled oral fluid testing for the presence of many drugs, such as the amfetamines and stimulants, benzodiazepines, cannabinoids, cocaine and metabolites, opiates and non-opiate narcotics.

Oral fluid as a testing matrix is increasingly being utilised in a range of applications, such as work place monitoring, clinical toxicology and criminal justice.

The advantages of oral fluid over traditional fluids such as blood and urine, are that collection is almost non-invasive, is relatively easy to perform, and, in forensic situations, can be achieved under close supervision to prevent adulteration or substitution of the samples.

There are now sensitive and reliable analytical methods available for oral fluid specimen collection, point-of-collection testing devices (POCT), screening and confirmation methods.

Due to the importance of results obtained it is essential that laboratories undertaking the analyses are able to demonstrate the testing they perform is dependable, reproducible and accurate. Participation in the DOF scheme will provide valuable feedback to laboratories/ on-site screening clinics who undertake these analyses, and a record of results overtime.

The full range and availability of test materials in DOF is determined on an annual basis and further details can be found in the DOF application form and scheme information document.

Test material	Analytes
Oral fluid test materials obtained from volunteers and known drug users. These regularly contain mixtures of drugs and their metabolites from six major classes	Amfetamines & stimulants, Benzodiazepines, Cannabinoids, Cocaine & metabolites, Non-opiate narcotics, Opiates.

Note: Test materials and analytes may be added or removed, please see current application form.

CPA
Accredited EQA Scheme
Reference No:028/0315

QUARTZ – Forensic blood toxicology scheme

QUARTZ is a blood toxicology scheme designed for laboratories undertaking analysis of drugs in post-mortem and other blood samples for toxicological purposes, particularly in a forensic context. Test materials are prepared using pre-screened human blood. Target analytes are added at an appropriate level and the test material mixed to ensure homogeneity prior to despatch.

The analytes to be determined in each round are from a list of non-prescription, prescription and controlled drugs, as well as other toxins, compiled by the Advisory Group, which reflects what participants are likely to encounter in forensic casework.

The test materials are subdivided into two groups:

Group A: those drugs that are more frequently determined by participants.

Group B: those drugs that may be less frequently determined by participants.

Up to three test materials are provided in each round containing between 0 and 4 drugs.

Alcohol is major cause of road casualties and deaths and as penalties for drink-driving are severe it is essential the accuracy of analysis can be proven in the legal case. The test material comprises 10ml vial of whole blood containing alcohol for analysis.

The full range and availability of test materials in QUARTZ is determined on an annual basis and further details can be found in the QUARTZ application form and scheme description.

Test material	Analytes
Group A More frequently determined drugs	6MAM (MACM), Amfetamine, Amisulpride, Amitriptyline, Benzoylecgonine, Buprenorphine, Carbamazepine, Chlordiazepoxide, Chlorpromazine, Citalopram, Clomipramine, Clozapine, Cocaine, Codeine, Cyclizine, Desmethyldiazepam, Diazepam, Diclofenac, Dihydrocodeine, Diphenhydramine, Dosulepin, Fentanyl, Fluoxetine, Ibuprofen, Imipramine, Ketamine, Lamotrigine, MDA, MDMA, Methadone, Methamphetamine, Midazolam, Mirtazepine, Morphine, Olanzapine, Oxazepam, Oxycodone, Paracetamol, Paroxetine, Pethidine, Phenytoin, Procyclidine, Promethazine, Propoxyphene, Quetiapine, Risperidone, Salicylate, Sertraline, Temazepam,THC, THC-COOH,Tramadol, Venlafaxine, Zolpidem, Zopiclone.
Group B Less frequently determined drugs	Amlodipine, Amobarbital, Atenolol, Benzyl piperazine (BZP), Butobarbital, Clobazam, Clomethiazole, Clonazepam, Dextromoramide, Dipipanone, Gabapentin, Loprazolam, Lormetazepam, Mefenamic Acid, Methylphenidate, Naltrexone, Pentobarbital, Phenelzine, Propranolol, Secobarbital, Sildenafil, Thioridazine, Trazadone, Zaleplon.

Note: Metabolites of the above substances may also be added.

Test material	Analytes
Drug Identification	Participants will be asked to identify the drug(s) only. The test material will always (if positive) contain one drug from Group A. Up to three other drugs may be in the test material from either Group A and/or Group B.
Drug Quantification	Participants will be told the identity, or generic classification, of the drug(s), and asked to quantify the concentration. They will also be asked to give an interpretation of the results in respect to a case study provided. The test material will always contain a drug from Group A. Any other drugs present will be from Group A and/or Group B.
Drug Quantification	Standard solutions containing drugs for the evaluation of instrumentation.
Alcohol Quantification	Participants will be required to quantify the alcohol concentration by their usual methods.

