ARBOR ASSAYS™

Interactive Assay Solutions™

ANN ARBOR, MICHIGAN

REPRODUCTION

STRESS

OXIDATIVE STRESS

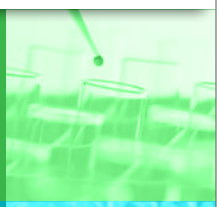
METABOLISM

THE FIRST **EMPLOYEE-OWNED** LIFE SCIENCE COMPANY

In January 2017 we became the world's first Employee Owned life science company. Arbor Assays Inc., is owned by a perpetual trust whose tenets are based on long term employment and customer satisfaction. A large number of companies have merged over the past few decades and this leads to a change or discontinuation of products. Our unique structure allows you to base your studies with a company, and on products, that will not change.

We build the world's most sensitive assay & detection kits.

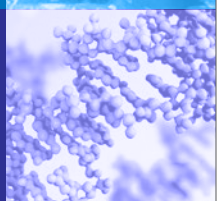
CELL SIGNALING



KIDNEY INJURY

INFLAMMATION

NORMALIZATION



WE BELIEVE IN:

Treating everyone and everything with dignity and respect

Looking after our customers

Working with our vendors

Encouraging our employees

Contributing to our community

Giving back through charitable efforts

Recycling everything we can

Respecting our environment

WHERE WE CAME FROM

We started making assay kits 35 years ago in the FDA-regulated *in vitro* diagnostics industry. Our previous company, Assay Designs, set a new standard for high-quality, easy-to-use life science kits and that is the foundation at Arbor Assays.

WHAT WE DO

- Novel detection and immunoassay kit development and manufacturing – for our own products and for the Contract Assay Services we provide
- Contract Chemical Synthesis Routes, Hapten Labeling and Antibody Generation
- Specialized Sample Testing Services
- Every kit we sell we make from scratch in Ann Arbor

HOW WE WORK WITH YOU

We give you the best technical and customer service support of any company. That is why so many of our customers make comments like:

"Wow! You really are the best source of ALL information!" (JB, St. Joseph Hospital, Bangor, ME)

VIDEO RESOURCES:

The following videos are all available on our website at www.arborassays.com/resources/#videos

CLIA Demo: How to set up a chemiluminescent assay (CLIA).

EIA Demo: How to set up an enzyme immunoassay (EIA).

Sample Preparation: How to handle various samples prior to running in Arbor Assays' kits.

Tail Bleed Sample Prep: Preparation of small volume mouse tail bleed samples for steroid assays.

Fecal Extraction Demo: Extraction of fecal samples prior to assay.

Assay Tricks: Tips and tricks to get the most out of your assays.

Data Analysis: How to analyze and reduce your data.

Arbor Assays Site Tour: All or our products are designed, manufactured and tested in Ann Arbor, Michigan.

OUR EXPERTISE

The employees of Arbor Assays have many years combined experience in designing, developing, building and manufacturing assays for research. That experience comes from the *in vitro* diagnostics and research use only assay industries.

We **NEVER** compromise on Quality. Throughout this catalog you will see the phrase "N-Cal™" on several of the pages. This refers to kits where the standard is calibrated to WHO or US National Institute of Standards and Technology (NIST) Reference Materials. Any kit is only as good as the standard that it is referenced against.

OUR COMMITMENT

Our commitment is to our customers, our suppliers, our community, our environment and ourselves. Our goal is to treat everyone with respect and with courtesy as in the quote attributable to Mahatma Gandhi.

"A customer is the most important visitor on our premises. He is not dependent on us. We are dependent on him. He is not an interruption in our work. He is the purpose of it. He is not an outsider in our business. He is part of it. We are not doing him a favor by serving him. He is doing us a favor by giving us an opportunity to do so."

Our Research The Cure™ program donates a fixed amount of money for each kit purchased to a single charity each year.

For 2017: **The Scripps Research Institute**
www.scripps.edu

For 2018: **Michael J. Fox Foundation for Parkinson's Research**
www.michaeljfox.org

How To Order

Via Phone

Call us at **734-677-1774** or toll-free at **855-677-1774** between the hours of 8:30 am and 5:30 pm ET Monday-Friday.

Via Website

Order from the product page, or fill in the secure online order form at www.ArborAssays.com/order-form

Via Fax

Fax orders to us 24 hours a day, 7 days a week at 734-677-6860.

Via E-mail

Please e-mail orders to orders@ArborAssays.com

Through Our Distributors

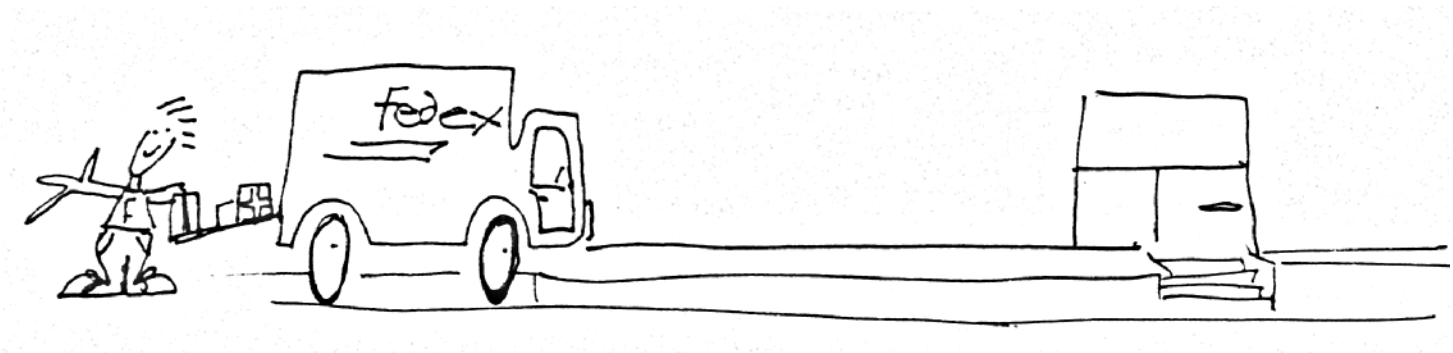
Please check our web site www.ArborAssays.com/distributors for our expanding list of distributors outside of the US. If you have a suggestion for a distributor in your country please send us their name and contact information.

Via Mail

Sales Order Entry
Arbor Assays
1514 Eisenhower Place
Ann Arbor, MI 48108-3284
USA

Bulk Orders

Please contact us for bulk orders for any product. We can provide personalized packaging and shipping for any product. Contact us at 734-677-1774 or bulk@ArborAssays.com



New Products

We regularly develop new kits and are always interested in our customers' ideas for new products or commercialization of their inventions and discoveries. A number of our products are direct collaborations with researchers including our Palladium PdX™ API Fluorescent Kit (K007-F1), HDM Fluorescent Kit (K010-F1), P450 Demethylation Activity Kit (K011-F1), Osteopontin Human (OPN) EIA Kit (K021-H1), PGFM EIA Kit (K022-H1/H5), Ceruloplasmin Colorimetric Activity Kit (K035-H1), FRAP™ (Ferric Reducing Antioxidant Power) Detection Kit (K043-H1), ST2 Human EIA Kit (K055-H1), Human Myeloperoxidase EIA Kit (K060-H1), and Epiandrosterone (K063-H1/H5). So contact us with your ideas and inventions at ProductIdeas@ArborAssays.com

Legal

Terms and Conditions

We require either a valid Purchase Order from your institution or credit card. We accept Visa, MasterCard, American Express or Discover cards. For credit card orders we will need the card number, expiration date, the 3- or 4-digit security code, along with the name on the card. With all orders, we will also need the telephone number and e-mail address(es) of the end user (so shipping, product, or important technical information can be sent) and your Accounts Payable department (if ordering via a PO). For Purchase Orders our terms are strictly Net 30 days from shipment date. All payment details can be found at the bottom of the Invoice. We accept payment by check, electronic payments (ACH), and wire transfers. We will ask for a credit application to be filled out for all new customers.

Orders are typically shipped via FedEx Standard Overnight, 2 Day, or ground service. We will opt for the least expensive method to ensure the shipment arrives on time. If you wish the order to ship using a different carrier please let our Customer Service experts know. They will copy you on the carriers tracking information via e-mail. You can also use your own FedEx account if you prefer.

If we receive your order before 3:30 pm ET it will typically ship the same day. There may be a very rare occurrence where the product is still in manufacturing, especially with new or high volume products. If this happens we will let you know as rapidly as we can and make sure that your order is shipped as soon as possible.

Warranty Information

Arbor Assays warrants that at the time of shipment products are free from defects in materials and workmanship. This warranty is in lieu of any other warranty expressed or implied, including but not limited to, any implied warranty of merchantability or fitness for a particular purpose. We must be notified of any breach of this warranty within 48 hours of receipt of the product. No claim shall be honored if we are not notified within this time period, or if the product has been stored in any way other than outlined in this publication. The sole and exclusive remedy of the customer for any liability based upon this warranty is limited to the replacement of the product, or refund of the invoice price of the goods.

Safety Information

The Safety Data Sheets (SDS) for our products are available online on the product web page as PDF files.

Product Use

All products are for **Research Use Only and are NOT for use in Diagnostic or Therapeutic Procedures**.

Trademarks

DetectX®, ThioStar®, and the Arbor Assays Logo are all Registered Trademarks of Arbor Assays Inc. DyLight® is the registered trademark of Thermo Fisher and all other trademarks are the property of their respective owners.

Indicates that a product described will achieve a supersensitive result.

Indicates that this kit will measure the molecule from multiple species. Most small molecules (< 500 Da) are identical in all sample types.

This refers to kits where the standard is calibrated to WHO or US National Institute of Standards and Technology (NIST) Reference Materials.

Alphabetical Index

Alphabetical Index

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Alphabetical Index

Assay Kit Index by Research Area

Index by Research Area

Distributors

Arbor Assays partners with trusted distributors around the world, who deliver our products to scientists wherever their research may take them.

To connect with a distributor near you, please visit: www.ArborAssays.com/distributors. If your country is not listed, please contact us directly. If you are aware of good distributors in your region, please let us know and we'll connect with them. Our goal is always to have our products delivered to you as quickly and easily as possible.

17-Hydroxyprogesterone EIA Kits

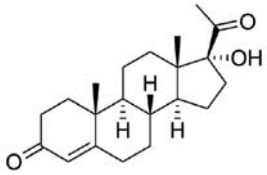
Catalog Number

K053-H1 (1 Plate)
K053-H5 (5 Plate)

Features

- **Stability**
  Liquid 4˚C Stable Reagents
- **Sample**
  Extracted Serum and Plasma, Urine, Fecal Extracts, and TCM
- **Samples/Kit**
  40 or 232 in Duplicate
- **Sensitivity**
  20.3 pg/mL

17-Hydroxyprogesterone



Related Products

Progesterone EIA Kits
Catalog No. K025-H1/H5

Cortisol EIA Kits
Catalog No. K003-H1/H5/H1W/H5W

Corticosterone EIA & CLIA Kits
Catalog No. K014-H1/H5, K014-C1/C5

Cortisone EIA & CLIA Kits
Catalog No. K017-H1/H5, K017-C1/C5

17ß-Estradiol EIA Kits
Catalog No. K030-H1/H5

Estrone EIA Kits
Catalog No. K031-H1/H5

PGFM EIA Kits
Catalog No. K022-H1/H5

Testosterone EIA Kits
Catalog No. K032-H1/H5

Creatinine Urinary Detection Kits
Catalog No. K002-H1/H5

MULTI SPECIES
MOST SENSITIVE

Scientific Relevance

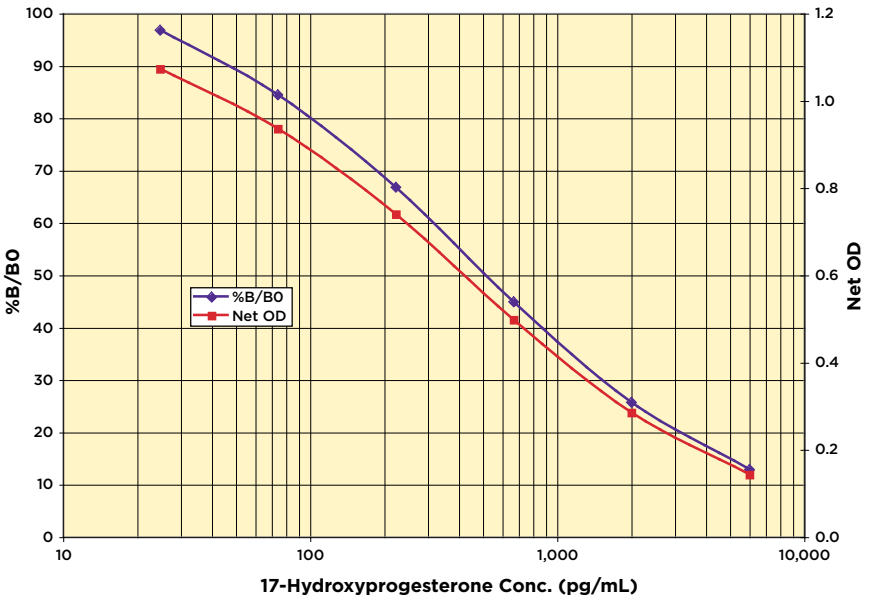
17-Hydroxyprogesterone (17HO-P, OHPG) is a steroid hormone from the androgen group and is found in mammals, reptiles, birds, and other vertebrates. It was first isolated from the adrenal glands of cattle by Pfiffner and North at Parke-Davis in 1940. It is derived from progesterone via 17-hydroxylase, a P450c17 enzyme, or from 17-hydroxypregnenolone via 3ß-hydroxysteroid dehydrogenase 2/Δ^{5-4} isomerase. It is primarily produced in the adrenal glands and to some degree in the gonads, specifically the corpus luteum of the ovary.

Application

17-Hydroxyprogesterone is hydroxylated at the 11 and 21 position to produce cortisol. Deficiency of either 11- or 21-hydroxylase results in decreased cortisol synthesis, and loss of feedback inhibition of adrenocorticotropic hormone (ACTH) secretion. Congenital adrenal hyperplasia (CAH) is caused by inherited defects in steroid biosynthesis. The resulting hormone imbalances with reduced glucocorticoids and mineralocorticoids and elevated 17HO-P and androgens can lead to life-threatening, salt-wasting crisis in the newborn and incorrect gender assignment of virtualized females. Adult-onset CAH may result in hirsutism or infertility in females.

Our Assay

The DetectX® 17-Hydroxyprogesterone EIA Kits are designed to quantitatively measure 17-Hydroxyprogesterone present in urine, extracted serum and plasma, extracted dried fecal samples, and tissue culture media. A 17-Hydroxyprogesterone stock solution is provided to generate a standard curve. A protocol is provided to prepare assay standards from 6,000 to 24.7 pg/mL. Samples are pipetted into a clear microtiter plate coated with an antibody to capture sheep antibodies. A 17-hydroxyprogesterone-peroxidase conjugate is added to the standards and samples in the wells. The binding reaction is initiated by the addition of a polyclonal antibody to 17-hydroxyprogesterone to each well. After a one hour incubation, the plate is washed and substrate is added. The substrate reacts with the bound 17-hydroxyprogesterone-peroxidase conjugate. After a short incubation, the reaction is stopped and the intensity of the generated color is detected at 450nm.



Acetylcholinesterase (AChE) Fluorescent Activity Kit

Scientific Relevance

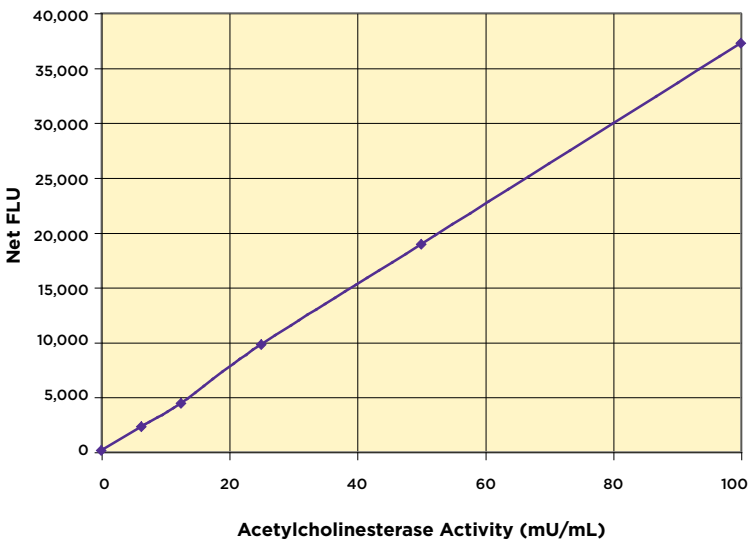
Cholinesterases appear critical to both development and function of the nervous system. Acetylcholinesterase (AChE) is encoded by the single AChE gene; and the structural diversity in the gene products arises from alternative RNA splicing and post translational associations of catalytic and structural subunits.

Application

The use of AChE inhibitors as therapeutic agents and pesticides has spurred detailed investigations of cholinesterases. Impairment of cholinergic neurotransmission is well-established in Alzheimer's disease, but there is controversy about its relevance at the early stages of the disease as well as in mild cognitive impairment.

Our Assay

The DetectX® Acetylcholinesterase Activity Kit is designed to quantitatively measure AChE activity in a variety of samples. A human AChE standard is provided. The kit utilizes a proprietary non-fluorescent molecule, ThioStar®, that covalently binds to the thiol product of the reaction between the AChE enzyme and AChE in the standards or samples, yielding a fluorescent product read at 510 nm in a fluorescent plate reader with excitation at 390 nm. The readout of this AChE activity assay is purely chemical and no other enzymes are involved, therefore few interferents will affect the readings obtained.



Catalog Number

K015-F1 (2 Plate)

Features

- **Use**
  Measure AChE Activity in 20 Minutes
- **Sample**
  CSF, Serum, Plasma, solubilized RBC Ghosts
- **Samples/Kit**
  90 in Duplicate
- **Sensitivity**
  < 0.22 mU/mL of AChE Activity

Related Products

Butyrylcholinesterase (BChE) Activity Kit
Catalog No. K016-F1

Urea Nitrogen (BUN) Detection Kits
Catalog No. K024-H1/H5

Oxytocin EIA & CLIA Kits
Catalog No. K048-H1/H5, K048-C1/C5

Hemoglobin Dual-Range Detection Kit
Catalog No. K013-H1

Arg^8-Vasopressin (AVP) CLIA Kits
Catalog No. K049-C1/C5

ThioStar® Thiol Detection System
Catalog No. L002: 50µg, 100µg, 250µg, 500µg

Thiol Fluorescent Detection Kit
Catalog No. K005-F1

MULTI SPECIES

Aldosterone EIA & CLIA Kits

EIA Catalog Number

K052-H1 (1 Plate)
K052-H5 (5 Plate)

CLIA Catalog Number

K052-C1 (1 Plate)
K052-C5 (5 Plate)

Features

- **Stability**
  Liquid 4˚C Stable Reagents
- **Sample**
  Extracted Serum and Plasma, Urine, Fecal Extracts, TCM
- **Samples/Kit**
  40/39 or 232/231 EIA/CLIA in Duplicate
- **Sensitivity**
  < 5 pg/mL or < 2 pg/mL EIA/CLIA

Aldosterone

Related Products

Progesterone EIA Kits
Catalog No. K025-H1/H5

Cortisol EIA Kits
Catalog No. K003-H1/H5/H1W/H5W

Corticosterone EIA & CLIA Kits
Catalog No. K014-H1/H5, K014-C1/C5

Cortisone EIA & CLIA Kits
Catalog No. K017-H1/H5, K017-C1/C5

17ß-Estradiol EIA Kits
Catalog No. K030-H1/H5

Estrone EIA Kits
Catalog No. K031-H1/H5

PGFM EIA Kits
Catalog No. K022-H1/H5

Testosterone EIA Kits
Catalog No. K032-H1/H5

Creatinine Urinary Detection Kits
Catalog No. K002-H1/H5

MULTI SPECIES
MOST SENSITIVE

Scientific Relevance

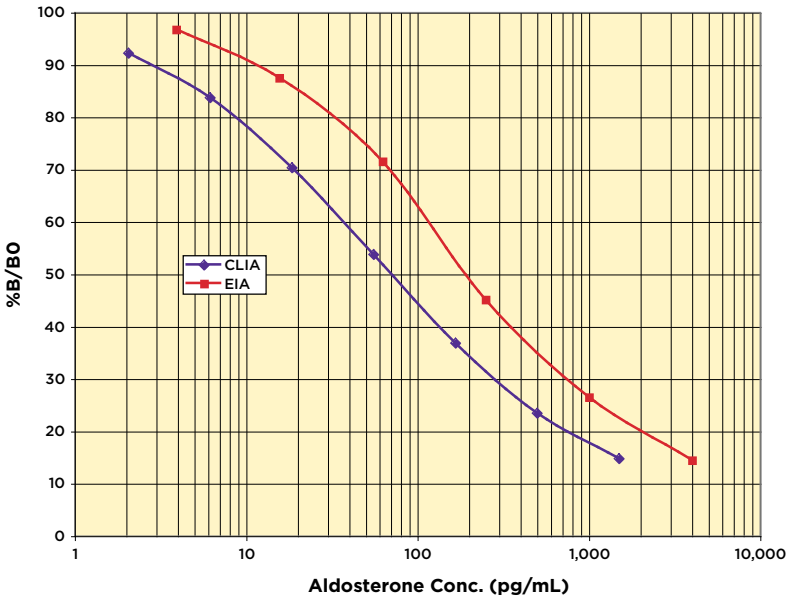
Aldosterone is a mineralocorticoid first isolated by the husband and wife team of Simpson and Tait at University College, London in 1953. Aldosterone controls the sodium-potassium balance through the unidirectional salt reabsorption in a variety of tissues and glands. Synthesized from cholesterol in the zona glomerulosa of the adrenal cortex, secretion is regulated through the renin-angiotensin system. Angiotensin II and potassium stimulate primary secretion by increasing the rate of production of the steroid. Peripheral aldosterone levels are dependent on age and body position and in a normal upright adult aldosterone levels are typically less than 300 pg/mL. Aldosterone is typically secreted as the 18-glucuronide and the tetrahydro-3-glucuronide and this excretion is generally 2-20 µg/24 hour urine collection.

Application

Aldosterone measurement is useful in the investigation of primary and secondary aldosteronism. The renin-angiotensin system is the primary regulator of the synthesis and secretion of aldosterone. Increased concentrations of potassium in the plasma may directly stimulate adrenal production of the hormone. Under physiologic conditions, pituitary adrenocorticotropic hormone is not a major factor in regulating aldosterone secretion. Levels of aldosterone in urine and plasma change during pregnancy, monitoring aldosterone may aid in detecting complications in pregnancy.

Our Assays

The DetectX® Aldosterone EIA and CLIA Kits are designed to quantitatively measure aldosterone present in extracted serum and plasma, or in urine, extracted dried fecal samples, and tissue culture media samples. These kits measure total aldosterone in extracted serum or plasma and fecal samples. An aldosterone stock solution is provided to generate a standard curve. Standards or diluted samples are pipetted into microtiter plates coated with an antibody to capture sheep antibodies. An aldosterone-peroxidase conjugate is added to the wells. The binding reaction is initiated by the addition of a polyclonal antibody to aldosterone. After an overnight incubation at 4°C, the plate is washed and substrate is added. The substrate reacts with the bound aldosterone-peroxidase conjugate. For the EIA kits the plate is read at 450 nm, while for the CLIA kits the light emission is read after 5 minutes.



Allopregnanolone EIA Kits, Monoclonal Antibody Based

Scientific Relevance

Allopregnanolone is made from progesterone which is converted into 5α-dihydroprogesterone by 5α-reductase type I, and 3α-hydroxysteroid oxidoreductase isoenzymes. This 5α-dihydro intermediate is then converted into allopregnanolone. 3α-hydroxysteroids do not interact with classical intracellular steroid receptors but bind stereoselectively and with high affinity to receptors for the major inhibitory neurotransmitter in brain, γ-amino-butyric acid (GABA).

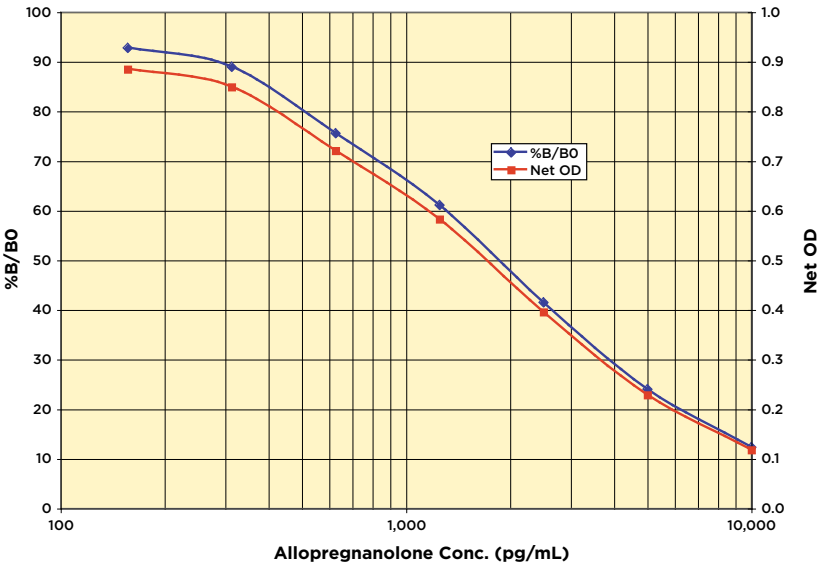
Application

Allopregnanolone may be involved in neuronal plasticity, learning and memory processes, aggression and epilepsy, and the modulation of the responses to stress, anxiety and depression. It aids neurogenesis and has been found to reverse neuron proliferative deficit and cognitive deficits in mouse models of Alzheimer's disease. Allopregnanolone restores functionality in mouse models of Alzheimer's disease, and has been shown to improve behavioral problems in post-traumatic stress disorder. In addition, research has shown that allopregnanolone inhibits ovulation and reduces the amount of Lutenizing Hormone in rats.

Our Assay

The DetectX® Allopregnanolone EIA Kits are designed to quantitatively measure allopregnanolone present in extracted serum, plasma, dried fecal samples, or diluted urine and tissue culture media samples. An allopregnanolone standard is provided to generate a standard curve for the assay and all samples should be read off the standard curve. Standards or diluted samples are pipetted into a clear micrometer plate coated with an antibody to capture mouse antibodies. An allopregnanolone-peroxidase conjugate is added to the standards and samples in the wells. The binding reaction is initiated by the addition of a monoclonal antibody to allopregnanolone to each well.

The kits have two format options: a primary incubation of two hours at room temperature with shaking, or overnight at 4°C. At the end of the incubation period the plate is washed and substrate is added. The substrate reacts with the bound allopregnanolone-peroxidase conjugate. After a short incubation, the reaction is stopped and the intensity of the generated color is detected in a microtiter plate reader capable of measuring 450 nm wavelength. The concentration of the allopregnanolone in the sample is calculated, after making suitable correction for the dilution of the sample, using software available with most plate readers.



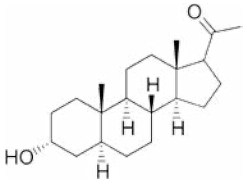
Catalog Number

K061-H1 (1 Plate)
K061-H5 (5 Plate)

Features

- **Use**
  Measure Allopregnanolone in a Variety of Samples
- **Sample**
  Urine, TCM or Extracted Serum, Plasma, and Dried Feces
- **Samples/Kit**
  39 or 231 in Duplicate
- **Sensitivity**
  129.7 pg/mL
- **Selective**
  Low Cross Reactivity to Progesterone and Metabolites

Allopregnanolone



Related Products

Protein Kinase A (PKA) Activity Kit
Catalog No. K027-H1

Cyclic AMP (cAMP) EIA & CLIA Kits
Catalog No. K019-H1/H5, K019-C1/C5

Cyclic GMP (cGMP) EIA & CLIA Kits
Catalog No. K020-H1/H5, K020-C1/C5

Nitric Oxide Detection Kit
Catalog No. K023-H1

Endothelin-1 (ET-1) EIA Kit
Catalog No. K045-H1

Human Myeloperoxidase (MPO) EIA Kit
Catalog No. K060-H1

Prostaglandin E_2 (PGE_2) Multi-Format EIA Kits
Catalog No. K051-H1/H5

MULTI SPECIES

Allopregnanolone EIA & CLIA Kits

EIA Catalog Number

K044-H1 (1 Plate)
K044-H5 (5 Plate)

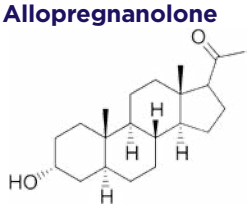
CLIA Catalog Number

K044-C1 (1 Plate)
K044-C5 (5 Plate)

Features

- **Use**
  Measure Allopregnanolone in a variety of samples
- **Sample**
  Extracted Serum and Plasma, Urine, Fecal Extracts, TCM
- **Species**
  Species Independent
- **Time to Answer**
  2.5 Hours EIA / Overnight CLIA
- **Samples/Kit**
  38/39 or 230/231 EIA/CLIA in Duplicate
- **Stability**
  Liquid 4˚C Stable Reagents
- **Sensitivity**
  EIA: 0.13 ng/mL
  CLIA: 20.9 pg/mL

Allopregnanolone



Related Products

Protein Kinase A (PKA) Activity Kit
Catalog No. K027-H1

Endothelin-1 (ET-1) EIA Kit
Catalog No. K045-H1

Human Myeloperoxidase (MPO) EIA Kit
Catalog No. K060-H1

Prostaglandin E_2 (PGE_2) Multi-Format EIA Kits
Catalog No. K051-H1/H5

MULTI SPECIES
MOST SENSITIVE

Scientific Relevance

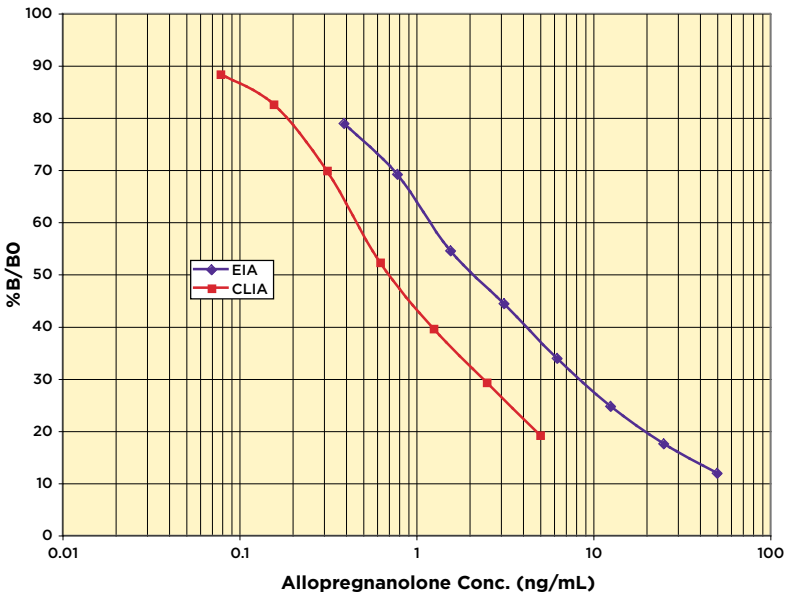
Allopregnanolone is made from progesterone which is converted into 5α-dihydroprogesterone by 5α-reductase type I, and 3α-hydroxysteroid oxidoreductase isoenzymes. This 5α-dihydro intermediate is then converted into allopregnanolone. 3α-hydroxysteroids do not interact with classical intracellular steroid receptors but bind stereoselectively and with high affinity to receptors for the major inhibitory neurotransmitter in brain, γ-amino-butyric acid (GABA).

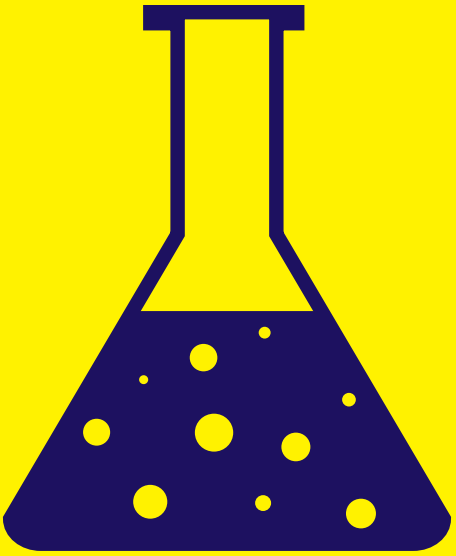
Application

Allopregnanolone may be involved in neuronal plasticity, learning and memory processes, aggression and epilepsy, and the modulation of the responses to stress, anxiety and depression. It aids neurogenesis and has been found to reverse neuron proliferative deficit and cognitive deficits in mouse models of Alzheimer's disease. Allopregnanolone restores functionality in mouse models of Alzheimer's disease, and has been shown to improve behavioral problems in post-traumatic stress disorder. In addition, research has shown that allopregnanolone inhibits ovulation and reduces the amount of Lutenizing Hormone in rats.

Our Assays

The DetectX® Allopregnanolone EIA and CLIA Kits are designed to quantitatively measure Allopregnanolone present in extracted serum, plasma, or dried fecal samples, or in diluted urine, and tissue culture media samples. These kits measure total Allopregnanolone in extracted serum or plasma and fecal samples. An allopregnanolone stock solution is provided to generate a standard curve. Standards or diluted samples are pipetted into microtiter plates coated with an antibody to capture rabbit antibodies. An Allopregnanolone-peroxidase conjugate is added to the wells. The binding reaction is initiated by the addition of a polyclonal antibody to Allopregnanolone. After incubation the plate is washed and substrate is added. The substrate reacts with the bound Allopregnanolone-peroxidase conjugate. For the EIA kits the plate is read at 450 nm, while for the CLIA kits the light emission is read after 5 minutes.





“Many thanks for all your help with my various lab questions—you guys are the best!”

GF, Detroit Zoological Society

Arg[8]-Vasopressin (AVP) CLIA Kits

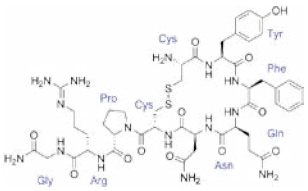
Catalog Number

K049-C1 (1 Plate)
K049-C5 (5 Plate)

Features

- **Use**
  Measure AVP in mammals, Arg-Vasotocin in birds and reptiles
- **Sample**
  Extracted Serum, Plasma, Buffers
- **Sensitivity**
  < 0.9 pg/mL
- **Samples/Kit**
  38 or 230 in Duplicate
- **Stability**
  Liquid 4˚C Stable Reagents

AVP



Related Products

Oxytocin EIA & CLIA Kits
Catalog No. K048-H1/H5, K048-C1/C5

Creatinine Serum Detection Kits
Catalog No. KB02-H1/H2/H1D

Cystatin C EIA Kit
Catalog No. K012-H1

17ß-Estradiol EIA Kits
Catalog No. K030-H1/H5

Progesterone EIA Kits
Catalog No. K025-H1/H5

Retinol Binding Protein Multi-Format EIA Kits
Catalog No. K062-H1/H5

Atrial Natriuretic Peptide (ANP) EIA Kits
Catalog No. K026-H1/H5

MULTI SPECIES
N-CAL™ KIT
MOST SENSITIVE

Scientific Relevance

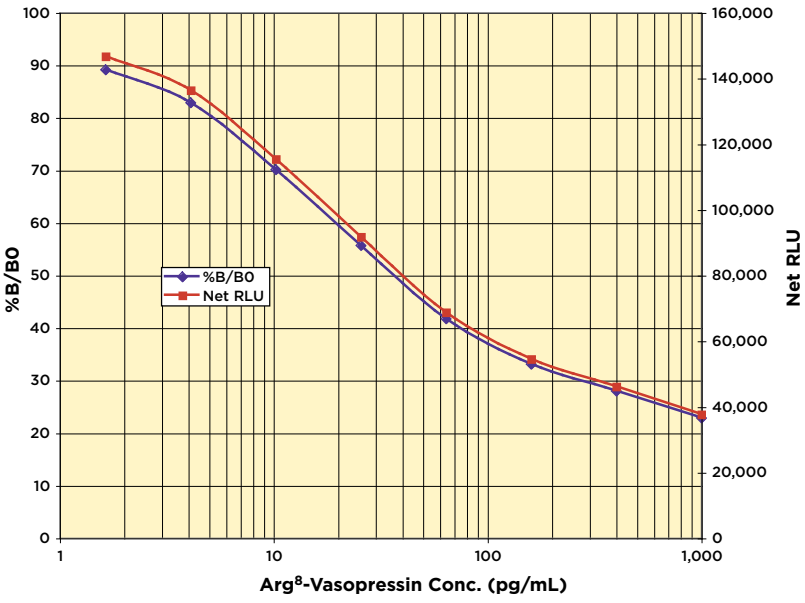
The neurohypophysial hormone arginine vasopressin (AVP), also known as an antidiuretic hormone, is involved in a wide range of physiological regulatory processes, including renal water reabsorption, cardiovascular homeostasis, hormone secretion from the anterior pituitary, and modulation of social behavior and emotional status. AVP and the structurally related posterior pituitary hormone, oxytocin (OT), are synthesized in the paraventricular nucleus and the supraoptic nucleus of the hypothalamus. AVP is a 9 amino acid peptide with a 6-member disulfide ring. It is structurally related to oxytocin, differing by 2 amino acids.

Application

AVP is released in response to sexual stimulation, uterine dilatation, stress, and dehydration. AVP acts principally on renal collecting tubules to increase water reabsorption. Diabetes insipidus (DI) is characterized by the inability to appropriately concentrate urine in response to volume and osmol stimuli. The main causes for DI are decreased AVP production (central DI) or decreased renal response to AVP. Inappropriate AVP secretion might be observed with CNS pathology, such as head injury, stroke, or tumor, or as a side effect of central acting drugs that interfere with the hypothalamic regulation of AVP. Noncentral causes of inappropriate AVP secretion include peripheral stimuli that mimic central vascular hypovolemia, in particular severe low-output cardiac failure, and ectopic AVP secretion.

Our Assay

The DetectX® Arg[8]-Vasopressin CLIA Kits are designed to measure AVP present in serum, plasma and tissue culture media samples. AVP standard is provided. Standards or diluted samples are pipetted into a coated white microtiter plate, and an AVP-peroxidase conjugate is added. The binding reaction is initiated by the addition of a polyclonal antibody to AVP. After an overnight incubation the plate is washed and the provided chemiluminescent substrate is added. The substrate reacts with the bound AVP-peroxidase conjugate to generate luminescent signal.



Atrial Natriuretic Peptide (ANP) EIA Kits

Scientific Relevance

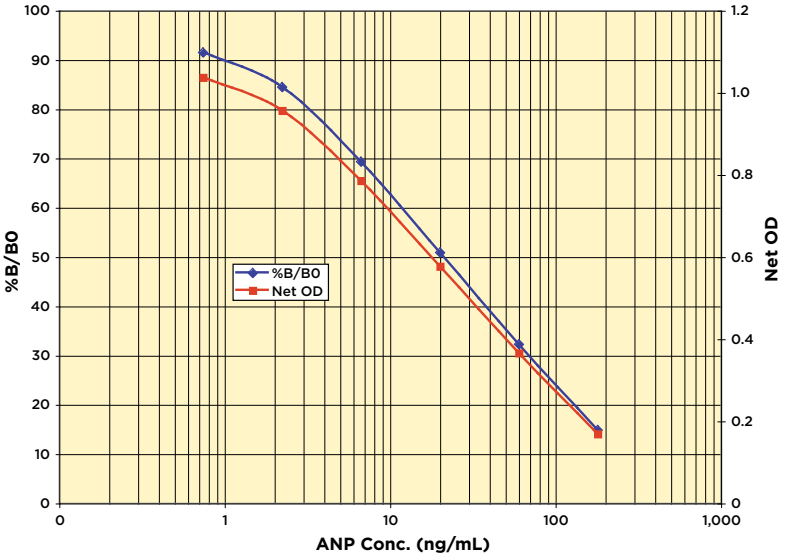
Atrial natriuretic peptide (ANP), a peptide hormone secreted mostly by cardiac myocytes, is a potent natriuretic, diuretic and vasodilatory peptide that contributes to blood pressure and volume homeostasis. ANP is released by myocytes in response to atrial distension. Upon binding to cell surface receptors (NPR-A, B, and C, also termed guanylyl cyclase-A and B receptors), ANP acts through generation of cyclic guanosine monophosphate (cGMP).

Application

Atrial natriuretic peptide demonstrates hemodynamic and glomerular effects, which increase sodium and water load delivery to the tubules, and the inhibition of the release of renin, aldosterone and vasopressin. The overall effect of ANP on the body is to counter increases in blood pressure and volume caused by the renin-angiotensin system. It decreases sodium reabsorption in the distal convoluted tubule and cortical collecting duct of the nephron via cGMP-dependent phosphorylation of epithelial sodium channels.

Our Assay

The DetectX® Atrial Natriuretic Peptide (ANP) EIA Kits are designed to measure ANP present in plasma, urine, or tissue culture media. An ANP standard is provided to generate a standard curve. Standards or samples are pipetted into a coated microtiter plate, and an ANP conjugate is added to the wells. The binding reaction is initiated by the addition of a rabbit polyclonal antibody to ANP. After an hour incubation, the plate is washed and substrate is added. The substrate reacts with the bound ANP conjugate. After a short incubation the intensity of the generated color is measured at 450 nm.



Catalog Number

K026-H1 (1 Plate)
K026-H5 (5 Plate)

Features

- **Use**
  Quantitate ANP in a Variety of Samples
- **Sample**
  Plasma, Urine, TCM
- **Samples/Kit**
  40 or 232 in Duplicate
- **Time to Answer**
  1.5 Hours
- **Range**
  180-0.74 ng/mL
- **Stability**
  Liquid 4˚C Stable Reagents

Related Products

Protein Kinase A (PKA) Activity Kit
Catalog No. K027-H1

Cyclic AMP (cAMP) EIA & CLIA Kits
Catalog No. K019-H1/H5, K019-C1/C5

Cyclic GMP (cGMP) EIA & CLIA Kits
Catalog No. K020-H1/H5, K020-C1/C5

Nitric Oxide Detection Kit
Catalog No. K023-H1

Endothelin-1 (ET-1) EIA Kit
Catalog No. K045-H1

Human Myeloperoxidase (MPO) EIA Kit
Catalog No. K060-H1

Prostaglandin E_2 (PGE_2) Multi-Format EIA Kits
Catalog No. K051-H1/H5

MULTI SPECIES

> I'm an Arbor Assays customer for life — our experience with you all has been so great!
>
> NL

BCA Protein Dual Range Colorimetric Detection Kit

Catalog Number
K041-H1 (2 Plate)

Features
- **Use**
  Measure Total Protein Content in Variety of Samples
- **Uniform**
  Less Variation than Dye-Binding Methods
- **Compatible**
  Unaffected by Most Detergents
- **Rapid**
  Easier and Faster than the Lowry Method
- **Linear**
  Linear Working Range 6.25 to 1,000 µg/mL BSA
- **Samples/Kit**
  89 in Duplicate
- **Stability**
  Liquid Reagents, RT Storage

Related Products
Creatinine Serum Detection Kits
Catalog No. KB02-H1/H2/H1D

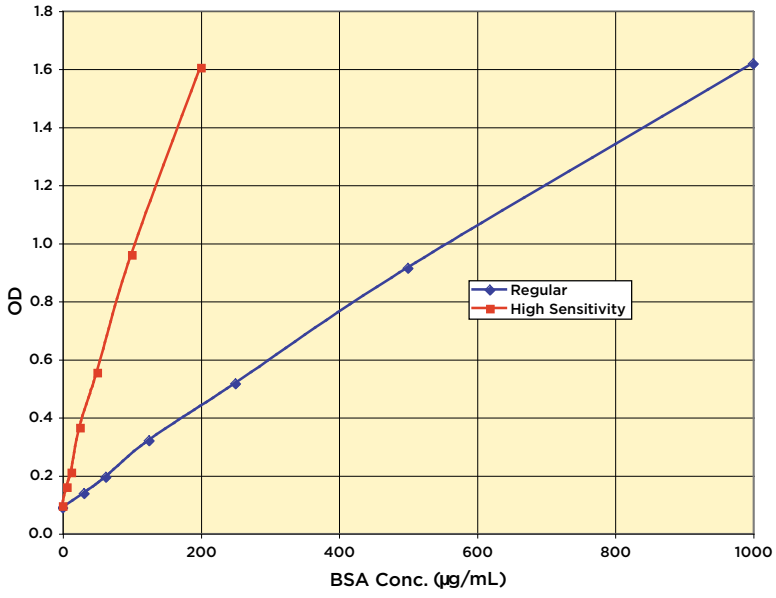
Hemoglobin Detection Kit
Catalog No. K013-H1

Urea Nitrogen (BUN) Detection Kits
Catalog No. K024-H1/H5

Scientific Relevance
Protein determination is one of the most common operations performed in biochemical research. The principle of the bicinchoninic acid (BCA) assay is similar to the Lowry assay, and relies on the formation of a Cu^{2+}-protein complex under alkaline conditions, followed by reduction of the Cu^{2+} to Cu^{1+}. The amount of reduction is proportional to protein present. It has been shown that cystine, cysteine, tryptophan, tyrosine, and peptide bonds are able to reduce Cu^{2+} to Cu^{1+}. BCA forms a purple-blue complex with Cu^{1+} in alkaline environments, thus providing a basis to monitor the reduction of alkaline Cu^{2+} by proteins.

Application
The DetectX® BCA Protein Assay Kit is a two-component, high-precision, detergent-compatible assay to measure total protein concentration compared to the supplied protein standard. The kit provides accurate determination of protein concentration with most sample types encountered in protein research. Compared to most dye-binding methods, the BCA Assay is affected much less by protein compositional differences, providing greater protein-to-protein uniformity. It can be used to study protein:protein interactions, column fractions, recovery of proteins from cell extracts, and HTS of fusion proteins.

Our Assay
The method used in the DetectX® BCA Detection Kit combines the well-known reduction of Cu^{2+} to Cu^{1+} by protein in an alkaline medium (the biuret reaction) with the highly sensitive and selective colorimetric detection of the cuprous cation (Cu^{1+}) using a unique reagent containing bicinchoninic acid. The purple-colored reaction product of this assay is formed by the chelation of two molecules of BCA with one cuprous ion. This water-soluble complex exhibits a strong absorbance at 562 nm that is nearly linear with increasing protein concentrations over a broad working range (6-1,000 µg/mL). Our assay uses all room temperature stable materials and includes two 96-well plates, a protein standard and all the reagents for measuring protein content.



Butyrylcholinesterase (BChE) Fluorescent Activity Kit

Scientific Relevance

Butyrylcholinesterase (BChE) belongs to the same structural class of proteins as acetylcholinesterase (AChE). The tetrameric glycoprotein is predominantly found in blood, kidneys, intestine, liver, lung, heart, and the central nervous system. BChE preferentially acts on butyrylcholine, but also hydrolyzes acetylcholine. BChE hydrolyzes ester-containing drugs and scavenges cholinesterase inhibitors, such as succinylcholine, before they have a chance to reach synaptic targets. A deficiency of BChE can result in delayed metabolism of various drugs, such as cocaine, and treatment with doses of BChE can help in overcoming their physiological effects.