Note: Test materials and analytes may be added or removed, please see current application form.

FORENSICS PT trial scheme

LGC Standards Proficiency Testing has developed a range of trials for the Forensic Science sector. These are intended to complement the quality control and quality assurance products already well established in these specialised laboratories, in order to help demonstrate the efficacy of these measures.

The trials may comprise:

- Qualitative tests; confirmatory testing and/or identification.
- Quantitative tests; analysis of specified component(s).
- Post-analytical challenges/scientific conclusion; interpretation based on a case study and analytical data.

Participants may use any method they deem appropriate to perform the test or analyse the data. If the method used influences the result, it will be possible to identify this through analysis of the data submitted, and give feedback in the report.

The full range and availability of test materials in FORENSICS PT is determined on an annual basis and further details can be found in the FORENSICS PT application form and scheme description.

Test material	Analytes
Alcohol Technical Defence*	Participants will be asked to use the available information to establish the likely level of intoxication of a suspect at a given time. Data provided will include analytical results and an alleged case scenario or witness statement.
DNA*	Participants will be asked to use the available information to establish the suitability of a mixture of DNA profiles for designation. Data available may include print outs of electrophoretograms from GMID, an excel table of peak data exported from GMID, and .fsa files generated by AB Data Collection software.
Drugs*	Participants will be asked to use the available information to establish the identity of an unknown powder submitted for drugs profiling. Data provided will include a brief summary of the investigative approach, chromatograms or similar of the suspect powder from appropriate analytical technique (e.g. GC-MS). Results for reference materials/ calibrants analysed simultaneously.
Questioned Documents*	Participants will receive a piece of paper with a series of ink marks, and up to three suspect writing implements or comparison documents. The hypothesis to be tested will be described in detail.

Note: Test materials and analytes may be added or removed, please see current application form.

*Please note these trials are currently not included in our scope of accreditation.

PHARMASSURE - Pharmaceutical scheme

PHARMASSURE has been specifically designed to meet the needs of the pharmaceutical industry. The reduction of risks associated with the manufacture of pharmaceutical products is the primary objective of the pharmaceutical quality assurance laboratory. There is an abundance of regulations, biological standards, validation procedures and other tools available to the quality control professional to achieve this aim. In most cases however, the use of these tools is aimed at assessing the product or the environment in which it was produced. The introduction of proficiency testing offers a valuable independent tool for the ongoing assessment of the testing procedures, methods employed, laboratory staff responsible for the analysis and subsequent interpretation of results.

The regulations surrounding the manufacture of pharmaceutical products and the laboratories which test them are wideranging, and compliance with the requirements of GMP/GLP are aimed at ensuring the safety and efficacy of all pharmaceutical preparations. Similarly, the annual revalidation of methods is an important tool in understanding and ensuring that a testing method is working properly. However, these tools are largely internal operations. Regular participation in a PT scheme, provides an external independent tool for monitoring the effectiveness of methods employed in any laboratory, without the work involved in a full method revalidation. The test materials cover chemical and microbiological analysis. The sterility test is ideally suited to ongoing assessment and provides staff involved in the analysis and in interpretation of results with a tool to ensure that low level contamination events which occur particularly infrequently – and often not at all over the course of a testing year – are identified and the results correctly interpreted.

The full range and availability of test materials in PHARMASSURE is determined on an annual basis and further details can be found in the PHARMASSURE application form and scheme description.

Test material	Analytes
Sample 1 Basic chemical analysis	Acid/Base Titration, Density, Melting Point, Other Basic Titration (actual analytes dependant on test), pH, Refractive Index
Sample 2 Advanced chemical testing	Advanced Titration (e.g. Potentio-metric, Non-Aqueous), Flame Spectroscopy, FTIR, GC, Polarimetry, UV/TLC, Viscosity
Sample 2A HPLC	HPLC
Sample 3 Microbiological identification	A low inoculum level test material for enumeration by membrane filtration and identification
Sample 4 Microbiological enumeration	A high inoculum leven material for enumeration of Total aerobic mesophilic bacteria, *Staphyloccus aureus*, *Escherichia coli*, Yeast and mould
Sample 5 Sterility testing	A set of 5 test materials each to be tested for sterility

Note: Test materials and analytes may be added or removed, please see current application form.