Application

In Alzheimer's disease, the reduction in choline acetyltransferase leads to a decrease in acetylcholine and acetylcholinesterase activity, which appears to cause an increase in BChE activity. Selective BChE inhibitors prevent the formation of new beta-amyloid plaques, which are created by BChE cleaving APP to beta-amyloid. BChE may have roles in attention, executive function, emotional memory and behavior. As dementia advances, BChE activity has been shown to increase, while AChE activity decreases, leaving the potential for BChE activity to be used as a biomarker for progression or target for future therapies.

Our Assay

The DetectX® Butyrylcholinesterase Activity Kit is designed to quantitatively measure BChE activity in a variety of samples such as diluted CSF, serum, and plasma. A human BChE standard is provided. The kit utilizes a proprietary non-fluorescent molecule, ThioStar®, that covalently binds to the thiol product of the reaction between the BChE substrate and BChE enzyme in the standards or samples, yielding a fluorescent product read at 510 nm in a fluorescent plate reader with excitation at 390 nm. The readout of this BChE activity assay is purely chemical and no other enzymes are involved, therefore few interferents will affect the readings obtained.

Catalog Number

K016-F1 (2 Plate)

Features

- **Use**
  Measure BChE Activity in 20 Minutes
- **Sample**
  CSF, Serum, Plasma
- **Species**
  Human and Other Mammalian Species
- **Samples/Kit**
  88 in Duplicate
- **Sensitive**
  0.02 mU/mL of BChE activity

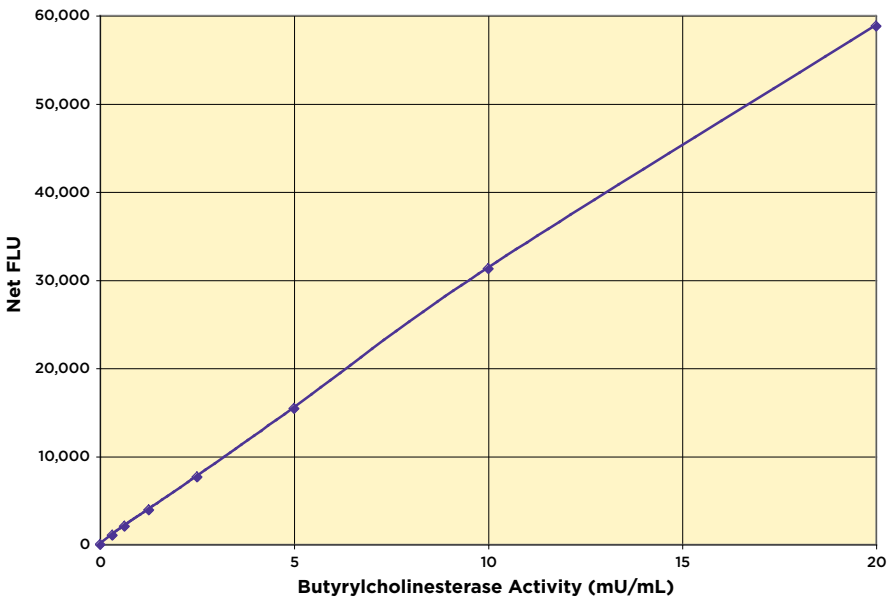
Related Products

Acetylcholinesterase (AChE) Activity Kit
Catalog No. K015-F1

Arg^8-Vasopressin CLIA Kits
Catalog No. K049-C1/C5

Urea Nitrogen (BUN) Detection Kits
Catalog No. K024-H1/H5

ThioStar® Thiol Detection System
Catalog No. L002: 50µg, 100µg, 250µg, 500µg



MULTI SPECIES

MOST SENSITIVE

> You guys are the best, thank you so much! ... I really appreciate how you guys have handled this.
>
> JW

Catalase Colorimetric & Fluorescent Detection Kits

Catalog Number

Colorimetric: K033-H1 (2 Plate)
Fluorescent: K033-F1 (2 Plate)

Features

- **Use**
  Measure Catalase Activity in any Sample
- **Time to Answer**
  45 Minutes
- **Species**
  Species Independent
- **Samples/Kit**
  89 in Duplicate
- **Stability**
  Liquid 4˚C Stable Reagents

Related Products

Hydrogen Peroxide Detection Kits
Catalog No. K034-H1, K034-F1

Superoxide Dismutase (SOD) Activity Kit
Catalog No. K028-H1

FRAP™ (Ferric Reducing Antioxidant Power) Detection Kit
Catalog No. K043-H1

Glutathione Fluorescent Detection Kits
Catalog No. K006-F1/F5/F1D

Glutathione Colorimetric Detection Kits
Catalog No. K006-H1/H1C-H/H1C-L

Glutathione Reductase (GR) Activity Kit
Catalog No. K009-F1

MULTI SPECIES
MOST SENSITIVE

Scientific Relevance

Hydrogen peroxide, H_2O_2 is one of the most frequently occurring reactive oxygen species. It is formed either in the environment or as a by-product of aerobic metabolism, superoxide formation and dismutation, or as a product of oxidase activity. Both excessive hydrogen peroxide and its decomposition product hydroxyl radical, formed in a Fenton-type reaction, are harmful for most cell components. One of the most efficient ways of removing peroxide is through the enzyme catalase, which is encoded by a single gene, and is highly conserved among species. High catalase activity is detected in peroxisomes.

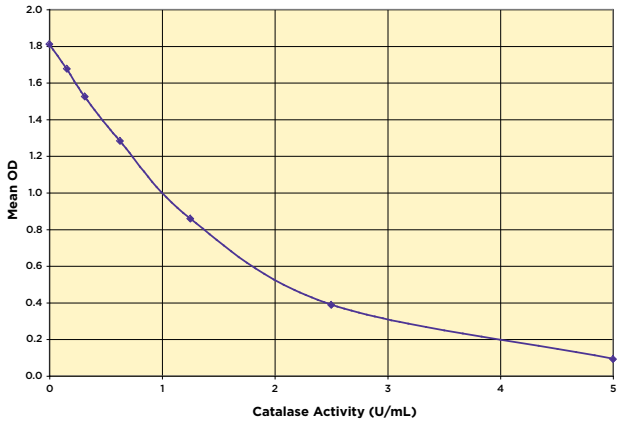
Application

Overexpression of catalase was reported to retard atherosclerosis progression and to decrease the aortic content of F2-isoprostanes in ApoE-/- mice, however, the underlying mechanisms for this protective effect remain to be established unambiguously. Complete acatalasemia bears severely adverse health outcomes, including diabetes mellitus; lower-than-normal catalase activity implies a high risk of the premature onset of age-related degenerative diseases, and has been proven to be a key metabolic feature in multiple chemical sensitivity patients.

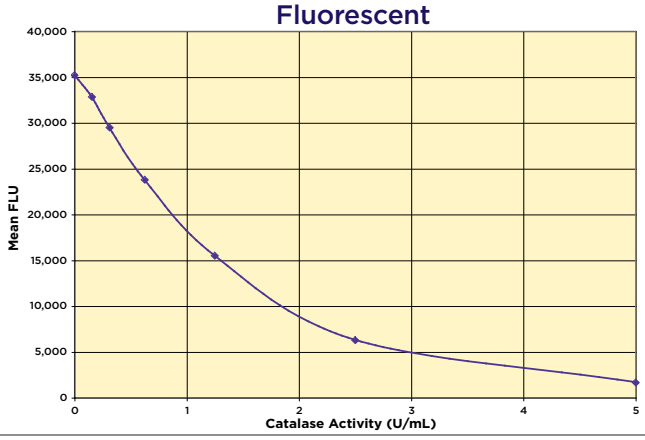
Our Assays

The DetectX® Catalase Activity Kits are designed to quantitatively measure catalase activity in a variety of samples. A bovine catalase standard is provided. Standards and samples are added to the wells of a half area plate. Hydrogen peroxide is added to each well and the plate incubated at room temperature for 30 minutes. The Detection Reagent and horseradish peroxidase are added and incubated at room temperature for 15 minutes. The HRP reacts with the substrate in the presence of hydrogen peroxide to produce either a colored or fluorescent product.

Colorimetric



Fluorescent



Ceruloplasmin (Cp) Colorimetric Activity Kit

Scientific Relevance

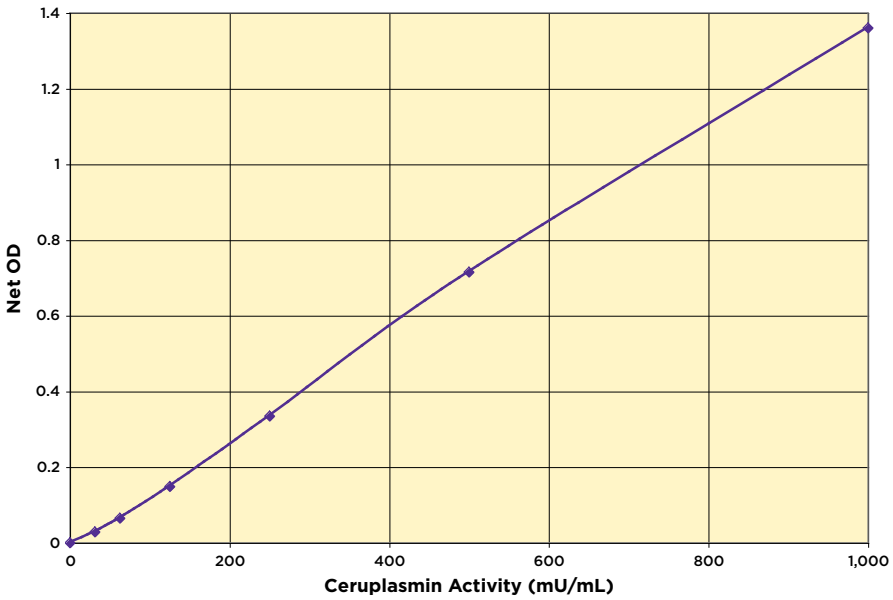
Ceruloplasmin (Cp) is a multicopper oxidase enzyme involved in the safe handling of oxygen in some metabolic pathways of vertebrates. It was denoted ceruloplasmin, literally meaning "a blue substance from plasma." Specialized copper sites have been recruited during evolution to provide long-range electron transfer reactivity and oxygen binding and activation in proteins destined to cope with oxygen reactivity in different organisms. Ceruloplasmin belongs to the family of multi-copper oxidases which are among the few enzymes able to bind molecular oxygen to perform its complete reduction to water.

Application

Aceruloplasminaemia is an autosomal recessive disorder of iron metabolism characterized by the complete absence of ceruloplasmin. The role of Cp in tissue iron overload and the subsequent clinical findings of diabetes, retinal degeneration and neurodegeneration has been associated with iron overload in aceruloplasminaemic patients. Ceruloplasmin is also associated with reproduction. Estrogens alter the subcellular distribution of copper in the liver, and hence an increase in plasma copper levels leads to subsequent ceruloplasmin synthesis.

Our Assay

The DetectX® Ceruloplasmin Activity Kit is designed to quantitatively measure ceruloplasmin activity in diluted serum and urine samples. An active human ceruloplasmin standard is provided. Samples are added to the wells of a half area clear plate. The reconstituted Ceruloplasmin Substrate is added and the plate is incubated at 30°C for 60 minutes. The ceruloplasmin in the standards and samples reacts with the substrate to produce a colored product which is measured at 560 nm.



Catalog Number

K035-H1 (2 Plate)

Features

- **Use**
  Non-Invasive Pregnancy Marker
- **Sample**
  Serum, Urine
- **Species**
  Polar Bears, Pandas, Human, and Felids
- **Samples/Kit**
  89 in Duplicate
- **Time to Answer**
  60 Minutes
- **Stable**
  Liquid 4˚C Stable Reagents

Related Products

PGFM EIA Kits
Catalog No. K022-H1/H5

Progesterone EIA Kits
Catalog No. K025-H1/H5

Prolactin EIA Kit
Catalog No. K040-H1

Oxytocin EIA & CLIA Kits
Catalog No. K048-H1/H5, K048-C1/C5

Estrone-3-Glucuronide (E1G) EIA Kits
Catalog No. K036-H1/H5

Estrone EIA Kits
Catalog No. K031-H1/H5

Estradiol EIA Kits
Catalog No. K030-H1/H5, KB30-H1/H5

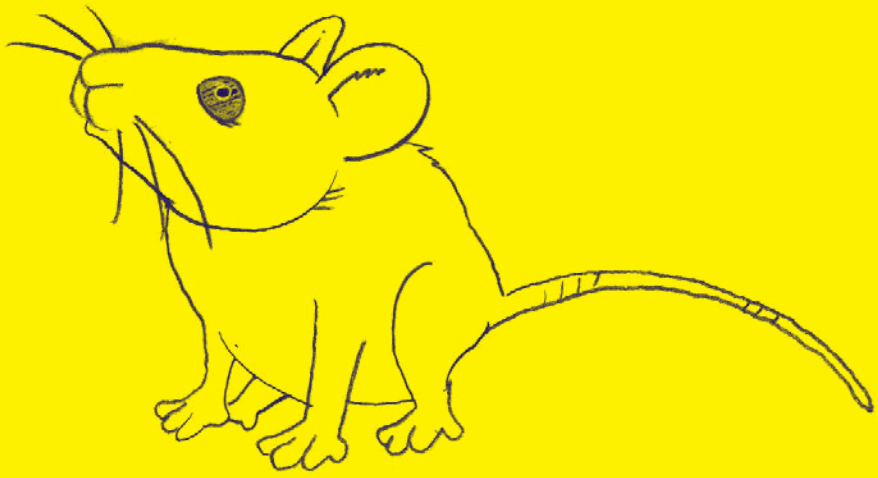
Pregnanediol-3-Glucuronide (PDG) EIA Kits
Catalog No. K037-H1/H5

MULTI SPECIES

MOST SENSITIVE

“ The Arbor Assays EIA and CLIA for corticosterone are the best kits I have ever used. They are exquisitely sensitive, with easy to follow instructions, and they work beautifully. The tech support is super — any time I call, they are very helpful, highly experienced, and more than willing to answer any questions I have.”

Professor SL, University of Kentucky



Corticosterone EIA and CLIA Kits

Scientific Relevance

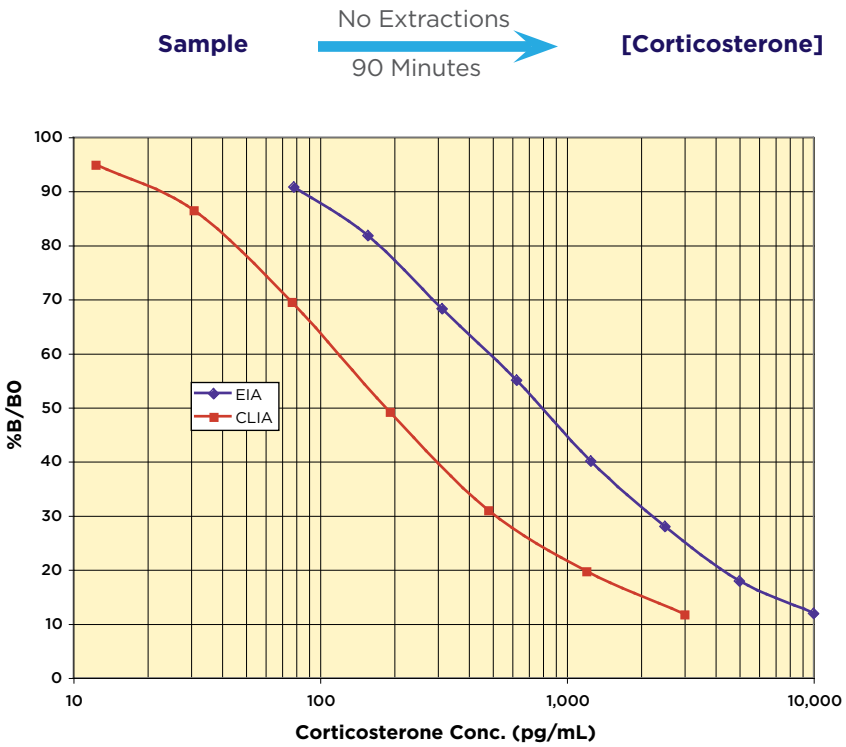
Corticosterone ($C_{21}H_{30}O_4$, Kendall's Compound 'B') is a glucocorticoid secreted by the cortex of the adrenal gland. Corticosterone is produced in response to stimulation of the adrenal cortex by ACTH and is the precursor of aldosterone.

Application

Corticosterone is a major indicator of stress and is the major stress steroid produced in non-human mammals. Studies involving corticosterone and levels of stress include impairment of long term memory retrieval, chronic corticosterone elevation due to dietary restrictions and in response to burn injuries. In addition to stress levels, corticosterone is believed to play a decisive role in sleep-wake patterns.

Our Assays

The DetectX® Corticosterone EIA & CLIA Kits are designed to quantitatively measure corticosterone present in non-extracted serum, plasma, extracted dried fecal, and tissue culture media samples. A corticosterone standard is provided. Standards or samples are pipetted into a coated microtiter plate, and a corticosterone-peroxidase conjugate is added to the wells. The binding reaction is initiated by the addition of a sheep polyclonal antibody to corticosterone. After incubation the plate is washed and substrate is added. The substrate reacts with the bound corticosterone-peroxidase conjugate. For the EIA kits the plate is read at 450 nm. For the CLIA kits, light emission is read after 5 minutes.



EIA Catalog Number

K014-H1 (1 Plate)
K014-H5 (5 Plate)

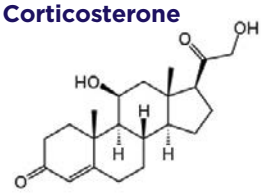
CLIA Catalog Number

K014-C1 (1 Plate)
K014-C5 (5 Plate)

Features

- **Use**
  Stress Marker in as Little as 1µL Serum, Plasma
- **Sample**
  Serum, Plasma, Saliva, Hair, Feathers, Nails, Urine, Fecal Extract, Respiratory Vapor, TCM
- **Species**
  Mice, Rats, Human, Monkey, Birds, Felids, Ungulates
- **Time to Answer**
  EIA: 1.5 Hours
  CLIA: 2 Hours
- **Samples/Kit**
  EIA: 38/230 in Duplicate
  CLIA: 39/231 in Duplicate
- **Small Sample Size**
  As Little as 1µL Serum, Plasma

Corticosterone



Related Products

Cortisol EIA Kits
Catalog No. K003-H1/H5/H1W/H5W

Cortisone EIA & CLIA Kits
Catalog No. K017-H1/H5, K017-C1/C5

Progesterone EIA Kits
Catalog No. K025-H1/H5

Aldosterone EIA & CLIA Kits
Catalog No. K052-H1/H5, K052-C1/C5

MULTI SPECIES
MOST SENSITIVE

Cortisol EIA Kits

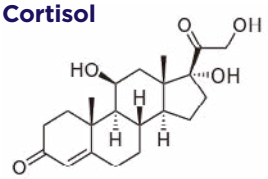
Catalog Number

K003-H1 (1 Strip Well Plate)
K003-H5 (5 Strip Well Plate)
K003-H1W (1 Whole Plate)
K003-H5W (5 Whole Plate)

Features

- **Use**
  Stress Marker in as Little as 1µL Serum, Plasma
- **Sample**
  Saliva, Serum, Plasma, Urine, Fecal Extract, Hair, Respiratory Vapor
- **Validation**
  Human, Monkey, Ruminants
- **Species**
  Species Independent
- **Time to Answer**
  90 Minutes
- **Samples/Kit**
  39 or 231 in Duplicate

Cortisol



Related Products

Corticosterone EIA & CLIA Kits
Catalog No. K014-H1/H5, K014-C1/C5

Cortisone EIA & CLIA Kits
Catalog No. K017-H1/H5, K017-C1/C5

Hemoglobin Dual-Range Detection Kit
Catalog No. K013-H1

Creatinine Urinary Detection Kits
Catalog No. K002-H1/H5

MULTI SPECIES
N-CAL™ KIT

> We just got published and cited the cortisol assay we used from your company. Your products are awesome.
>
> BW, University of Findlay

Scientific Relevance

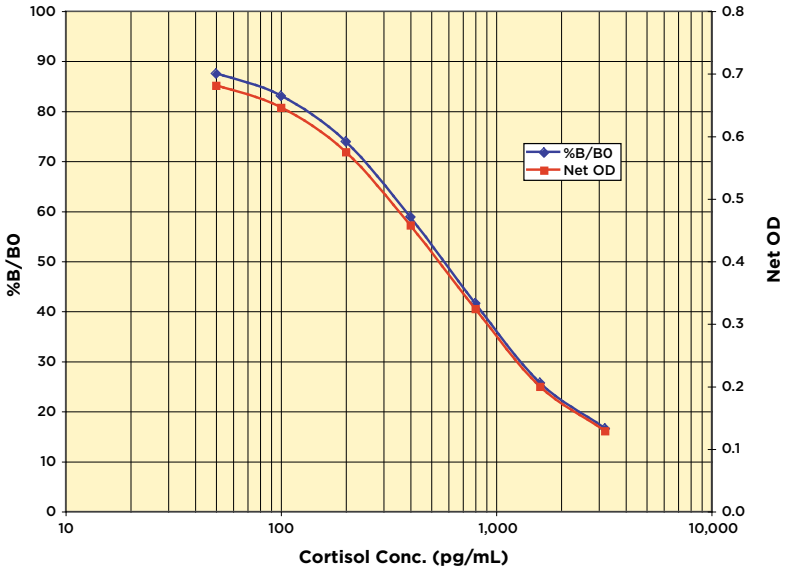
Cortisol, $C_{21}H_{30}O_5$, (hydrocortisone, compound 'F') is the primary glucocorticoid produced and secreted by the adrenal cortex. It is often referred to as the "stress hormone" and it affects blood pressure, blood sugar levels, and other actions of stress adaptation. Only free cortisol is available to most receptors and causes physiological processes to be modulated. Immunologically, cortisol functions as an important anti-inflammatory and plays a role in hypersensitivity, immunosuppression, disease resistance, gluconeogenesis, liver glycogen deposition, and the reduction of glucose utilization.

Application

Production of cortisol follows an ACTH-dependent circadian rhythm, with a peak level in the morning and decreasing levels throughout the day. Abnormal cortisol levels are being evaluated for correlation with a variety of different conditions, such as prostate cancer, depression, schizophrenia, Cushing's Syndrome and Addision's disease.

Our Assay

The DetectX® Cortisol EIA Kits are designed to measure cortisol present in non-extracted serum, plasma, saliva, extracted dried fecal, and tissue culture media samples. A cortisol standard is provided for the assays. Standards or samples are pipetted into a coated microtiter plate, and a cortisol-peroxidase conjugate is added to the wells. The binding reaction is initiated by the addition of a monoclonal antibody to cortisol. After an hour incubation, the plate is washed and substrate is added. The substrate reacts with the bound cortisol-peroxidase conjugate. After a short incubation the intensity of the generated color is measured at 450 nm.