PHYTAS - Phytochemical Testing Assurance Scheme

PHYTAS has been developed in response to demands from the phytochemical industry. In recent times there has been a huge amount of media attention and popular interest in medicinal plants and chemicals they contain. These plant materials are highly valued for the role they can play in promoting and sustaining human health. Plants have evolved and produce an array of secondary compounds, many of which have been used in traditional medicines and remedies for hundreds of years.

The most common classes of 'active' compounds found in medicinal plants are alkaloids, terpenoids, phenols, and glycosides, though the range of compounds is by no means limited to this four classes. As extracts of living matter, the quality and potency of botanical products is subject to variation, giving rise to uncertainty amongst consumers, analysts and regulators alike.

The analysis of such a wide range of compounds, in what is by definition an incredibly diverse range of matrices, is not always straightforward and there is little standardisation of methodologies from laboratory to laboratory. One of the major concerns in a relatively new and broad field of analysis is the lack of standardised methods and even definition of the 'required' components for analysis.

Proficiency testing is an important tool in the improvement of analytical performance in scientific disciplines such as this and by standardisation the quality of analysis, one of the variables is removed - helping to achieve consistency in the quality of the finished product for the consumer.

The full range and availbility of test materials in PHYTAS is determined on an annual basis and further details can be found in PHYTAS application form and scheme description.

Test material	Analytes
Botanical	Identification and quantification of a range of active ingredients

Note: Test materials and analytes may be added or removed, please see current application form. PHYTAS is currently not included in our scope of accreditation.

Confidentiality

In order to ensure confidentiality, participants in all schemes are allocated a unique laboratory reference number. This number enables results to be reported without divulging the identities of participant laboratories.

However it should be noted that, where required, the performance of U.K. participants is reported to the National Quality Assurance Advisory Panels for Chemical Pathology and for Medical Microbiology as appropriate.

Reports

If PT/EQA schemes are to be effective in facilitating improvements in the testing undertaken by participating laboratories, analyses of the results need to be returned to participants quickly. The HEATHCONTROL reports are issued promptly within two - four weeks of the reporting deadline and are received as paper copies. The content of the reports vary from scheme to scheme but includes details of the composition of the test materials, the assigned value, the spiked value, performance scores (BIS score) for each laboratory, and tabular and/or graphical representation of participant results.

The PHARMASSURE, PHYTAS, and QUARTZ scheme, as well as the FORENSIC PT Trial results are returned through our electronic reporting software, PORTAL. Full instructions for the use of the PORTAL system are provided on registration; features include result reporting by multiple analysts and using multiple methods. Following evaluation of the results, the PHARMASSURE, PHYTAS, QUARTZ and Forensics PT Trial reports are available on the website, or sent by email within 10 - 15 working days, respectively of round closure. Participants will be emailed a link to the report when it is available.

Other PT services

- Advice and consultancy for potential PT providers.
- Consultancy for PT providers in the implementation of appropriate quality systems.
- Training courses for PT participants and their customers.
- Prominent role in the development of policy and guidance for proficiency testing by representing the UK on a number of key international committees.

Product development

LGC Standards Proficiency Testing is continually striving to improve current products and to introduce new test materials and PT schemes where appropriate. New products may be introduced initially on a trial basis and offered to participants. It will be made clear to participants when they are participating in a trial.

If you have a requirement for a new analyte, test material matrix, or a whole new scheme please contact: customerservices@lgcpt.com

Reference materials

Before a correct interpretation can be applied to a diagnostic measurement, clinicians must have confidence that target analytes have been correctly identified and quantified. For many analytical methods, this can only be achieved through the use of appropriately certified and characterised reference materials

As a leading global supplier of reference materials, LGC Standards offers a broad range of measurement standards for routine clinical applications, such as therapeutic drug monitoring, occupational health, drugs and drugs of abuse, molecular biology and veterinary medicine.

We offer a range of certified reference materials (CRM) to assist, for example, manufacturers complying with the European *in vitro* diagnostics Directive 98/79/EC. These higher order reference materials are produced by metrological institutes and organisations and are precisely characterised.

For further information or to receive our catalogue, please contact your local office or visit our website: www.lgcstandards.com

Summary

Proficiency testing (or EQA) is widely used across many scientific disciplines as an integral part of the quality control and risk reduction process. Participation in these schemes provides the analytical laboratory with the ability to assess performance on an ongoing basis and benchmark that performance against other laboratories while maintaining anonymity.

The ongoing assessment of performance using proficiency testing allows the identification of areas for training and improvement and may also assist with audit processes.