Cortisone EIA & CLIA Kits

Scientific Relevance

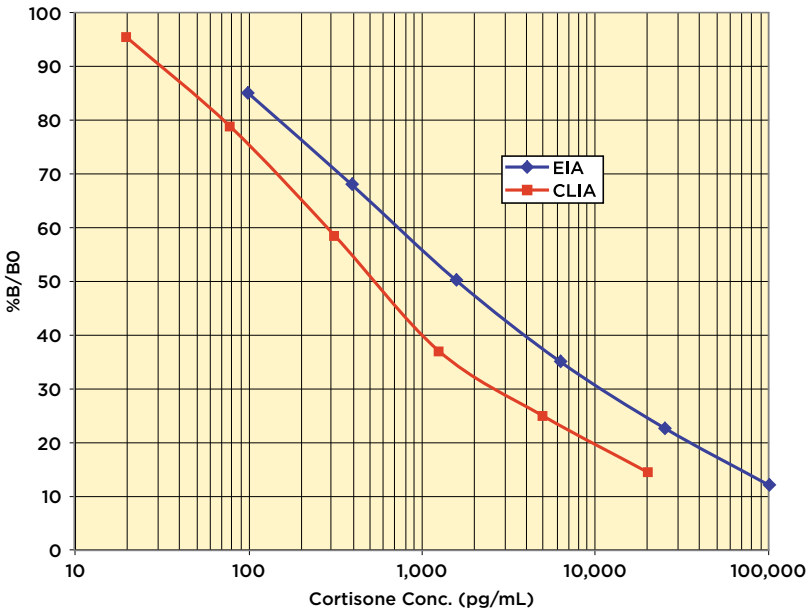
Cortisone ($C_{21}H_{28}O_5$, Kendall's Compound 'E') was identified by extraction from bovine suprarenal gland tissue. Cortisol and cortisone concentrations vary due to the activity of two 11ß-hydroxysteroid dehydrogenases (11ß-HSD). 11ß-HSD1 is found primarily in the liver where it converts cortisone to cortisol while 11ß-HSD2 is found in tissues such as the kidney where cortisol receptor binding is required. This glucocorticoid "shuttle" helps to initiate and regulate the anti-inflammatory response.

Application

Monitoring the ratio of cortisone:cortisol has applications in diabetes, obesity, metabolic syndrome, osteoporosis, and chronic fatigue syndrome in addition to adrenal diseases.

Our Assays

The DetectX® Cortisone EIA and CLIA Kits are designed to quantitatively measure Cortisone in extracted dried fecal samples, urine, saliva, and serum samples. These kits measure total cortisone in extracted serum or plasma and fecal samples. An cortisone stock solution is provided to generate a standard curve. Standards or diluted samples are pipetted into microtiter plates coated with an antibody to capture rabbit antibodies. A cortisone-peroxidase conjugate is added to the wells. The binding reaction is initiated by the addition of a polyclonal antibody to cortisone. After incubation for 2 hours the plate is washed and substrate is added. The substrate reacts with the bound cortisone-peroxidase conjugate. For the EIA kits the plate is read at 450 nm, while for the CLIA kits the light emission is read after 5 minutes.



EIA Catalog Number

K017-H1 (1 Plate)
K017-H5 (5 Plate)

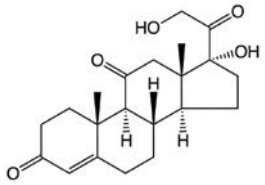
CLIA Catalog Number

K017-C1 (1 Plate)
K017-C5 (5 Plate)

Features

- **Use**
  Stress Marker in as Little as 1µL Serum, Plasma
- **Sample**
  Serum, Plasma, Hair, Feathers, Urine, Saliva, Fecal Extract
- **Validation**
  Mice, Rats, Human, Monkey, Birds, Felids, Ungulates
- **Species**
  Species Independent
- **Time to Answer**
  EIA: 2.5 Hours
  CLIA: 2 Hours
- **Samples/Kit**
  40 or 232 in Duplicate
- **Small Sample Size**
  As Little as 1µL Serum, Plasma

Cortisone



Related Products

Cortisol EIA Kits
Catalog No. K003-H1/H5/H1W/H5W

Corticosterone EIA & CLIA Kits
Catalog No. K014-H1/H5, K014-C1/C5

Hemoglobin Dual-Range Detection Kit
Catalog No. K013-H1

MULTI SPECIES
MOST SENSITIVE

Creatinine Serum Detection Kits

Catalog Number

KB02-H1 (2 Plate)
KB02-H2 (4 Plate)
KB02-H1D (384-Well Plate)

Features

- **Use**
  Kidney Damage
- **Sample**
  Serum and Plasma
- **Samples/Kit**
  91 or 187 in Duplicate
- **Calibrated**
  N-Cal Kit, NIST-Calibrated Reference Standard #914a
- **Stability**
  Liquid 4°C Stable Reagents

Related Products

Creatinine Urinary Detection Kit
Catalog No. K002-H1/H5

Hemoglobin Detection Kit
Catalog No. K013-H1

Human Cystatin C EIA Kit
Catalog No. K012-H1

RBP Multi-Format EIA Kits
Catalog No. K062-H1/H5

Arg⁸-Vasopressin (AVP) CLIA Kits
Catalog No. K049-C1/C5

Atrial Natriuretic Peptide (ANP) EIA Kits
Catalog No. K026-H1/H5

Scientific Relevance

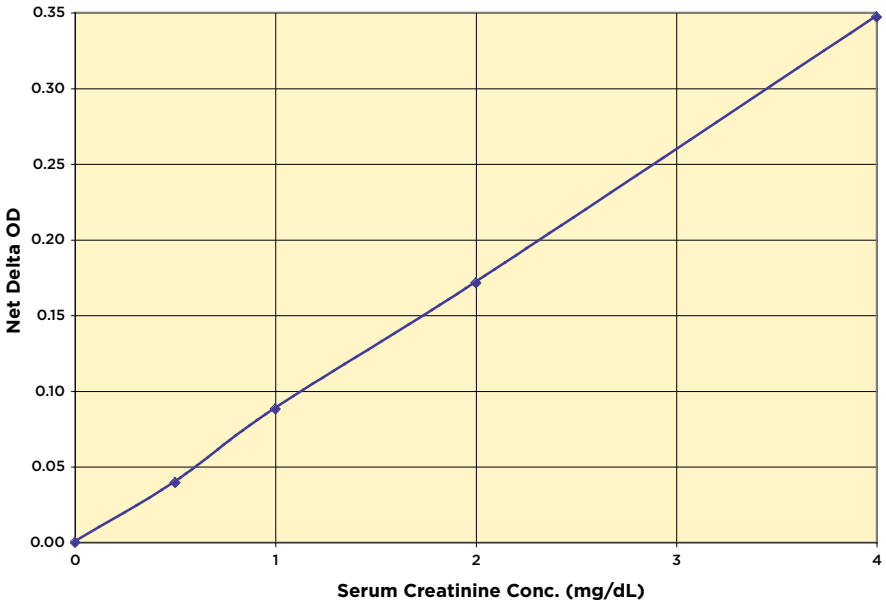
Creatinine is a metabolite of phosphocreatine (p-creatine), a high-energy phosphate that can be utilized by tissues for the production of ATP. Creatine either comes from the diet or synthesized from the amino acids arginine, glycine, and methionine. Creatine and p-creatine are converted non-enzymatically to the metabolite creatinine, which diffuses into the blood and is excreted by the kidneys. *In vivo*, this conversion appears to be irreversible and *in vitro* it is favored by higher temperatures and lower pH.

Application

Measuring serum creatinine is one of the most commonly used indicators of renal function. A rise in blood creatinine levels is observed only with marked damage to functioning nephrons. A good indicator of kidney function is given by the creatinine clearance test. Creatinine clearance can be accurately calculated using serum creatinine concentration and taking into account the variables of sex, age, weight, and race.

Our Assay

The DetectX® Serum Creatinine Detection Kits measure creatinine in serum and plasma samples. A creatinine standard, calibrated to a NIST creatinine standard, is provided to generate a standard curve. The color generating reaction is initiated with the Creatinine Detection Reagent. The assay utilizes a kinetic absorbance method to overcome interference by colored compounds in the sample. The concentration of creatinine is calculated using the delta of the optical density readings at 1 and 30 minutes. A free Excel worksheet for concentration calculations is available in the Resources section of the Arbor Assays website.



Creatinine Urinary Detection Kits

Scientific Relevance

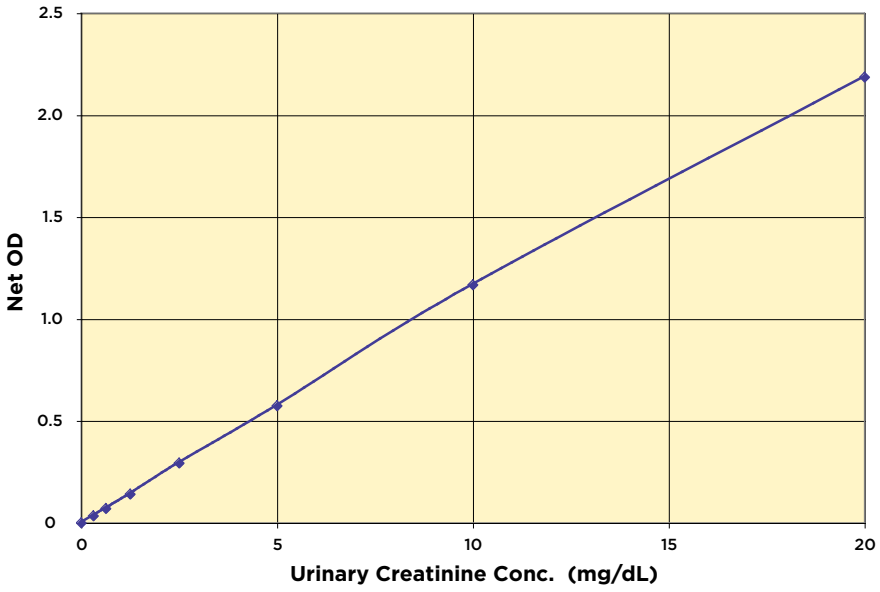
Creatinine is a metabolite of phosphocreatine (p-creatine), a high-energy phosphate that can be utilized by tissues for the production of ATP. Creatine either comes from the diet or synthesized from the amino acids arginine, glycine, and methionine. Creatine and p-creatine are converted non-enzymatically to the metabolite creatinine, which diffuses into the blood and is excreted by the kidneys. *In vivo*, this conversion appears to be irreversible and *in vitro* it is favored by higher temperatures and lower pH.

Application

Creatinine forms spontaneously from p-creatine. Under normal conditions, its formation occurs at a rate that is relatively constant and intra-individual variation is <15% from day to day. Because of this, creatinine is a useful tool for normalizing the levels of other molecules found in urine. Concentrations for other analytes in a urine sample can be expressed relative to creatinine allowing for comparison of samples regardless of the volume or concentration of the urine sample collected.

Our Assay

The DetectX® Creatinine Urinary Detection Kits are designed to quantitatively measure creatinine in urine samples. A NIST calibrated creatinine standard is used to standardize the assay. Samples are pipetted into a clear microtiter plate and the color generating reaction is initiated with the supplied no-mix DetectX Creatinine Reagent, which is pipetted into each well. After a 30 minute incubation at room temperature the color is read at 490nm.



Catalog Number

K002-H1 (2 Plate)
K002-H5 (10 Plate)

Features

- **Use**
  Urine Volume
- **Sample**
  Urine
- **Samples/Kit**
  88 or 472 in Duplicate
- **Calibrated**
  N-Cal Kit, NIST-Calibrated Reference Standard #914a
- **Stability**
  Liquid 4°C Stable Reagents

Related Products

Creatinine Serum Detection Kit
Catalog No. KB02-H1/H2/H1D

Hemoglobin Detection Kit
Catalog No. K013-H1

Urea Nitrogen (BUN) Detection Kits
Catalog No. K024-H1/H5

BCA Protein Dual Range Detection Kit
Catalog No. K041-H1

MULTI SPECIES
N-CAL™ KIT

> Thank you so much! ... I really appreciate your quick response and attention.
>
> EW

Cyclic AMP (cAMP) Direct EIA and CLIA Kits

EIA Catalog Number

K019-H1 (1 Plate)
K019-H5 (5 Plate)

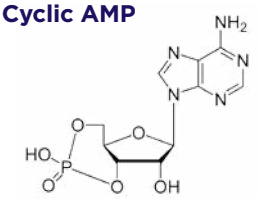
CLIA Catalog Number

K019-C1 (1 Plate)
K019-C5 (5 Plate)

Features

- **Use**
  Measure cAMP **DIRECTLY** in Samples
- **Format**
  Lyse Cells, Kill PDEs and Stabilize cAMP in Sample Diluent
- **Sample**
  Lysates, Saliva, Urine, Plasma, Media
- **Species**
  Species Independent
- **Time to Answer**
  2.5 Hours EIA/2 Hours CLIA
- **Samples/Kit**
  39 or 231 in Duplicate

Cyclic AMP



Related Products

Protein Kinase (PKA) Activity Kit
Catalog No. K027-H1

Cyclic GMP (cGMP) EIA & CLIA Kits
Catalog No. K020-H1/H5, K020-C1/C5

IBMX Phosphodiesterase Inhibitor
Catalog No. P019-100MG, P019-1GM

BRL-50481 Phosphodiesterase Inhibitor
Catalog No. P020-10MG, P020-50MG

MULTI SPECIES

MOST SENSITIVE

Scientific Relevance

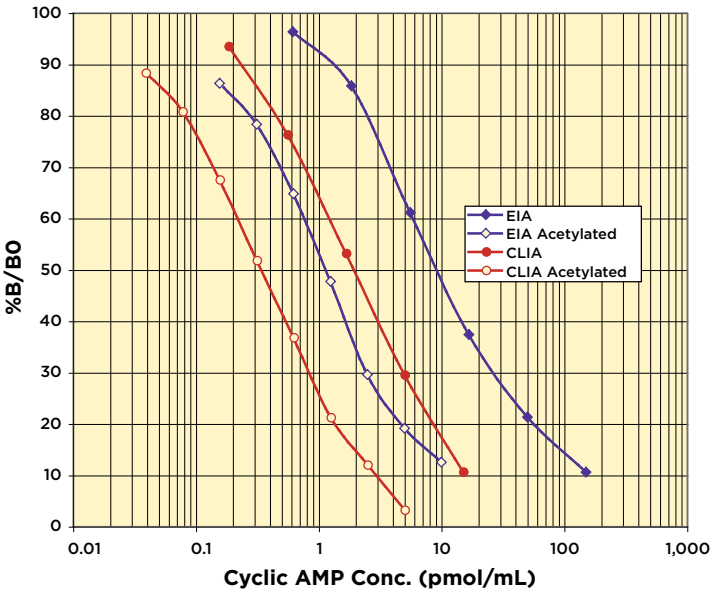
Adenosine-3′, 5′-cyclic monophosphate, or cyclic AMP (cAMP), is one of the most important second messengers and a key intracellular regulator. It was discovered by Sutherland and Rall in 1957.

Application

Cyclic AMP functions as a mediator of activity for a number of hormones, including epinephrine, glucagon, and ACTH. Adenylate cyclase is activated by the hormones glucagon and adrenaline and by G protein. Liver adenylate cyclase responds more strongly to glucagon, and muscle adenylate cyclase responds more strongly to adrenaline. cAMP decomposition into AMP is catalyzed by the enzyme phosphodiesterase. In the Human Metabolome Database there are 166 metabolic enzymes listed that convert cAMP.

Our Assays

The DetectX® cAMP EIA & CLIA Kits are designed to directly measure cAMP present in cell lysates, saliva, urine, EDTA and Heparin plasma, or tissue culture media diluted in Sample Diluent. A cAMP standard is provided. Standards or samples are pipetted into a coated microtiter plate after Plate Primer has been added to wells. A cAMP-peroxidase conjugate is added to the wells and the binding reaction is initiated by the addition of a sheep polyclonal antibody to cAMP. After incubation the plate is washed and substrate is added. The substrate reacts with the bound cAMP-peroxidase conjugate. For the EIA kits the plate read at 450 nm. For the CLIA kits the luminescent signal is read after 5 minutes.



Cyclic GMP (cGMP) Direct EIA & CLIA Kits

Scientific Relevance

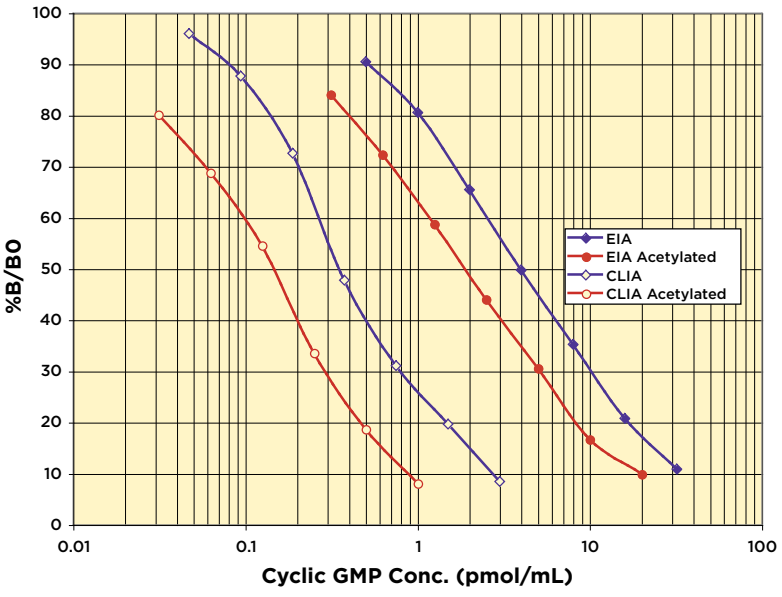
Guanosine 3′, 5′-cyclic monophosphate (cyclic GMP; cGMP) is a critical and multifunctional second messenger present at levels typically 10-100 fold lower than cAMP in most tissues. Intracellular cGMP is formed by the action of the enzyme guanylate cyclase (GC) on GTP and degraded through phosphodiesterase hydrolysis.

Application

Guanylate cyclases are either soluble or membrane bound. Soluble GCs are nitric oxide responsive, whereas membrane bound GCs respond to hormones such as acetylcholine, insulin and oxytocin. Other chemicals like serotonin and histamine also cause an increase in cGMP levels. Cyclic GMP regulates cellular composition through cGMP-dependent kinase, cGMP-dependent ion channels or transporters, and through its hydrolytic degradation by phosphodiesterase.

Our Assays

The DetectX® Direct Cyclic GMP (cGMP) EIA & CLIA Kits are designed to directly measure cGMP present in lysed cells or tissue, plasma, urine, saliva and tissue culture media samples. The kits are unique in that all samples are diluted into an acidic Sample Diluent for cGMP measurement. The cGMP in the samples is stable and endogenous phosphodiesterases are inactivated in the Sample Diluent. A cGMP standard is provided. Plate Primer is added to the coated microtiter plate and samples, either with or without acetylation, are pipetted into the primed wells. A cGMP-peroxidase conjugate is added and the binding reaction is initiated by the addition of a mouse monoclonal antibody to cGMP. After incubation the plate is washed and substrate is added. The substrate reacts with the bound cGMP-peroxidase conjugate. For the EIA kits the plate read at 450 nm. For the CLIA kits light emission is read after 5 minutes.



IMPROVED KITS COMING SOON!

EIA Catalog Number

K020-H1 (1 Plate)
K020-H5 (5 Plate)

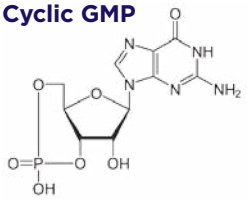
CLIA Catalog Number

K020-C1 (1 Plate)
K020-C5 (5 Plate)

Features

- **Use**
  Measure cGMP **DIRECTLY** in Samples
- **Format**
  Lyse Cells, Kill PDEs and Stabilize cGMP in Sample Diluent
- **Sample**
  Lysates, Saliva, Urine, Plasma, Media
- **Species**
  Species Independent
- **Time to Answer**
  2.5 Hours EIA/Overnight CLIA
- **Samples/Kit**
  39 or 231 in Duplicate

Cyclic GMP



Related Products

Protein Kinase (PKA) Activity Kit
Catalog No. K027-H1

Cyclic AMP (cAMP) EIA & CLIA Kits
Catalog No. K019-H1/H5, K019-C1/C5

IBMX Phosphodiesterase Inhibitor
Catalog No. P019-100MG, P019-1GM

BRL-50481 Phosphodiesterase Inhibitor
Catalog No. P020-10MG, P020-50MG

MULTI SPECIES
MOST SENSITIVE

Human Cystatin C EIA Kit

Catalog Number
K012-H1 (1 Plate)

Features
- **Use**
  Kidney Injury Marker
- **Sample**
  Serum, Plasma, Urine, TCM
- **Species**
  Human
- **Samples/Kit**
  40 in Duplicate
- **Time to Answer**
  2 Hours
- **Stable**
  Liquid 4˚C Stable Reagents

Related Products
Creatinine Serum Detection Kits
Catalog No. KB02-H1/H2/H1D

RBP Multi-Format EIA Kits
Catalog No. K062-H1/H5

Hemoglobin Colorimetric Detection Kit
Catalog No. K013-H1

Urea Nitrogen (BUN) Detection Kits
Catalog No. K024-H1/H5

Arg⁸-Vasopressin (AVP) CLIA Kits
Catalog No. K049-C1/C5

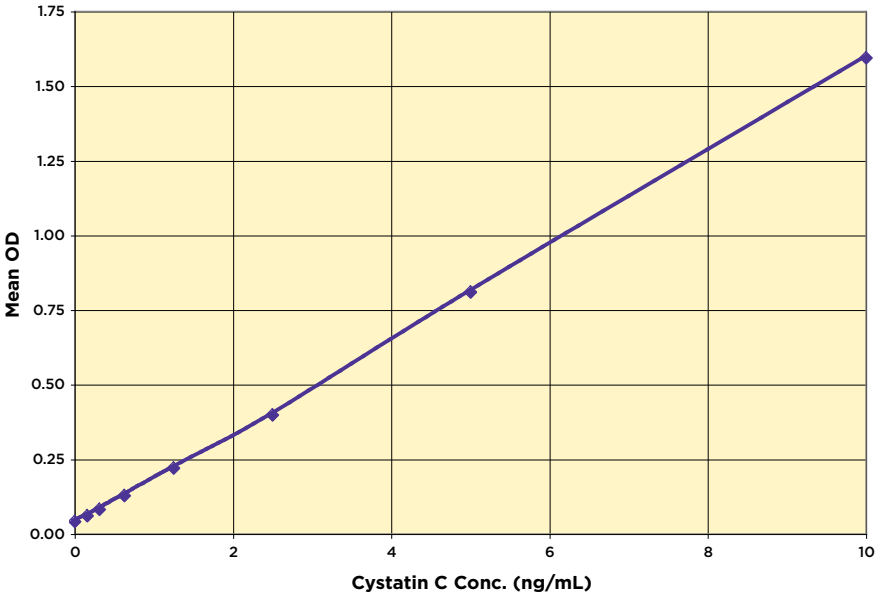
Atrial Natriuretic Peptide (ANP) EIA Kits
Catalog No. K026-H1/H5

MOST SENSITIVE

Scientific Relevance
Cystatin C is a non-glycosylated protein of low molecular weight (13kDa) in the cystatin superfamily. Cystatin C is produced at a constant rate in all nucleated cells. It is secreted from cells and thus found in detectable amounts in most body fluids. Cystatin C belongs to the cysteine proteinase inhibitor group and is associated with several pathological conditions.

Application
Cystatin C is removed from blood plasma by glomerular filtration in the kidneys. It is reabsorbed by the proximal tubular cells and degraded. There is a linear relationship between the reciprocal Cystatin C concentration in plasma and the glomerular filtration rate (GFR). Cystatin C is suggested to be a better marker for GFR than the ubiquitous serum creatinine marker as its serum concentration is not affected by other factors such as age, gender and body mass. Cystatin C has higher sensitivity to detect a reduced GFR than creatinine determination.

Our Assay
The DetectX® Human Cystatin C EIA Kit is designed to measure human Cystatin C present in biological samples and tissue culture media. A human Cystatin C standard is provided. Standards or diluted samples are pipetted into a clear microtiter plate coated with a monoclonal antibody to capture Cystatin C. After a short incubation, the plate is washed and a peroxidase conjugated Cystatin C monoclonal antibody is added. The plate is again incubated and washed. Substrate is then added to the plate, which reacts with the bound Cystatin C conjugate to generate signal.



DHEA-S EIA Kits

Scientific Relevance

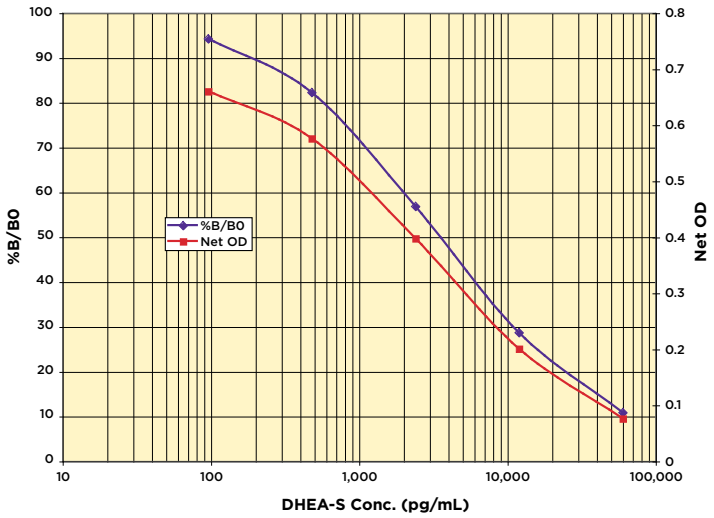
Dehydroepiandrosterone sulfate (DHEA-S) is the major C19 steroid secreted by the adrenal cortex, and is a precursor in testosterone and estrogen biosynthesis. It is produced by the addition of a sulfate group to dehydroepiandrosterone (DHEA), catalyzed by the sulfotransferase enzymes, SULT1A1 and SULT1E1, which also produce estrone sulfate from estrone. DHEA sulfate can also be back-converted to DHEA through the action of steroid sulfatase. Due to the 17-ketone group rather than hydroxyl group, DHEA-S has relatively low androgenic activity. However the bioactivity of DHEA-S may be high due to its high serum concentrations at 100-1,000-fold higher than testosterone or DHEA and its weak affinity for sex-hormone binding globulin.

Application

The physiological role of DHEA-S is not well defined with serum levels being high in the fetus and neonates, low during childhood and increased during puberty. DHEA-S levels decline during the third decade of life. DHEA-S, unlike DHEA and other steroids, does not show a significant diurnal or day-to-day variation. DHEA-S levels are not increased due to ACTH administration and do not change significantly during the normal menstrual cycle. DHEA-S has a lower metabolic clearance rate than DHEA. Since DHEA-S is primarily produced by the adrenal glands, it is useful as a marker for adrenal function. While elevated levels may not be noticed in adult men, they can lead to amenorrhea and visible symptoms of virilization in women. Women with polycystic ovary syndrome tend to have elevated levels of DHEA-S. Excess levels of DHEA-S in children can cause precocious puberty in boys; and ambiguous external genitalia, excess body hair, and abnormal menstrual periods in girls.

Our Assay

The DetectX® Dehydroepiandrosterone Sulfate EIA Kits use a specifically generated antibody to measure Dehydroepiandrosterone Sulfate (DHEA-S) in serum, plasma, urine, saliva, and in fecal extracts and tissue culture media sample. A DHEA-S standard is provided to generate a standard curve for the assay. Standards or diluted samples are pipetted into a clear microtiter plate coated with an antibody to capture sheep antibodies. A DHEA-S-peroxidase conjugate is added to the standards and samples in the wells. The binding reaction is initiated by the addition of a polyclonal antibody to DHEA-S to each well. After a 2 hour incubation, the plate is washed and substrate is added. The substrate reacts with the bound DHEA-S-peroxidase conjugate. After a short incubation the generated color is read at 450nm.



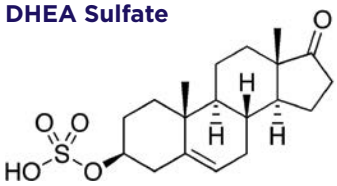
Catalog Number

K054-H1 (1 Plate)
K054-H5 (5 Plate)

Features

- **Use**
  Marker for Adrenal Function
- **Sample**
  Serum, Plasma, Saliva, Urine, TCM, and Fecal Extracts
- **Species**
  Species Independent
- **Samples/Kit**
  41 or 233 in Duplicate
- **Small Sample Size**
  < 2 µL Serum or Plasma

DHEA Sulfate



Related Products

Cortisol EIA Kits
Catalog No. K003-H1/H5/H1W/H5W

Corticosterone EIA & CLIA Kits
Catalog No. K014-H1/H5, K014-C1/C5

Cortisone EIA & CLIA Kits
Catalog No. K017-H1/H5, K017-C1/C5

Progesterone EIA Kits
Catalog No. K025-H1/H5

17-Hydroxyprogesterone EIA Kits
Catalog No. K053-H1/H5

Allopregnanolone EIA & CLIA Kits
Catalog No. K061-H1/H5, K044-C1/C5, K044-H1/H5

Estradiol EIA Kits
Catalog No. K030-H1/H5, KB30-H1/H5

Estrone EIA Kits
Catalog No. K031-H1/H5

Testosterone EIA Kits
Catalog No. K032-H1/H5

MULTI SPECIES
MOST SENSITIVE

DNA Damage EIA Kits

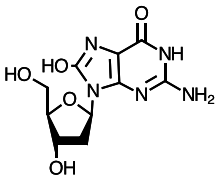
Catalog Number

K059-H1 (1 Plate)
K059-H5 (5 Plate)

Features

- **Use**
  Measure Oxidized DNA
- **Sample**
  Serum, Plasma, Saliva, Urine, Fecal extracts or TCM
- **Species**
  Species Independent
- **Samples/Kit**
  38 or 230 in Duplicate
- **Sensitivity**
  < 51 pg/mL
- **Time to Answer**
  2.5 Hours
- **Readout**
  Colorimetric, 450 nm

8-OHdG



Related Products

Glutathione Fluorescent Detection Kits
Catalog No. K006-F1/F5/F1D

Glutathione Colorimetric Detection Kits
Catalog No. K006-H1/H1C-H/H1C-L

Glutathione Reductase (GR) Activity Kit
Catalog No. K009-F1

Catalase Activity Kits
Catalog No. K033-H1, K033-F1

Superoxide Dismutase (SOD) Activity Kit
Catalog No. K028-H1

FRAP™ (Ferric Reducing Antioxidant Power) Detection Kit
Catalog No. K043-H1

Hydrogen Peroxide Detection Kits
Catalog No. K034-H1, K034-F1

MULTI SPECIES
MOST SENSITIVE

Scientific Relevance

Free radicals and other reactive species are constantly generated *in vivo* and cause oxidative damage to biomolecules, a process held in check only by the existence of multiple antioxidant and repair systems as well as the replacement of damaged nucleic acids, proteins, and lipids. Intracellular free radical species (ROS) are produced as a result of normal metabolism and extracellular forms are produced as a result of ultraviolet radiation or ionizing radiation.

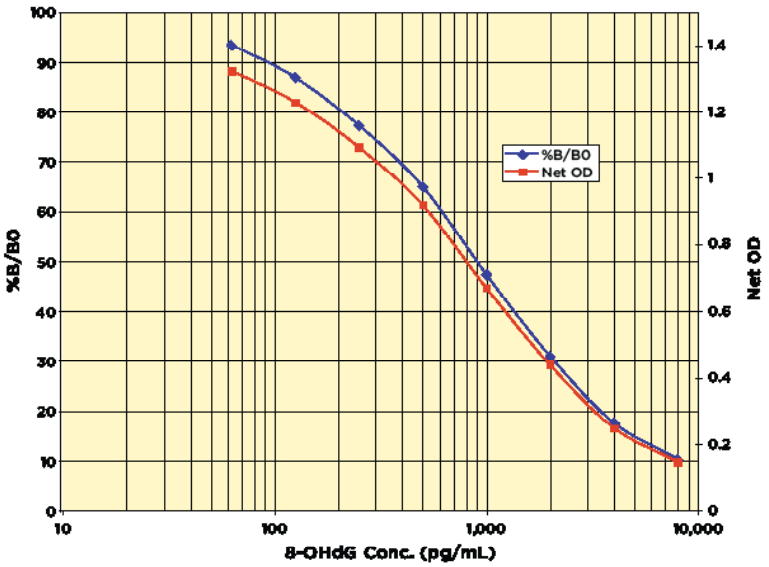
It is widely thought that continuous oxidative damage to DNA is a significant contributor to the age-related development of major cancers, such as those of the colon, breast, rectum, and prostate. Among numerous types of oxidative DNA damage, the formation of 8-hydroxy-2'-deoxyguanosine (8-OHdG) is a ubiquitous marker of oxidative stress. 8-OHdG is physiologically formed and enhanced by chemical carcinogens. During the repair of damaged DNA *in vivo* by exonucleases, the resulting 8-OHdG is excreted without further metabolism into urine.

Application

DNA damage is an alteration in the chemical structure of DNA, such as a break in a strand of DNA, a base missing from the backbone of DNA, or a chemically changed base as 8-OHdG. Damage to DNA that occurs naturally can result from metabolic or hydrolytic processes.

Our Assay

The DetectX® DNA Damage EIA Kits are designed to quantitatively measure DNA and RNA oxidized guanosine species. An 8-OHdG standard is provided to generate a standard curve for the assay. Standards or diluted samples are pipetted into a clear microtiter plate coated with an antibody to capture rabbit IgG. An 8-hydroxyguanosine conjugate is added to the standards and samples in the wells. The binding reaction is initiated by the addition of a peroxidase-labeled mouse monoclonal antibody to 8-hydroxy-2'-deoxyguanosine to each well. After a 2 hour incubation the plate is washed and substrate added. The substrate reacts with the peroxidase labeled antibody that has reacted with the bound conjugate. After a short incubation the generated color is detected at 450nm.



Endothelin-1 (ET-1) EIA Kit

Scientific Relevance

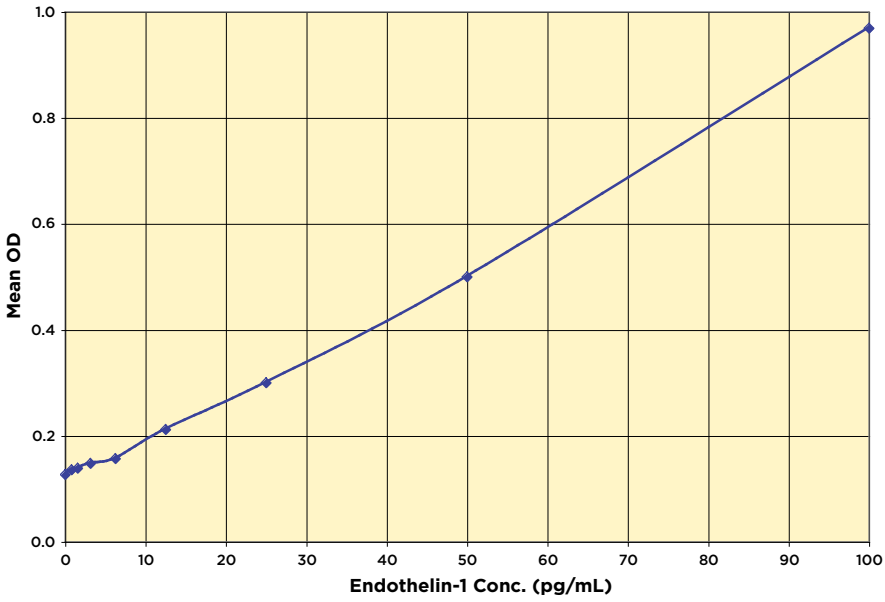
Endothelin-1 (ET-1), a peptide of 21 amino acid residues, is a pleiotropic molecule known for its action as a potent vasoconstrictor. ET-1 is one of a family of three proteins encoded by distinct genes that also includes Endothelin-2 (ET-2) and Endothelin-3 (ET-3). ET-2 and ET-3 differ from ET-1 by 2 and 6 amino acids, respectively. All members of the Endothelin family contain two essential disulfide bridges and six conserved amino acid residues at the C-terminus. Human ET-1 is initially synthesized as a pre-pro-polypeptide of 212 amino acids. It is proteolytically cleaved to produce pro-ET-1 and Big ET-1. Big ET-1 is then cleaved by Endothelin-converting enzyme (ECE-1), producing the potent mature form, ET-1. The vascular endothelium is an abundant source of ET-1. It may also be expressed by leukocytes, smooth muscle cells, mesangial cells, cardiac myocytes, and astrocytes.

Application

ET-1 can be induced in endothelial cells by many factors including mechanical stimulation, various hormones, and pro-inflammatory cytokines. Production is inhibited by nitric oxide (NO), cyclic nucleotides, prostacyclin, and atrial natriuretic peptide (ANP). ET-1 stimulates cardiac contraction and the growth of cardiac myocytes, regulates the release of vasoactive substances, and stimulates smooth muscle cell mitogenesis. ET-1 has putative roles in other pathologies including septic shock, atherosclerosis, heart failure, renal insufficiency, pulmonary hypertension, and cerebrovascular conditions associated with subarachnoid hemorrhage.

Our Assay

The DetectX® Endothelin-1 (ET-1) EIA Kit is designed to quantitatively measure ET-1 present in a variety samples and tissue culture media. An ET-1 standard is provided. Standards or diluted samples are pipetted into a clear microtiter plate coated with a monoclonal antibody to ET-1. After incubation, the plate is washed and a peroxidase conjugated ET-1 antibody is added. The plate is again incubated and washed. Substrate is then added to the plate, which reacts with the bound ET-1 conjugated antibody and the generated color is measured at 450 nm.



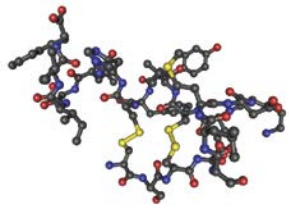
Catalog Number

K045-H1 (1 Plate)

Features

- **Use**
  Measure Low Concentrations of ET-1
- **Sensitive**
  < 0.6 pg/mL ET-1
- **Sample**
  Serum, Plasma, TCM
- **Economical**
  No C18 Cartridges - Supplied Extraction Solution
- **Samples/Kit**
  39 in Duplicate

Endothelin-1



Related Products

Nitric Oxide Detection Kit
Catalog No. K023-H1

Cyclic AMP (cAMP) EIA & CLIA Kits
Catalog No. K019-H1/H5, K019-C1/C5

Cyclic GMP (cGMP) EIA & CLIA Kits
Catalog No. K020-H1/H5, K020-C1/C5

Prostaglandin E_2 (PGE_2) Multi-Format EIA Kits
Catalog No. K051-H1/H5

Urea Nitrogen (BUN) Detection Kits
Catalog No. K024-H1/H5

MULTI SPECIES
MOST SENSITIVE

Epiandrosterone EIA Kits

Catalog Number

K063-H1 (1 Plate)
K063-H5 (5 Plate)

Features

- **Use**
  Measure Epiandrosterone in a Variety of Matrices
- **Sample**
  Fecal Extracts, Urine
- **Sample Volume**
  50µL
- **Samples/Kit**
  40 or 232 in Duplicate
- **Time to Answer**
  2.5 Hours
- **Stability**
  Liquid 4˚C Stable Reagents

Related Products

Testosterone EIA Kits
Catalog No. K032-H1/H5

Estradiol EIA Kits
Catalog No. K030-H1/H5, KB30-H1/H5

Progesterone EIA Kits
Catalog No. K025-H1/H5

Estrone-3-Glucuronide (E1G) EIA Kits
Catalog No. K036-H1/H5

DHEA-S EIA Kits
Catalog No. K054-H1/H5

MULTI SPECIES

Scientific Relevance

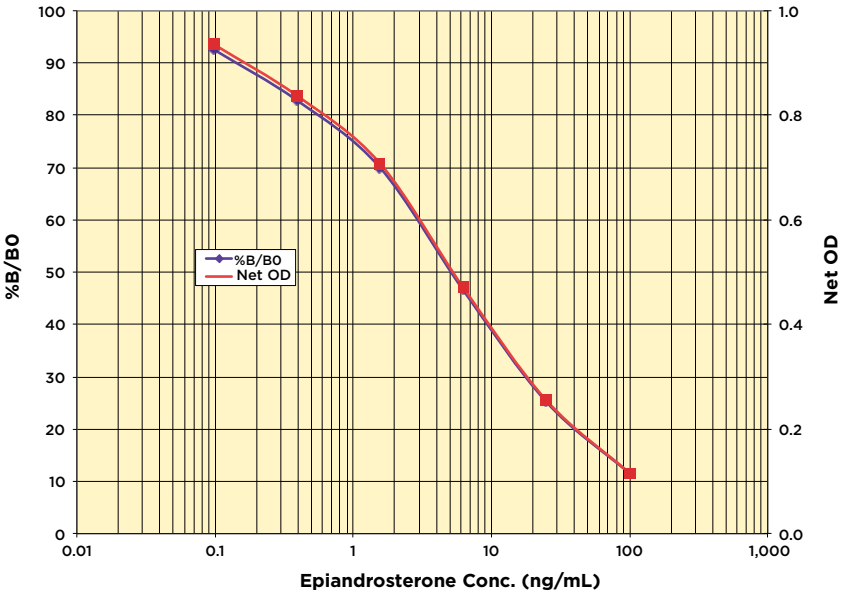
Epiandrosterone is a naturally occurring metabolite of dehydroepiandrosterone (DHEA) found in most mammals and produced via the action of the 5α-reductase enzyme. It is a weak androgen formed primarily in peripheral tissues, released into circulation and ultimately excreted in urine.

Application

Epiandrosterone has been shown to inhibit the pentose phosphate pathway (PPP), decreasing intracellular NADPH levels. It also attenuates NO-evoked relaxation of the pulmonary artery. It has been linked to gonadal activity and sexual behavior in males. Epiandrosterone is of interest for cell metabolism, cardiac, and prostate cancer research.

Our Assay

The DetectX® Epiandrosterone EIA Kits are designed to quantitatively measure epiandosterone. An epiandrosterone standard is provided. Standards or samples are pipetted into a coated microtiter plate and a peroxidase-epiandrosterone conjugate is added to the wells. The binding reactions is initiated by the addition of a polyclonal antbody to epiandrosterone. After a 2 hour incubation the plate is washed and substrate is added. The substrate reacts with the bound epiandrosterone-peroxidase conjugate. After an additional incubation the color development is stopped and the intensity of the generated signal is read at 450 nm.



Non-Invasive and Serum Estradiol EIA Kits

Scientific Relevance

17ß-Estradiol (E2) is a key regulator of growth, differentiation, and function in a wide array of tissues, including the male and female reproductive tracts, mammary gland, brain, skeletal and cardiovascular systems. The predominant biological effects of E2 are mediated through two distinct intracellular receptors, ERα and ERß, each encoded by unique genes.

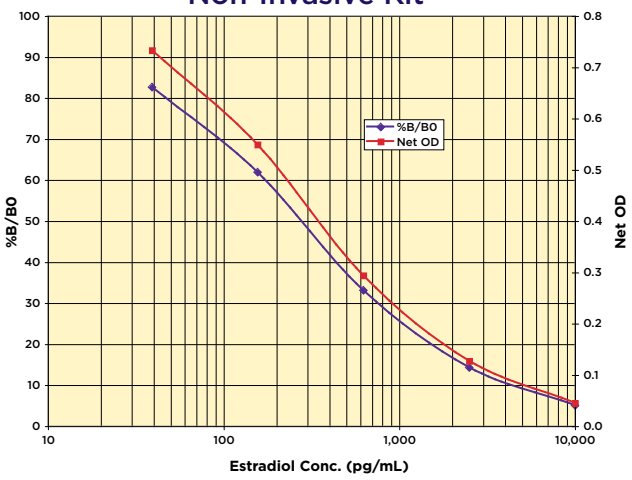
Application

Estradiol also influences bone growth, brain development and maturation, and food intake, and it is critical in maintaining organ functions during severe trauma. In plasma, estradiol is bound to serum proteins such as albumin and sex hormone-binding globulin. Just over 2% of E2 is free and biologically active, the percentage remaining constant throughout the menstrual cycle.

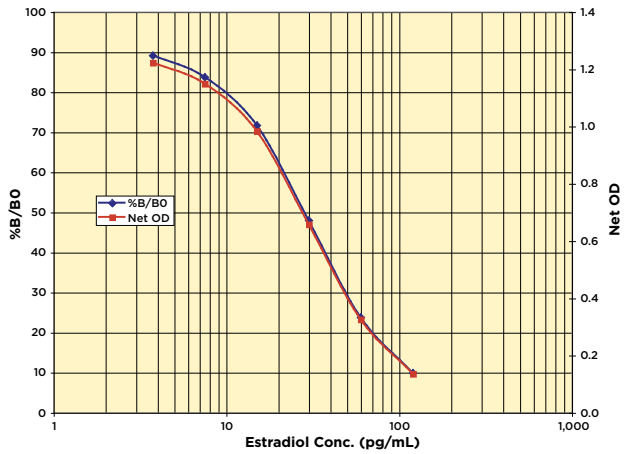
Our Assays

The DetectX® Estradiol EIA Kits use specifically generated antibodies to measure estradiol and its metabolites in urine and fecal samples, or serum estradiol. An estradiol standard is provided. Standards or diluted samples are pipetted into a coated microtiter plate. An estradiol-peroxidase conjugate is added to the wells, and the binding reaction is initiated by the addition of an antibody to estradiol. After a 2-hour incubation, the plate is washed and substrate is added. The substrate reacts with the bound estradiol-peroxidase conjugate and the generated color is measured at 450 nm.

Non-Invasive Kit



Serum Kit



Catalog Number

Non-Invasive

K030-H1 (1 Plate)
K030-H5 (5 Plate)

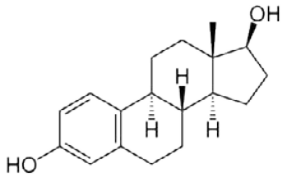
Serum

KB30-H1 (1 Plate)
KB30-H5 (5 Plate)

Features

- **Use**
  Measure Estradiol Rapidly
- **Sample**
  Non-Invasive – Urine, Fecal Extracts, TCM
  Serum – Plasma, Serum, TCM
- **Species**
  Species Independent
- **Time to Answer**
  2.5 Hours
- **Samples/Kit**
  Non-Invasive - 41 or 233 in Duplicate
  Serum - 40 or 232 in Duplicate

17ß-Estradiol



Related Products

Estrone EIA Kits
Catalog No. K031-H1/H5

Progesterone EIA Kits
Catalog No. K025-H1/H5

PGFM EIA Kits
Catalog No. K022-H1/H5

Ceruloplasmin (Cp) Activity Kit
Catalog No. K035-H1

Estrone-3-Glucuronide (E1G) EIA Kits
Catalog No. K036-H1/H5

Estriol EIA Kits
Catalog No. K064-H1/H5

MULTI SPECIES

“ Thank you for your
impressively quick reply
(not all companies do that)”

LT

Estriol EIA Kits

Scientific Relevance

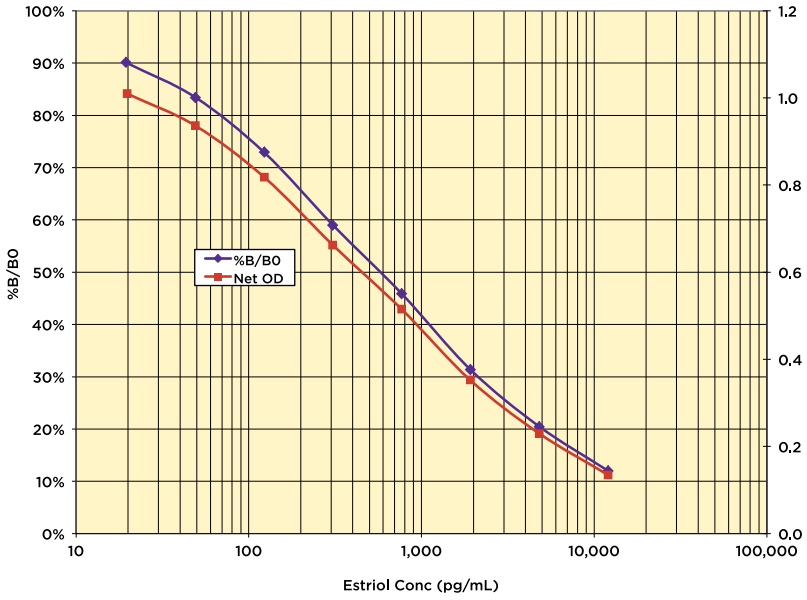
Estriol is one of the three major endogenous estrogens, along with estradiol and estrone. It is a weak estrogen derived from hydroxylation of estradiol and estrone in the liver and normal levels in women who are not pregnant are typically nearly undetectable. However, estriol is produced in large amounts by the placenta and rising maternal levels can be detected from the very early weeks of pregnancy through until delivery.

Application

Estriol can be monitored as an indicator of fetal health and well-being during pregnancy. It is routinely measured as part of both the triple test and the quadruple test during pregnancy outreach and screening. Abnormally low levels in pregnant females can suggest chromosomal or congenital anomalies in the fetus. In some parts of the world exogenous estriol is used for the treatment of menopausal symptoms. Estriol has also been investigated as a protective neurosteroid with potential roles in immune diseases and bone and lipid metabolism.

Our Assay

The DetectX® Estriol EIA Kits are designed to quantitatively measure estriol. An estriol standard is provided. Standards or diluted samples are pipetted into to a coated microtiter plate and a peroxidase-estriol conjugate and an estriol specific antibody is added to the wells. The binding reaction is initiated by the addition of a polyclonal antibody to estriol. After a 2 hour incubation the plate is washed and substrate is added. The substrate reacts with the bound estriol-peroxidase conjugate. After an additional incubation the color development is stopped and the intensity of generated signal read at 450 nm.



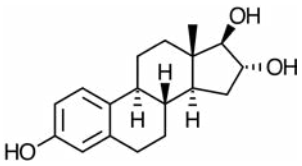
Catalog Number

K064-H1 (1 Plate)
K064-H5 (5 Plate)

Features

- **Use**
  Measure Estriol in a Variety of Sample Matrices
- **Sample Volume**
  50µL
- **Sample**
  Saliva, Urine, Fecal Extracts
- **Time to Answer**
  2.5 hours or Overnight
- **Samples/Kit**
  38 or 230 in Duplicate

Estriol



Related Products

Estradiol EIA Kits
Catalog No. K030-H1/H5, KB30-H1/H5

Estrone EIA Kits
Catalog No. K031-H1/H5

DHEA-S EIA Kits
Catalog No. K054-H1/H5

Estrone-3-Glucuronide (E1G) EIA Kits
Catalog No. K036-H1/H5

Estrone-3-Sulfate (E1S) EIA Kits
Catalog No. K038-H1/H5

MULTI SPECIES
MOST SENSITIVE

Estrone EIA Kits

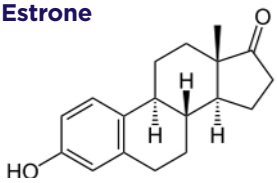
Catalog Number

K031-H1 (1 Plate)
K031-H5 (5 Plate)

Features

- **Use**
  Non-Invasive Reproductive Marker
- **Sample**
  Urine, Fecal Extracts, TCM
- **Specificity**
  Measure Estrone, E1G and E1S
- **Species**
  Species Independent
- **Time to Answer**
  2.5 Hours
- **Samples/Kit**
  39 or 231 in Duplicate

Estrone



Related Products

Estrone-3-Glucuronide (E1G) EIA Kits
Catalog No. K036-H1/H5

Estradiol EIA Kits
Catalog No. K030-H1/H5, KB30-H1/H5

Progesterone EIA Kits
Catalog No. K025-H1/H5

PGFM EIA Kits
Catalog No. K022-H1/H5

Ceruloplasmin (Cp) Activity Kit
Catalog No. K035-H1

Estriol EIA Kits
Catalog No. K064-H1/H5

Estrone-3-Sulfate (E1S) EIA Kits
Catalog No. K038-H1/H5

P450 Demethylating Activity Kit
Catalog No. K011-F1

MULTI SPECIES

Scientific Relevance

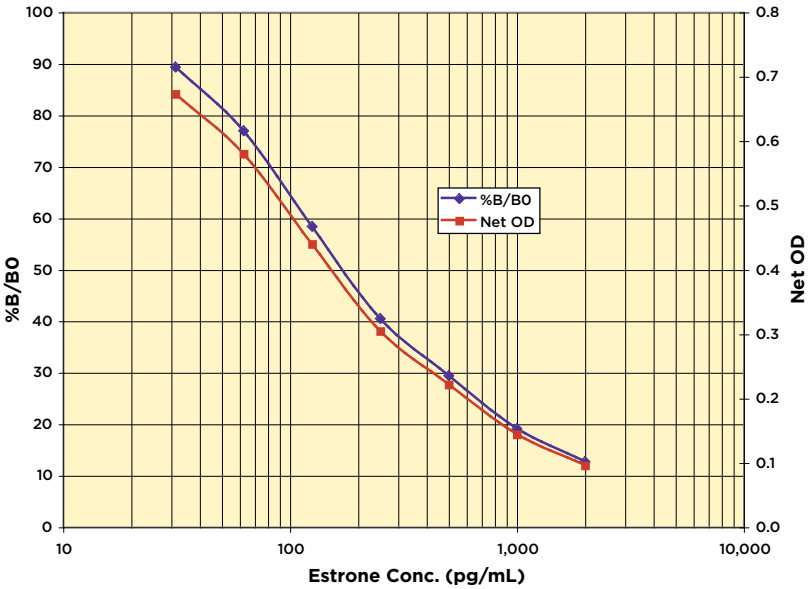
Estrone (E1) is a C-18 steroid hormone and is one of the three naturally occurring estrogens, the others being estradiol and estriol. Estrone is produced primarily from androstenedione originating from the gonads or the adrenal cortex and from estradiol by 17-hydroxysteroid dehydrogenase. Androstenedione is also converted into estrone by aromatase (CYP19) to estrone and is expressed in stromal and carcinoma or parenchymal components of breast cancer tissue.

Application

Estrone concentrations in premenopausal mammals fluctuate according to the menstrual cycle. In premenopausal women, more than 50% of the estrone is secreted by the ovaries. In prepubertal children, men and non-supplemented postmenopausal women the major portion of estrone is derived from peripheral tissue conversion of androstenedione. Interconversion of estrone and estradiol also occurs in peripheral tissue. In humans, during the follicular phase of the menstrual cycle estrone levels increase slightly. The production of estrone then increases markedly to peak at around day 13. The peak is of short duration and by day 16 the estrone levels will be low. A second peak occurs at around day 21 of the cycle and if fertilization does not occur, then the production of estrone decreases.

Our Assay

The DetectX® Estrone EIA Kits are designed to measure estrone present in urine, extracted dried fecal, and media samples. An estrone standard is provided for the assays. Standards or samples are pipetted into a coated microtiter plate, and an estrone-peroxidase conjugate is added to the wells. The binding reaction is initiated by the addition of a polyclonal antibody to estrone. After a 2 hour incubation, the plate is washed and substrate is added. The substrate reacts with the bound estrone-peroxidase conjugate. After a short incubation the intensity of the generated color is measured at 450 nm.



Estrone-3-Glucuronide (E1G) EIA Kits

Scientific Relevance

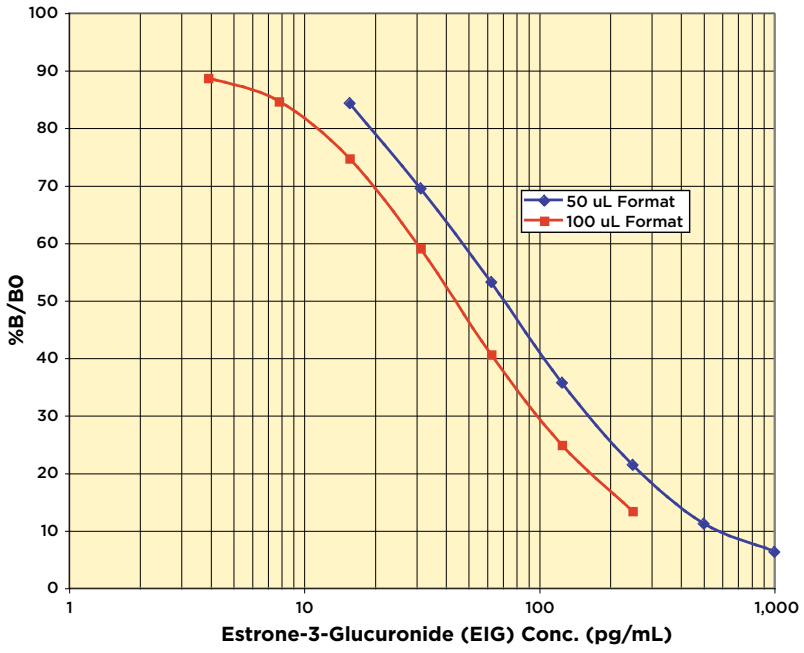
E1G is a conjugated metabolite of estrone. It is formed from estrone in the liver by UDP-glucuronyltransferase via attachment of glucuronic acid and is eventually excreted in the urine by the kidneys. It has much higher water solubility than does estrone. Glucuronides are the most abundant estrogen conjugates and estrone glucuronide is the dominant metabolite of estradiol.

Application

Ovulation is the critical event of each menstrual cycle that occurs during the reproductive life of healthy females as the ovum can only be fertilized during a short period of time post ovulation in which it is viable. Clinical studies have indicated the utility of measuring estrone-3-glucuronide (E1G) and pregnanediol-3-glucuronide (PDG) in samples of urine to monitor ovarian function in females.

Our Assay

The DetectX® Estrone-3-Glucuronide (E1G) EIA Kits use a specifically generated antibody to measure E1G and its metabolites in urine and fecal samples, or in extracted serum and plasma. An E1G standard is provided. Standards or diluted samples are pipetted into coated clear microtiter plates, and an E1G-peroxidase conjugate is added to the wells. The binding reaction is initiated by the addition of a polyclonal antibody to E1G. After a 2 hour incubation the plate is washed and substrate is added which reacts with the bound E1G-peroxidase conjugate. After a short incubation the intensity of the generated color is measured at 450 nm.



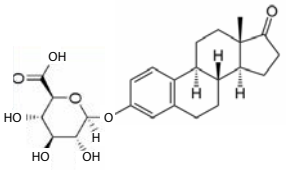
Catalog Number

K036-H1 (1 Plate)
K036-H5 (5 Plate)

Features

- **Use**
  Non-invasive Estradiol Determination
- **Sample**
  Serum, Plasma, Urine, Fecal Extract, Buffer
- **Species**
  Species Independent
- **Time to Answer**
  2.5 Hours
- **Samples/Kit**
  39 or 231 in Duplicate
- **Stable**
  Liquid 4˚C Stable Reagents

Estrone-3-Glucuronide (E1G)



Related Products

Estrone EIA Kits
Catalog No. K031-H1/H5

Estradiol EIA Kits
Catalog No. K030-H1/H5, KB30-H1/H5

Estriol EIA Kits
Catalog No. K064-H1/H5

Estrone-3-Sulfate (E1S) EIA Kits
Catalog No. K038-H1/H5

Progesterone EIA Kits
Catalog No. K025-H1/H5

Pregnanediol-3-Glucuronide (PDG) EIA Kits
Catalog No. K037-H1/H5

PGFM EIA Kits
Catalog No. K022-H1/H5

Ceruloplasmin (Cp) Activity Kit
Catalog No. K035-H1

MULTI SPECIES
MOST SENSITIVE

Estrone-3-Sulfate (E1S) EIA Kits

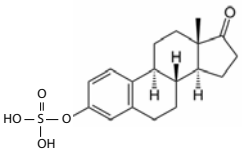
Catalog Number

K038-H1 (1 Plate)
K038-H5 (5 Plate)

Features

- **Use**
  Breast Cancer and Cryptorchidism
- **Sample**
  Fecal Extracts, TCM, Urine, Serum, Plasma
- **Species**
  Species Independent
- **Time to Answer**
  2.5 Hours
- **Samples/Kit**
  40 or 232 in Duplicate

Estrone-3-Sulfate (E1S)



Related Products

Estradiol EIA Kits
Catalog No. K030-H1/H5, KB30-H1/H5

Progesterone EIA Kits
Catalog No. K025-H1/H5

PGFM EIA Kits
Catalog No. K022-H1/H5

Ceruloplasmin (Cp) Activity Kit
Catalog No. K035-H1

Estrone EIA Kits
Catalog No. K031-H1/H5

Testosterone EIA Kits
Catalog No. K032-H1/H5

Estriol EIA Kits
Catalog No. K064-H1/H5

Estrone-3-Glucuronide (E1G) EIA Kits
Catalog No. K036-H1/H5

MULTI SPECIES
MOST SENSITIVE

Scientific Relevance

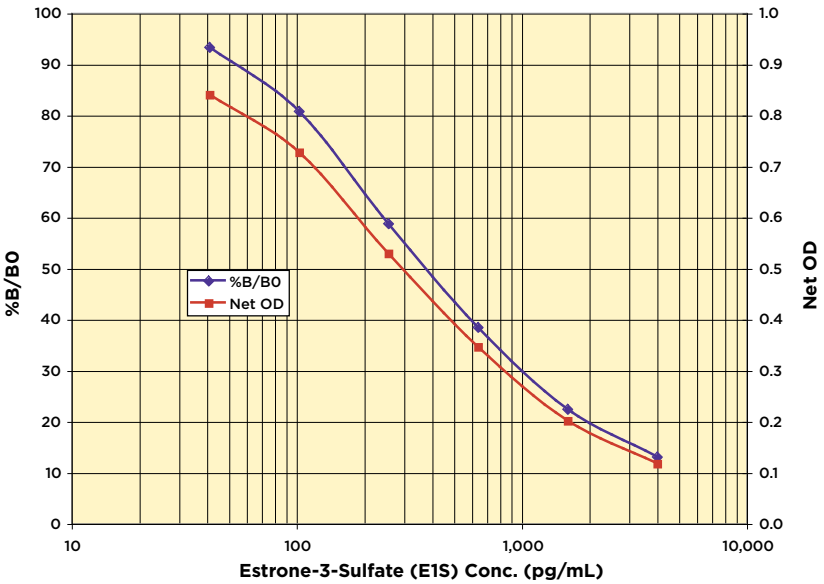
Estrone-3-sulfate (E1S) is synthesized in the fetal or cotyledonary portion of the placentome. Production rates of E1S are high in both males and females, with males producing 77 µg/day, females in early follicular phase producing 95 µg/day and females in early luteal phase producing 182 µg/day. Estrone sulfate, present in plasma in a higher concentration than either unconjugated estrone or estradiol in nonpregnant women and normal men, appears to originate almost entirely from a conjugation of estrone and converted estradiol in nonglandular tissues. Estrone sulfate is slowly cleared from plasma, thus its concentration does not fluctuate markedly during the day.

Application

Breast tumors contain sulfatase activity and can convert estrone sulfate into estradiol. Consequently, estrone sulfate provides a continuous supply of estrogens to hormone-responsive tumors. Cryptorchidism is a condition in which one or both testicles fail to descend into the scrotum, and it is considered to be a prevalent defect in horses. Bilaterally cryptorchid stallions do not produce viable spermatozoa but often exhibit normal secondary sexual characteristics such as libido, because of testosterone production by the interstitial cells of the retained testes. Several investigators have suggested measuring testosterone and estrone sulfate serum levels as reliable diagnostic aids for the condition.

Our Assay

The DetectX® Estrone-3-Sulfate (E1S) EIA Kits are designed to measure E1S present in urine and extracted dried fecal, and media samples. An E1S standard is provided for the assays. Standards or samples are pipetted into a coated microtiter plate, and an E1S conjugate-peroxidase is added to the wells. The binding reaction is initiated by the addition of a polyclonal antibody to E1S. After a 2-hour incubation, the plate is washed and substrate is added. The substrate reacts with the bound E1S-peroxidase conjugate. After a short incubation the intensity of the generated color is measured at 450 nm.



Formaldehyde Fluorescent Detection Kit

Scientific Relevance

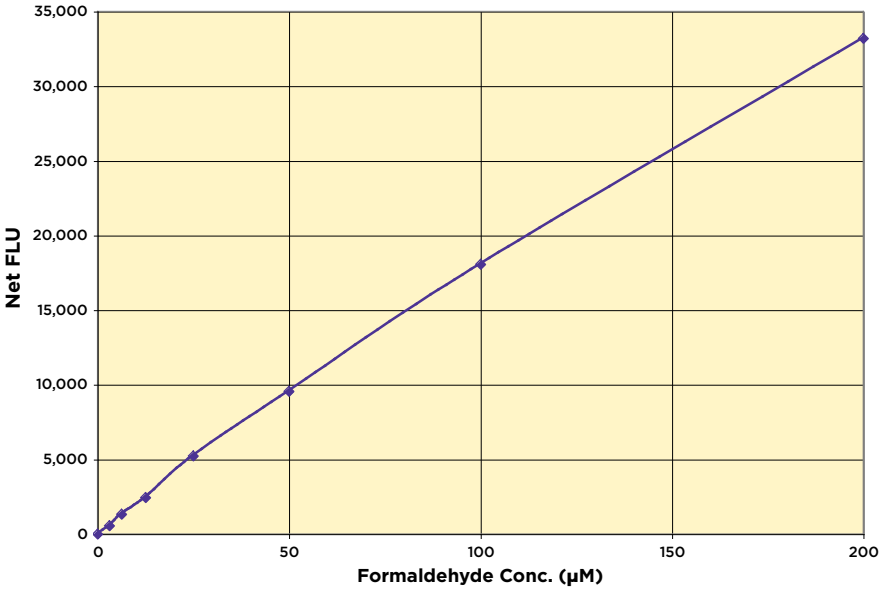
Formaldehyde (methanal) (CH_2O), is a colorless, flammable, strong-smelling gas. It is an important industrial chemical used to manufacture building materials and to produce many household products. In the US approximately 3 x 10^9 kg are produced annually. In addition, formaldehyde is commonly used as an industrial fungicide, germicide, and disinfectant, and as a preservative in mortuaries and medical laboratories. Materials containing formaldehyde can release formaldehyde gas or vapor into the air. Formaldehyde can also be released by burning wood, kerosene, natural gas, or cigarettes, from automobile emissions, and from natural processes. Formaldehyde can undergo rapid chemical changes immediately after absorption.

Application

Studies have suggested that exposure to formaldehyde may cause leukemia, particularly myeloid leukemia, in humans. Industrial workers who help to produce formaldehyde or formaldehyde-containing products, laboratory technicians, health care professionals, and mortuary employees may be exposed to higher levels of formaldehyde. Exposure occurs primarily by inhaling formaldehyde gas or vapor from the air or by absorbing liquids containing formaldehyde through the skin. Formaldehyde is highly toxic to all animals and has been classified by multiple agencies (US EPA, WHO, NTP, etc.) as a known human carcinogen.

Our Assay

The DetectX® Formaldehyde Detection Kit is designed to quantitatively measure formaldehyde present in tissue culture media and urine samples. A formaldehyde standard is provided. Standards or diluted samples are pipetted into a black microtiter plate. The fluorescent reaction is initiated with the addition of the Formaldehyde reagent. After a short incubation the emission of the generated fluorescent signal is detected in a microtiter plate reader capable of measuring 510 nm fluorescence utilizing 450 nm excitation wavelength.



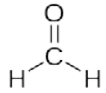
Catalog Number

K001-F1 (2 Plate)

Features

- **Use**
  Detection of Formaldehyde
- **Sample**
  Urine, Water, TCM
- **Samples/Kit**
  88 in Duplicate
- **Time to Answer**
  30 Minutes
- **Stable**
  Liquid 4˚C Stable Reagents

Formaldehyde



Related Products

P450 Demethylating Activity Kit
Catalog No. K011-F1

Creatinine Urinary Detection Kits
Catalog No. K002-H1/H5

HDM Fluorescent Activity Kit
Catalog No. K010-F1

FRAP™ (Ferric Reducing Antioxidant Power) Detection Kit

Catalog Number

K043-H1 (2 Plate)

Features

- **Use**
  Antioxidant Power Assessment
- **Samples**
  Cosmetics, Serum, Plasma, Urine, Teas, Fruit Juices, Beer, Cider, Cell Lysates, Herbal Extracts, Fruit Extracts
- **Time to Answer**
  30 Minutes
- **Samples/Kit**
  89 in Duplicate
- **Stability**
  Liquid 4˚C Stable Reagents

Related Products

Glutathione Fluorescent Detection Kits
Catalog No. K006-F1/F5/F1D

Glutathione Colorimetric Detection Kits
Catalog No. K006-H1/H1C-H/H1C-L

Superoxide Dismutase (SOD) Activity Kit
Catalog No. K028-H1

Hydrogen Peroxide Detection Kits
Catalog No. K034-H1, K034-F1

Catalase Activity Kits
Catalog No. K033-H1, K033-F1

Scientific Relevance

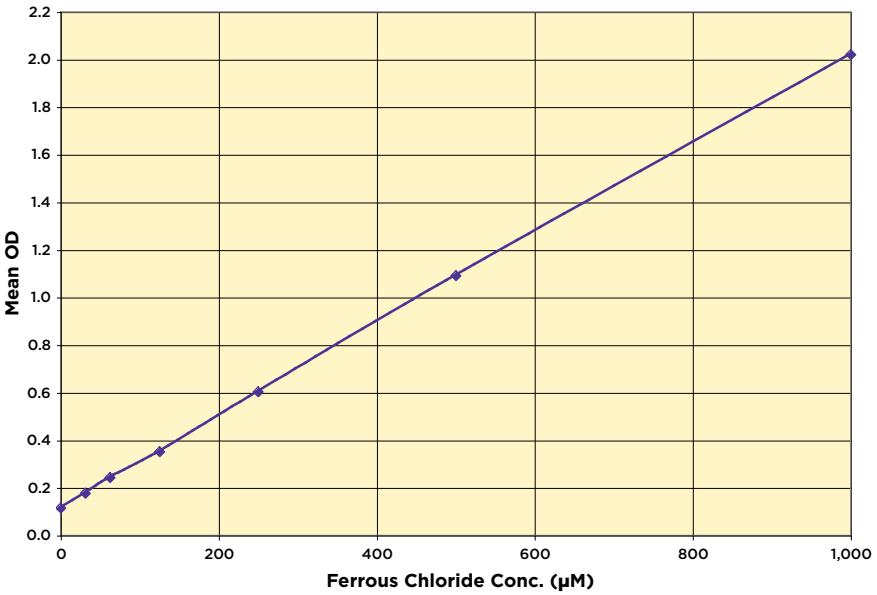
Reactive oxygen species (ROS) are produced as a consequence of normal aerobic metabolism. These "free radicals" (FR) are usually removed or converted into other products *in vivo* by an array of antioxidants. Antioxidants are stable atoms and molecules that inhibit oxidation. Almost all biomolecules may be attacked by reactive free radicals. Free radicals are responsible for many pathological processes, or they can be generated as the result of the pathological stage and cause important secondary damage to biological systems and cells.

Application

Connections between free radicals and some serious diseases, including Parkinson's and Alzheimer's diseases, atherosclerosis, myocardial infarction, and chronic fatigue syndrome, have been demonstrated. On average, 65–70% of the population is excessively impacted by oxidative stress caused by FRs. In 1996 a simple assay to measure antioxidant power was published showing the power of this assay to measure antioxidant potential in serum and plasma, certain foods, teas, and fungi. The protective system of organisms is based on the activity of specific enzymes (especially superoxide dismutase, glutathione peroxidase, catalase, and glutathione reductase) as well as non-enzymatic compounds with antioxidant activity (ß-tocopherol, L-ascorbic acid, glutathione, coenzyme Q10, flavonoids, albumin and other molecules). Excess production of reactive oxygen species can also lead to inflammation, premature aging disorders, and several disease states, including cancer, diabetes, and atherosclerosis.

Our Assay

The DetectX® Ferric Reducing Antioxidant Power (FRAP™) Assay Kit is designed to quantitatively measure antioxidant status in a variety of samples. The assay measures the antioxidant ability from all species. A Ferrous Chloride standard is provided to generate a standard curve for the assay. Samples are diluted in the provided Assay Buffer and added to the wells. The FRAP Color Solution is made by mixing Reagent A and B with Assay Buffer. The FRAP Color Solution is added to all wells and the plate incubated at room temperature. Antioxidant power in the samples generates a blue colored product which is read at 560 nm.



Galactose Colorimetric Detection Kit

Scientific Relevance

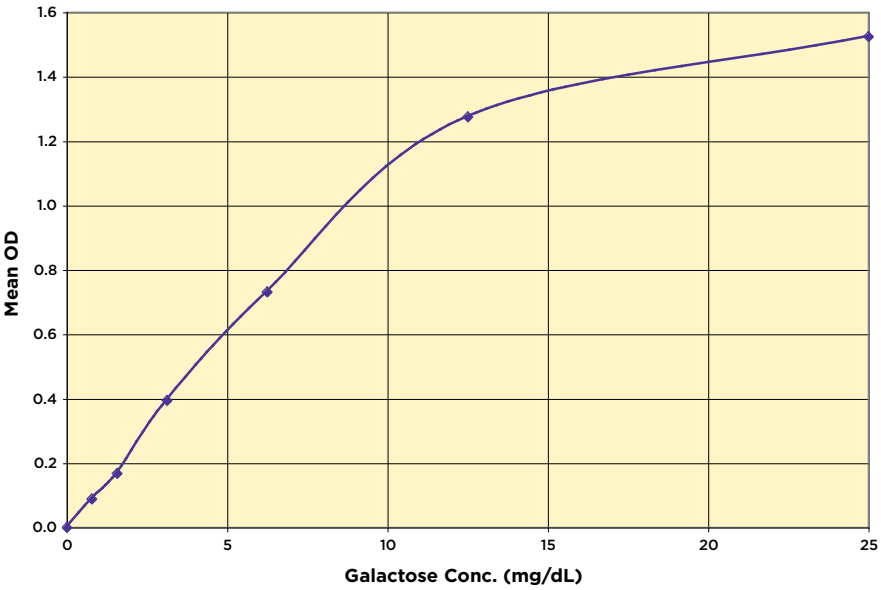
Galactose is a hexose sugar that differs from glucose only by the configuration of the hydroxyl group at the carbon-4 position. Present as an anomeric mixture of α-D-galactose and ß-D-galactose, this monosaccharide exists abundantly in milk, dairy products and many other food types such as fruits and vegetables.

Application

Absorption of galactose in humans is mediated by the Na^+/glucose co-transporters SGLT1 and SGLT2 from food across the brush border membrane of the proximal jejunum and renal epithelium. Additionally, adults can produce up to 2 grams of galactose per day. Inside cells, ß-D-galactose is epimerized to α-D-galactose and is subsequently converted to galactose-1-phosphate (Gal-1-P). In the presence of galactose-1-phosphate uridylyltransferase, Gal-1-P reacts with UDP-glucose to form UDP-galactose and glucose-1-phosphate. Glucose-1-phosphate produced can enter the glycolytic pathway or react with UTP in the presence of UDP-glucose pyrophosphorylase to form a new molecule of UDP-glucose. This enzyme pathway comprises the evolutionarily conserved Leloir pathway of galactose metabolism. If the flow of galactose through the Leloir pathway is perturbed either due to congenital deficiency of any of the above-mentioned enzymes or an overwhelming presence of this hexose, toxicity syndromes (galactosemia) will be observed.

Our Assay

The DetectX® Galactose Colorimetric Detection Kit is designed to quantitatively measure galactose in a variety of samples. A standard of D-(+)-galactose is provided. Samples are mixed with the Colorimetric Substrate and horseradish peroxidase and the reaction initiated by addition of galactose oxidase. The galactose oxidase reacts with galactose to produce hydrogen peroxide which reacts with the colorless Colorimetric Substrate to produce a pink-colored product which is read at 560 nm.



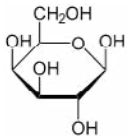
Catalog Number

K042-H1 (2 Plate)

Features

- **Use**
  Metabolism Measurement
- **Sample**
  Serum, Plasma, TCM, Buffers
- **Samples/Kit**
  88 in Duplicate
- **Time to Answer**
  30 Minutes
- **Stable**
  Liquid 4˚C Stable Reagents

Galactose



Related Products

Glucose Detection Kits
Catalog No. K039-H1, K039-F1

Urea Nitrogen (BUN) Detection Kits
Catalog No. K024-H1/H5

Hemoglobin Detection Kit
Catalog No. K013-H1

MULTI SPECIES

MOST SENSITIVE

Glucose Colorimetric & Fluorescent Detection Kits

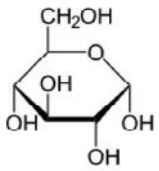
Catalog Number

Colorimetric: K039-H1 (2 Plate)
Fluorescent: K039-F1 (2 Plate)

Features

- **Use**
  Measurement of Glucose
- **Sample**
  Serum, Plasma, Urine, Buffers, TCM
- **Time to Answer**
  30 Minutes
- **Species**
  Species Independent
- **Samples/Kit**
  88 in Duplicate
- **Stability**
  Liquid 4˚C Stable Reagents

Glucose



Related Products

Hemoglobin Detection Kit
Catalog No. K013-H1

Galactose Detection Kit
Catalog No. K042-H1

Urea Nitrogen (BUN) Detection Kits
Catalog No. K024-H1/H5

Creatinine Urinary Detection Kits
Catalog No. K002-H1/H5

Insulin EIA Kit
Catalog No. K046-H1

Triiodothyronine (T_3) EIA Kits
Catalog No. K056-H1/H5

Thyroxine (T_4) EIA Kits
Catalog No. K050-H1/H5

MULTI SPECIES
MOST SENSITIVE

Scientific Relevance

Glucose is by far the most common carbohydrate energy source for the cell. It is a monosaccharide, an aldose, a hexose, and a reducing sugar, and is also known as dextrose, because it is dextrorotatory (rotates polarized light clockwise). For all biological and molecular events and for multiple cellular functions, energy is essential. Reduced energy levels threaten cellular homeostasis and integrity. Impaired energy metabolism may trigger pro-apoptotic signaling (programmed cell death), oxidative damage, excitotoxicity and impede mitochondrial DNA repair.

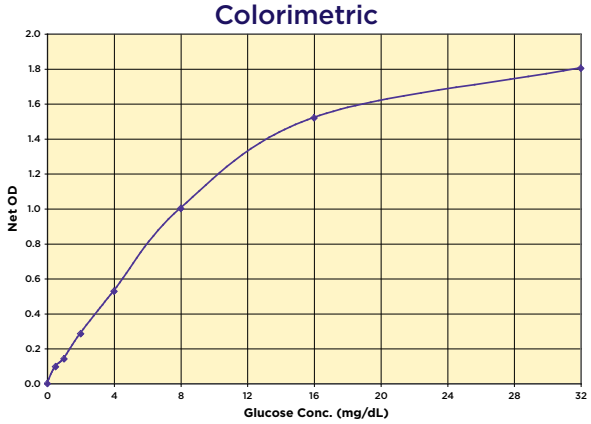
Application

A serious fall in blood glucose can be characterized by metabolic dysfunction, neuroglycopenia, seizure, and death. A persistent elevation in blood glucose leads to “glucose toxicity.” Glucose toxicity contributes to ß-cell dysfunction and the pathology grouped together as complications of diabetes. Estrogen-induced signaling pathways in hippocampal and cortical neurons involve the mitochondria to enhance mitochondrial function and to sustain aerobic glycolysis and citric acid cycle oxidative phosphorylation and ATP generation.

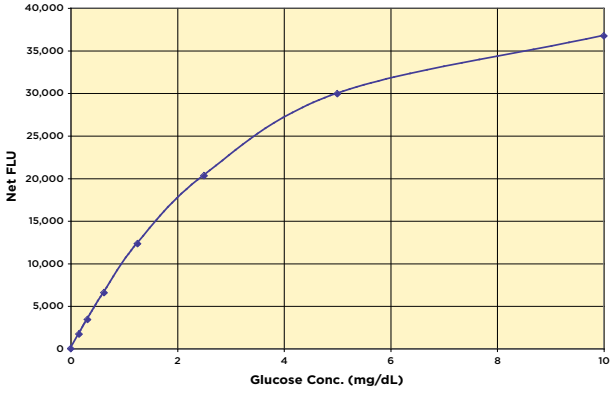
Our Assays

The DetectX® Glucose Detection Kits are designed to quantitatively measure glucose concentrations in a variety of samples. A glucose standard is provided. Samples are added to the wells of a half area plate. The supplied Detection Reagent, HRP, and glucose oxidase are added, and the plate is incubated at room temperature for 30 minutes. The HRP reacts with glucose-derived hydrogen peroxide in the presence of the substrate to produce either a colored or fluorescent product.

Colorimetric



Fluorescent



Glutathione (GSH) Colorimetric Detection Kits

Scientific Relevance

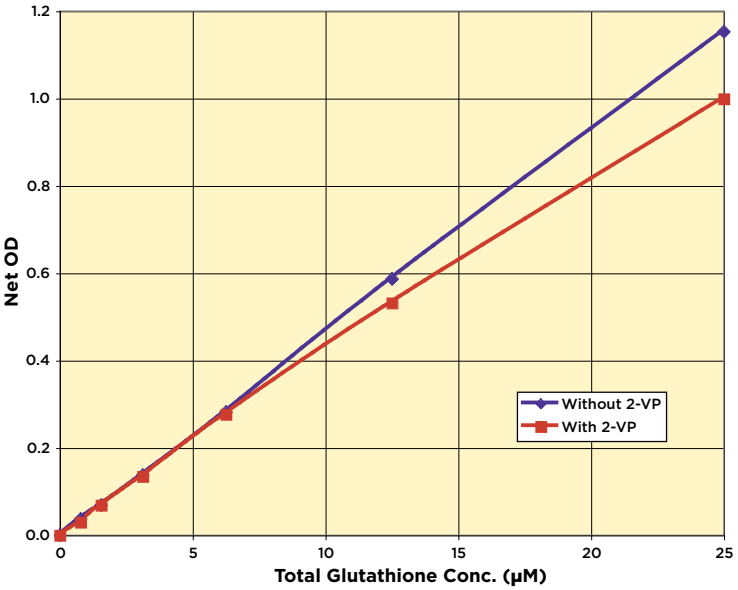
Glutathione (L-γ-glutamyl-L-cysteinylglycine; GSH) is the highest concentration non-protein thiol in mammalian cells and is present in concentrations of 0.5 – 10 mM. GSH plays a key role in many biological processes, including the synthesis of proteins and DNA, the transport of amino acids, and the protection of cells against oxidation. Harmful hydrogen peroxide cellular levels are minimized by the enzyme glutathione peroxidase (GP) using GSH as a reductant. The oxidized GSH dimer, GSSG, is formed from GSH and peroxide by the GP reaction. An important role of GSSG in the NFKß activating signal cascade is suggested by the facts that the potent NFKß inducer, tetradecanoyl phorbol acetate, increases intracellular GSSG levels and GSSG/GSH ratios.

Application

The ratio of reduced glutathione to oxidized glutathione within cells is often used as a measure of cellular toxicity. In healthy cells and tissue, more than 90% of the total glutathione pool is in the form of GSH and less than 10% exists as GSSG. An increased GSSG-to-GSH ratio is considered indicative of oxidative stress. Glutathione concentrations are important indicators in Type 2 Diabetes, HIV infections, and a number of other pathological conditions.

Our Assay

The DetectX® Glutathione Detection Kits are designed to quantitatively measure glutathione (GSH), and oxidized glutathione (GSSG) present in a variety of samples. No separation or washing is required. A GSSG standard is provided. The kit utilizes a colorimetric substrate that reacts with the free thiol group on GSH to yield a highly colored product read at 405 nm. The kit will measure oxidized gluathione and total glutathione. Reduced or free GSH concentration in the sample is calculated as the difference between the Total GSH determined and the GSH generated from GSSG.



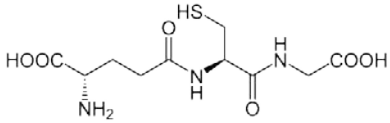
Catalog Number

K006-H1 (4 Plate)
K006-H1C-H/L (200 Cuvette)

Features

- **Use**
  Determine Oxidative Stress
- **Sample**
  Serum, Plasma, Urine, RBCs, Lysates, TCM, Whole Blood, Tissue
- **Samples/Kit**
  89 (Total and GSSG) in Duplicate
- **Time to Answer**
  30 Minutes
- **Stable**
  Liquid 4˚C Stable Reagents

Glutathione



Related Products

Glutathione Fluorescent Detection Kits
Catalog No. K006-F1/F5/F1D

Glutathione Reductase Activity Kit
Catalog No. K009-F1

Glutathione S-Transferase Activity Kit
Catalog No. K008-F1

AbX™ Glutathione Antibodies
Catalog No. A001/A001F/A001T

AbX™ L-Cysteine Antibody
Catalog No. A002-50UG

Superoxide Dismutase (SOD) Activity Kit
Catalog No. K028-H1

Hydrogen Peroxide Detection Kits
Catalog No. K034-H1, K034-F1

Catalase Detection Kits
Catalog No. K033-H1, K033-F1

MULTI SPECIES

Glutathione (GSH) Fluorescent Detection Kits

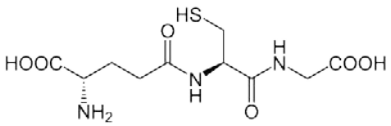
Catalog Number

K006-F1 (1 Plate)
K006-F5 (5 Plate)
K006-F1D (Two 384-Well Plate)

Features

- **Use**
  Measure Free and Total GSH in Same Sample
- **Sample**
  Cells, RBCs, Serum, Plasma, Urine, Tissues, Whole Blood
- **Sensitive**
  45nM Free, 48nM Total
- **Samples/Kit**
  39 or 231 in Duplicate
- **Stability**
  Liquid 4˚C Stable Reagents

Glutathione



Related Products

Glutathione Reductase Activity Kit
Catalog No. K009-F1

Glutathione S-Transferase Activity Kit
Catalog No. K008-F1

Glutathione Colorimetric Detection Kits
Catalog No. K006-H1/H1C-H/H1C-L

AbX™ Glutathione Antibodies
Catalog No. A001/A001F/A001T

AbX™ L-Cysteine Antibody
Catalog No. A002-50UG

Superoxide Dismutase (SOD) Activity Kit
Catalog No. K028-H1

Hydrogen Peroxide Detection Kits
Catalog No. K034-H1, K034-F1

Catalase Activity Kits
Catalog No. K033-H1, K033-F1

MULTI SPECIES
MOST SENSITIVE

Scientific Relevance

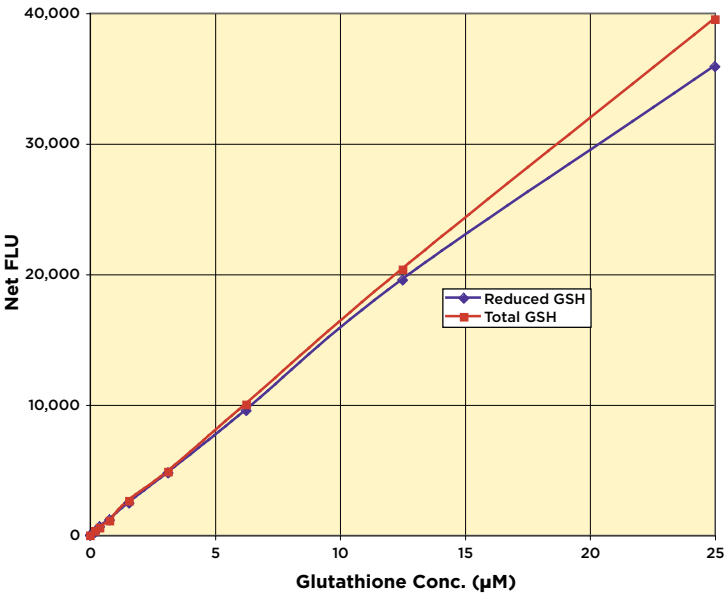
Glutathione (L-γ-glutamyl-L-cysteinylglycine; GSH) is the highest concentration non-protein thiol in mammalian cells and is present in concentrations of 0.5 – 10 mM. GSH plays a key role in many biological processes, including the synthesis of proteins and DNA, the transport of amino acids, and the protection of cells against oxidation. Harmful hydrogen peroxide cellular levels are minimized by the enzyme glutathione peroxidase (GP) using GSH as a reductant. The oxidized GSH dimer, GSSG, is formed from GSH and peroxide by the GP reaction. An important role of GSSG in the NFKß activating signal cascade is suggested by the facts that the potent NFKß inducer, tetradecanoyl phorbol acetate, increases intracellular GSSG levels and GSSG/GSH ratios.

Application

The ratio of reduced glutathione to oxidized glutathione within cells is often used as a measure of cellular toxicity. In healthy cells and tissue, more than 90% of the total glutathione pool is in the form of GSH and less than 10% exists as GSSG. An increased GSSG-to-GSH ratio is considered indicative of oxidative stress. Glutathione concentrations are important indicators in Type 2 Diabetes, HIV infections, and a number of other pathological conditions.

Our Assay

The DetectX® Glutathione Fluorescent Kits are designed to quantitatively measure glutathione (GSH), followed by oxidized glutathione (GSSG) in the same well using a proprietary non-fluorescent molecule, ThioStar®, that covalently binds to the free thiol group on GSH to yield a highly fluorescent product. Total GSH is measured by the addition of a reaction mixture that converts all the oxidized glutathione, GSSG, into free GSH, which then reacts with the excess ThioStar®, yielding a fluorescent product read at 510 nm in a fluorescent plate reader with excitation at 390 nm.



Glutathione Reductase (GR) Activity Kit

Scientific Relevance

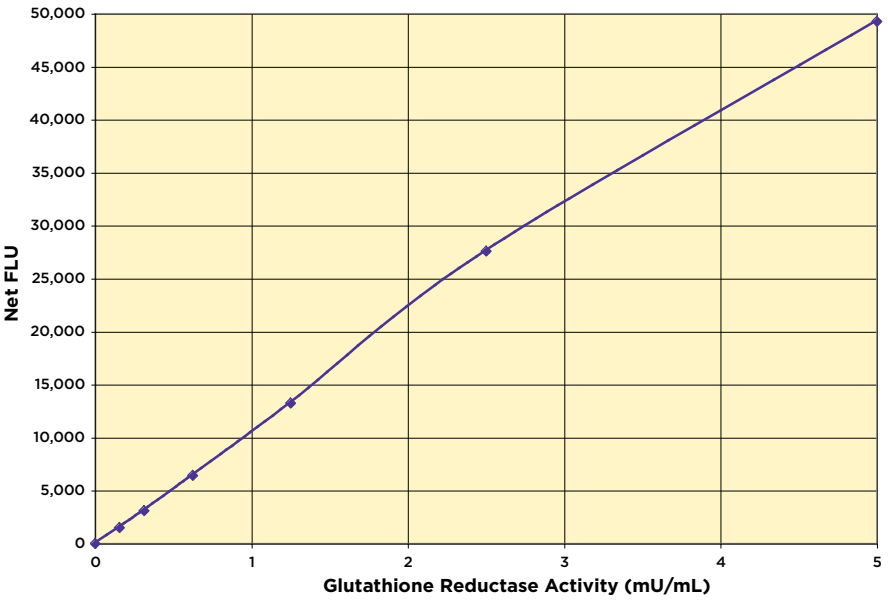
Glutathione reductase (GR) is a ubiquitous 100-120 kDa dimeric flavoprotein that catalyzes the reduction of oxidized glutathione (GSSG) to reduced glutathione (GSH), using ß-nicotinamide dinucleotide phosphate (NADPH) as the hydrogen donor.

Application

GR plays an indirect but essential role in the prevention of oxidative damage within the cell by helping to maintain appropriate levels of intracellular glutathione. GSH, in conjunction with the enzyme glutathione peroxidase (GP), is the acting reductant responsible for minimizing harmful hydrogen peroxide cellular levels. The regeneration of GSH is catalyzed by GR.

Our Assay

The DetectX® Glutathione Reductase Fluorescent Activity Kit is designed to quantitatively measure GR activity in a variety of samples. A GR standard is provided. The kit utilizes a proprietary non-fluorescent molecule, ThioStar®, that will covalently bind to the free thiol group on GSH. Background thiol content is read first after 5 minutes, followed by addition of GSSG and NADPH which uses the standard or sample GR to convert the oxidized glutathione (GSSG) into free GSH, which then reacts with the ThioStar® to yield the signal related to GR activity. The signal is read at 510 nm in a fluorescent plate reader with excitation at 390 nm.



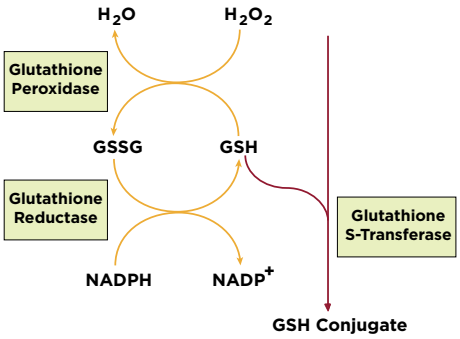
Catalog Number

K009-F1 (1 Plate)

Features

- **Use**
  Measure GR Activity
- **Sample**
  RBCs, Cells, Serum, Plasma
- **Convenient**
  Kinetic or 20 Minute End Point
- **Sensitive**
  9 µU/mL, World's Most Sensitive
- **Samples/Kit**
  41 in Duplicate
- **Stability**
  Liquid 4˚C Stable Reagents

Glutathione Reductase Reaction



Related Products

Glutathione Colorimetric Detection Kits
Catalog No. K006-H1/H1C-H/H1C-L

Glutathione Fluorescent Detection Kits
Catalog No. K006-F1/F5/F1D

Glutathione S-Transferase Activity Kit
Catalog No. K008-F1

Superoxide Dismutase (SOD) Activity Kit
Catalog No. K028-H1

Hydrogen Peroxide Detection Kits
Catalog No. K034-H1, K034-F1

Catalase Activity Kits
Catalog No. K033-H1, K033-F1

MULTI SPECIES
MOST SENSITIVE

Glutathione S-Transferase (GST) Fluorescent Activity Kit

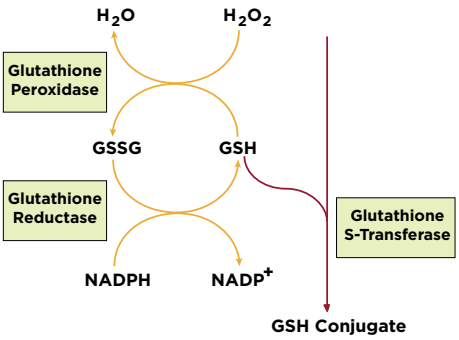
Catalog Number

K008-F1 (1 Plate)

Features

- **Use**
  Measure GST Activity
- **Sample**
  Lysates, Serum, Plasma, Urine
- **Convenient**
  Measure GST Activity Kinetically or at 30 Minute End Point
- **Sensitivity**
  2.7 mU/mL
- **Samples/Kit**
  40 in Duplicate
- **Stability**
  Liquid 4˚C Stable Reagents

Glutathione S-Transferase Reaction



Related Products

Glutathione Reductase Activity Kit
Catalog No. K009-F1

Glutathione Colorimetric Detection Kits
Catalog No. K006-H1/H1C-H/H1C-L

Glutathione Fluorescent Detection Kits
Catalog No. K006-F1/F5/F1D

Superoxide Dismutase (SOD) Activity Kit
Catalog No. K028-H1

Hydrogen Peroxide Detection Kits
Catalog No. K034-H1, K034-F1

Catalase Activity Kits
Catalog No. K033-H1, K033-F1

MULTI SPECIES
MOST SENSITIVE

Scientific Relevance

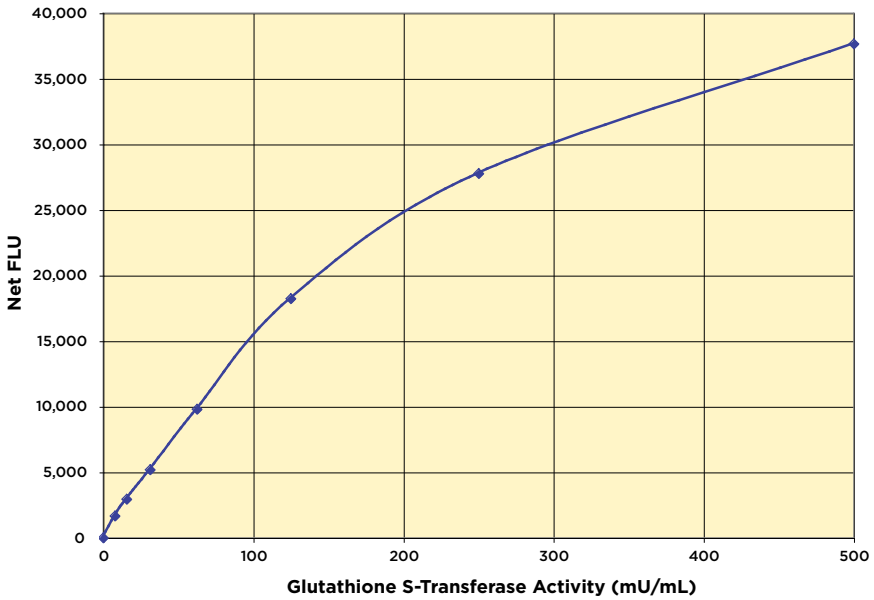
The Glutathione S-Transferase (GST) family of isozymes function to detoxify and neutralize a wide variety of electrophilic molecules by mediating their conjugation with reduced glutathione. Human GSTs are encoded by 5 gene families, expressed in almost all tissues as four cytosolic and one microsomal form.

Application

Given its pivotal role in ameliorating oxidative stress/damage, GST activity has been repeatedly investigated as a biomarker for arthritis, asthma, COPD, and multiple forms of cancer, as well as an environmental marker. Examination of GST isoforms and activity in human cancers, tumors and tumor cell lines has revealed the predominance of the acidic pi class. Furthermore, this activity is thought to substantially contribute to the innate or acquired resistance of specific neoplasms to anticancer therapy.

Our Assay

The DetectX® Glutathione S-Transferase Fluorescent Activity Kit is designed to quantitatively measure the activity of GST present in a variety of samples. A GST standard is provided. The kit utilizes a non-fluorescent molecule that is a substrate for the GST enzyme which covalently attaches to glutathione (GSH) to yield a highly fluorescent product. Mixing the sample or standard with the supplied Detection Reagent and GSH and incubating at room temperature for 30 minutes yields a fluorescent product which is read at 460 nm in a fluorescent plate reader with excitation at 390 nm.



Hemoglobin Dual Range Colorimetric Detection Kit

Scientific Relevance

Hemoglobin (Hgb) is comprised of two sets of identical pairs of subunits, each of which bind an iron-prophyrin heme group. Heme binds and releases oxygen or carbon dioxide in response to slight changes in local gas tension. Free oxygen or carbon dioxide bound by one heme group facilitates subsequent binding by the other heme groups in a given hemoglobin molecule. Subtle changes in pH also regulate hemoglobin affinity for free gases, resulting in a high level of hemostatic control.

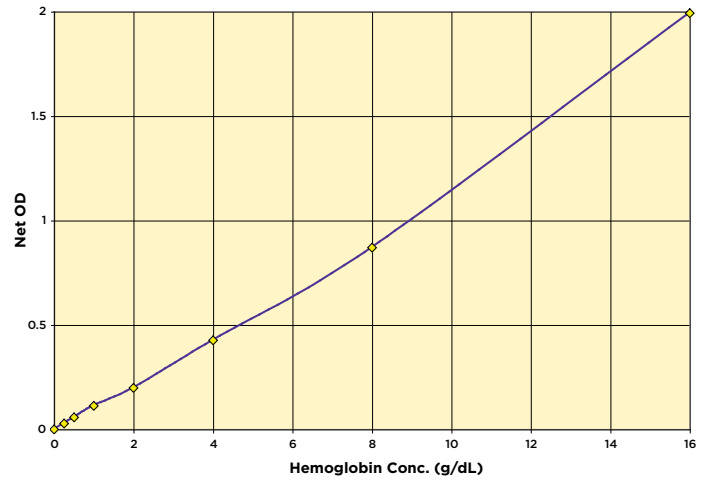
Application

Hemoglobin values are associated with a variety of conditions ranging from anemias (low Hgb), erythrocytosis (high Hgb), thalassemias (aberrant chain synthesis), and sickling disorders (abnormal complex shape).

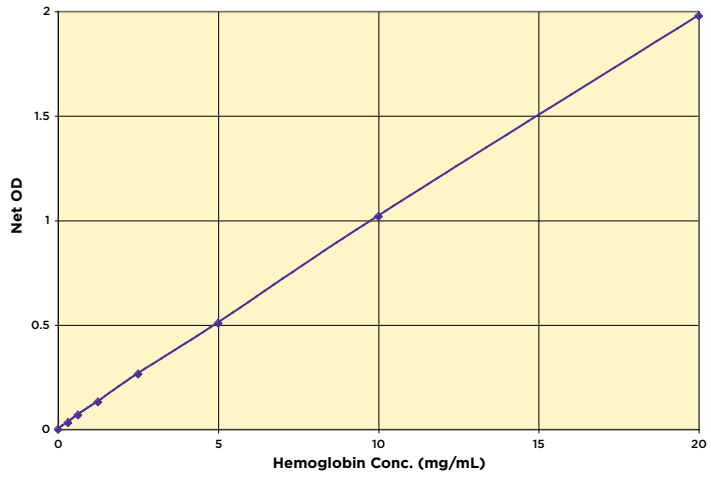
Our Assay

The DetectX® Hemoglobin Detection Kit will measure all forms of hemoglobin present in blood and RBCs, or plasma and serum. A human hemoglobin standard is provided. Standards or diluted samples are pipetted into a clear microtiter plate, the ready-to-use Hemoglobin Detection Reagent is added and incubated for 30 minutes at room temperature. The plate is read at 560-580 nm. Results are calculated as g/dL for whole blood and RBCs, and mg/mL for serum and plasma.

Regular Format



High Sensitivity



Catalog Number

K013-H1 (2 Plate)

Features

- **Use**
  Determine Hemoglobin Content
- **Sample**
  Whole Blood, Serum, Plasma, RBCs
- **Samples/Kit**
  88 in Duplicate
- **Sensitivity**
  20 µg/mL
- **Time to Answer**
  30 Minutes
- **Stable**
  Liquid 4˚C Stable Reagents

Related Products

Creatinine Urinary Detection Kits
Catalog No. K002-H1/H5

Urea Nitrogen (BUN) Detection Kits
Catalog No. K024-H1/H5

BCA Protein Dual Range Detection Kit
Catalog No. K041-H1

MULTI SPECIES

Histone Demethylase (HDM) Fluorescent Activity Kit

Catalog Number

K010-F1 (2 Plate)

Features

- **Use**
  Detection of HDM Activity
- **Universal**
  Measure LSD1- and *Jumonji*-type HDMs
- **Samples**
  Cell Lysates, Purified Enzyme Systems
- **Samples/Kit**
  89 in Duplicate
- **Convenient**
  30 Minute Non-Radioactive Assay
- **Stability**
  Liquid 4˚C Stable Reagents

Related Products

P450 Demethylating Activity Kit
Catalog No. K011-F1

AbX™ Histone H3 Antibodies
Catalog No. A004, A005, A006, A007

AbX™ LSD1 Antibody
Catalog No. A003-100UL

BIX-01294 Inhibitor
Catalog No. P018-5MG, P018-25MG

5-Azacytidine Inhibitor
Catalog No. P012-50MG, P012-250MG

Decitabine Inhibitor
Catalog No. P015-10MG, P015-50MG

IOX1 Inhibitor
Catalog No. P022-5MG, P022-25MG

Tranylcypromine Inhibitor
Catalog No. X042-1EA

MULTI SPECIES

Scientific Relevance

Formaldehyde is a common by-product formed in the oxidative demethylation of proteins, nucleic acids, and biological small molecules. Examples of formaldehyde-producing enzymes include histone demethylases (HDMs), and cytochrome P450 enzymes that demethylate drugs and other xenobiotic compounds. Lysine-specific HDMs were first discovered in 2004 and are currently among the most actively studied enzyme groups. At present, there are two known classes of HDMs: the flavin adenine dinucleotide (FAD)-dependent Lysine Specific Demethylase 1 (LSD1) family and the Fe(II)-dependent *Jumonji* C (JmjC) family.

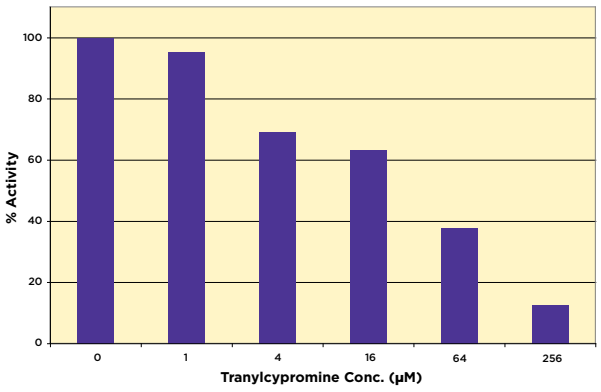
Application

HDMs catalyze the site-specific demethylation of methyl-lysine residues in histones to dynamically regulate chromatin structure, gene expression, and potentially other genomic functions. Despite their biological importance, HDMs have proven difficult to quantitatively assay owing to their relatively low turnover numbers, hindering our understanding of their kinetic properties, substrate specificities, and reaction mechanisms.

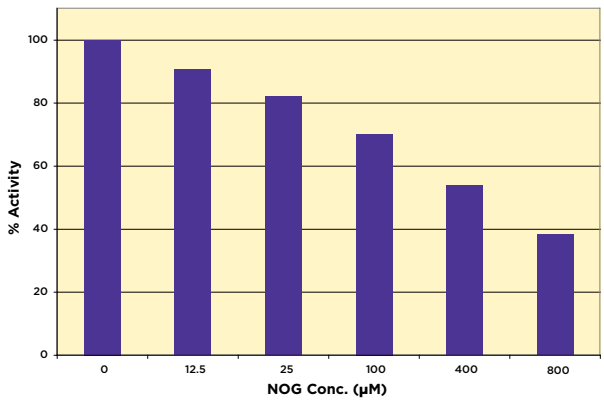
Our Assay

The DetectX® Demethylase Activity Kit is designed to quantitatively measure the enzymatic activity of formaldehyde-producing enzymes such as Histone Demethylases. The kit is unique in that the product of these enzymatic demethylation reactions, formaldehyde, is quantitated directly by a fluorescent product. No separation or washing is required. The kit has been validated for both LSD1 and JMJD2A histone Demethylases (HDMs). Results are read at 510 nm utilizing 450 nm excitation wavelength.

LSD1 Inhibition Profile



JMJD2A Inhibition Profile



“ You know your stuff! Arbor Assays is an excellent company.”

ANF, University of Illinois

Hydrogen Peroxide (H_2O_2) Colorimetric & Fluorescent Detection Kits

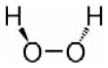
Catalog Number

Colorimetric: K034-H1 (2 Plate)
Fluorescent: K034-F1 (2 Plate)

Features

- **Use**
  Measure H_2O_2 in Any Sample
- **Convenient**
  Everything Included
- **Time to Answer**
  15 Minutes
- **Species**
  Species Independent
- **Samples/Kit**
  88 Colorimetric/89 Fluorescent in Duplicate
- **Stability**
  Liquid 4˚C Stable Reagents

Hydrogen Peroxide



Related Products

Catalase Detection Kits
Catalog No. K033-H1, K033-F1

Superoxide Dismutase (SOD) Activity Kit
Catalog No. K028-H1

FRAP™ (Ferric Reducing Antioxidant Power) Detection Kit
Catalog No. K043-H1

Glutathione Fluorescent Detection Kits
Catalog No. K006-F1/F5/F1D

Glutathione Colorimetric Detection Kits
Catalog No. K006-H1/H1C-H/H1C-L

Glutathione Reductase (GR) Activity Kit
Catalog No. K009-F1

MULTI SPECIES

MOST SENSITIVE

> Thanks again for all of your helpful advice! ... I appreciate your technical insight.
>
> KS

Scientific Relevance

Hydrogen peroxide, H_2O_2, was first described in 1818 by Louis Jacques Thénard. H_2O_2 is one of the most frequently occurring reactive oxygen species. It is formed either in the environment or as a by-product of aerobic metabolism, superoxide formation and dismutation, or as a product of oxidase activity. In biological systems incomplete reduction of O_2 during respiration produces superoxide anion ($O_2^{-\cdot}$), which is spontaneously or enzymatically dismutated by superoxide dismutase to H_2O_2. Many cells produce low levels of $O_2^{-\cdot}$ and H_2O_2.

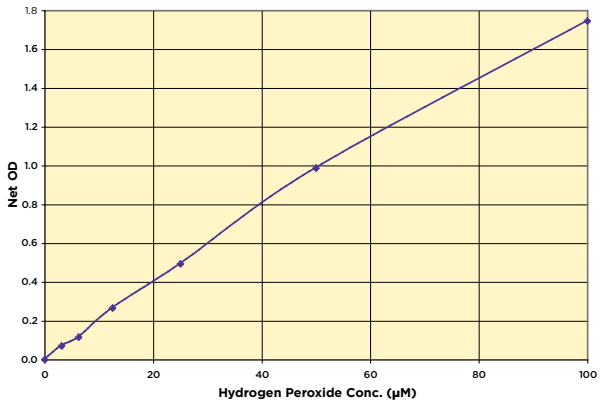
Application

H_2O_2 and O_2 may participate in the production of singlet oxygen and peroxynitrite and the generation of these species may be concurrent with reactions involving iron, and under some circumstances they might be important contributors to H_2O_2 toxicity. A substantial portion of H_2O_2 lethality involves DNA damage by oxidants generated from iron-mediated Fenton reactions. Damage by Fenton oxidants occurs at the DNA bases or at the sugar residues. Sugar damage is initiated by hydrogen abstraction from one of the deoxyribose carbons, and the predominant consequence is eventual strand breakage and base release.

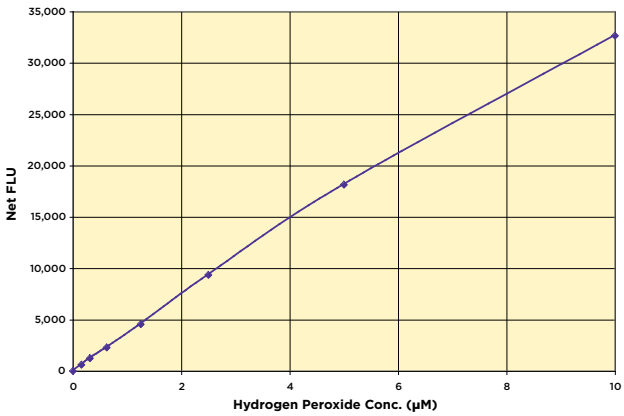
Our Assays

The DetectX® Hydrogen Peroxide Detection Kits are designed to quantitatively measure H_2O_2 in a variety of samples. A hydrogen peroxide standard is provided. Samples are mixed with the Substrate and the reaction initiated by addition of horseradish peroxidase. The reaction is incubated at room temperature for 15 minutes. The HRP reacts with the substrate in the presence of hydrogen peroxide to convert the substrate into colored or fluorescent product.

Colorimetric Assay



Fluorescent Assay



Human Insulin EIA Kit

Scientific Relevance

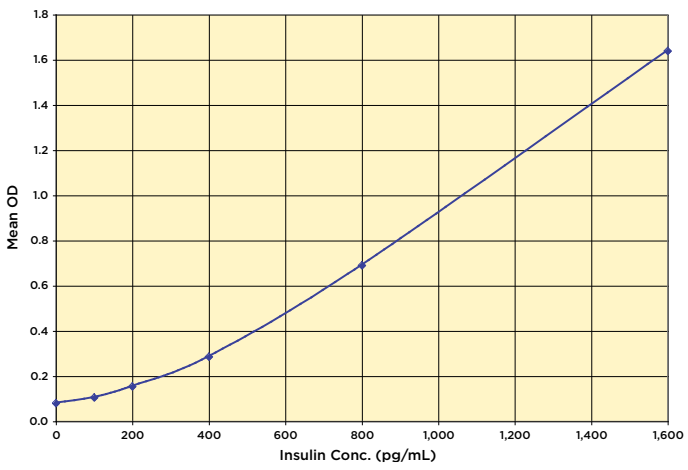
Human Insulin is a 51 amino acid anabolic peptide-hormone that is secreted by the pancreatic ß-cells in the Islets of Langerhans. Insulin consists of two chains (A and B) connected by disulfide bonds. One of its primary functions is the stimulation of glucose uptake from the systemic circulation, as well as the suppression of hepatic gluconeogenesis. It thereby serves a major role in glucose homeostasis and the prevention of the metabolic disorder diabetes mellitus. The work of Banting, Best, Collip and MacCleod in the early 1920's resulted in the identification of a substance in extracts of pancreas that had the remarkable ability to reduce blood glucose levels in diabetic animals and by 1923 these pancreas extracts were being used to successfully treat diabetic patients. Insulin exists primarily as a monomer at low concentrations (~10^{-6} M) and forms dimers at higher concentrations at neutral pH. At high concentrations and in the presence of zinc ions insulin aggregates further to form hexameric complexes. Preproinsulin, the first translational product from the insulin gene, is a 110 amino acid polypeptide with a 24 amino acid signal peptide.

Application

The major function of insulin is to counter the concerted actions of a number of hyperglycemia-generating hormones and to maintain low blood glucose levels. In addition to its role in regulating glucose metabolism, insulin stimulates lipogenesis, diminishes lipolysis, and increases amino acid transport into cells. Because there are numerous hyperglycemic hormones, untreated disorders associated with insulin generally lead to severe hyperglycemia and shortened life span. Insulin also exerts activities typically associated with growth factors. Insulin is a member of a family of structurally and functionally similar molecules that include the insulin-like growth factors and relaxin. The tertiary structure of all four molecules is similar, and all have growth-promoting activities. Insulin modulates transcription and stimulates protein translocation, cell growth, DNA synthesis, and cell replication; effects that it holds in common with the insulin-like growth factors and relaxin.

Our Assay

The DetectX® Insulin EIA kit is designed to quantitatively measure insulin present in a variety of samples and tissue culture media. An Insulin standard is provided to generate a standard curve. Standards or diluted samples are pipetted into a clear microtiter plate coated with a monoclonal antibody to capture insulin. After a 60 minute incubation, the plate is washed. A peroxidase-conjugated insulin antibody is added and the plate is again incubated for 30 minutes, and then washed. Substrate is then added to the plate, which reacts with the bound insulin conjugated antibody. The intensity of the generated color is read at 450 nm.



Catalog Number

K046-H1 (1 Plate)

Features

- **Sensitive**
  Measure from 1,600 to 100 pg/mL
- **Sample**
  Serum, Plasma, and TCM
- **Samples/Kit**
  42 in Duplicate
- **Calibrated**
  WHO 1st International Standard 1975 (66/304)
- **Time to Answer**
  2 Hours

Related Products

Glucose Detection Kits
Catalog No. K039-H1, K039-F1

Thyroxine (T_4) EIA Kits
Catalog No. K050-H1/H5

Prostaglandin E_2 (PGE_2) Multi-Format EIA Kits
Catalog No. K051-H1/H5

Cortisol EIA Kits
Catalog No. K003-H1/H5/H1W/H5W

Hemoglobin Colorimetric Detection Kit
Catalog No. K013-H1

Galactose Detection Kit
Catalog No. K042-H1

MULTI SPECIES
N-CAL™ KIT

Levonorgestrel (LNG) EIA Kits

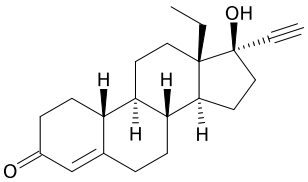
Catalog Number

K058-H1 (1 Plate)
K058-H5 (5 Plate)

Features

- **Use**
  Measure LNG in a Variety of Matrices
- **Sample**
  Saliva, Water, Milk, TCM, and Extracted Serum, Plasma or Fecal Material
- **Species**
  Species Independent
- **Samples/Kit**
  40 or 232 in Duplicate
- **Sensitivity**
  2.20 pg/mL
- **Time to Answer**
  1.5 Hours
- **Readout**
  Colorimetric, 450 nm

Levonorgestrel



Related Products

PGFM EIA Kits
Catalog No. K022-H1/H5

Nitric Oxide Detection Kit
Catalog No. K023-H1

Progesterone EIA Kits
Catalog No. K025-H1/H5

Estradiol EIA Kits
Catalog No. K030-H1/H5, KB30-H1/H5

Testosterone EIA Kits
Catalog No. K032-H1/H5

Ceruloplasmin (Cp) Activity Kit
Catalog No. K035-H1

Prolactin EIA Kit
Catalog No. K040-H1

MULTI SPECIES
MOST SENSITIVE

Scientific Relevance

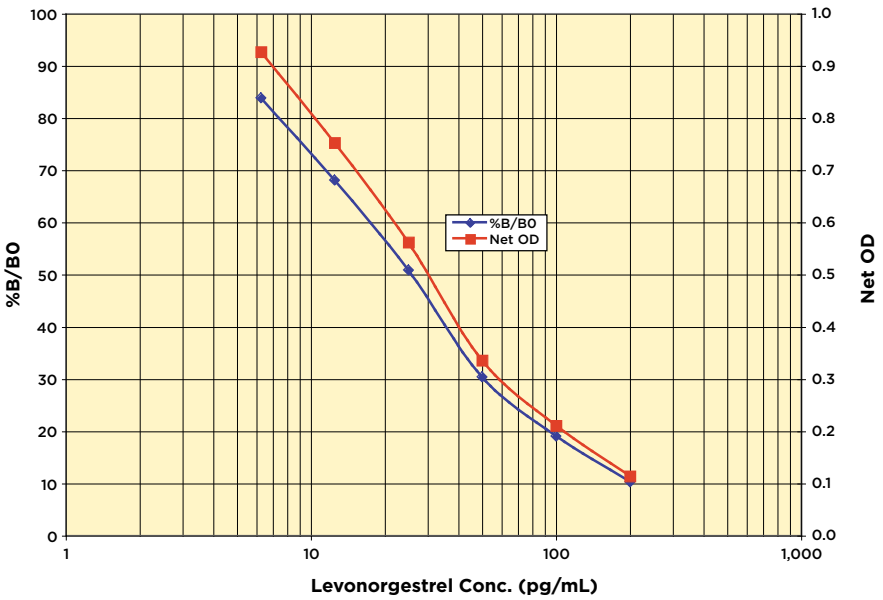
Levonorgestrel (LNG) is a synthetic steroid commonly used for contraception, treatment of dysmenorrhea, or for endometrial protection during estrogen replacement therapy in postmenopausal women. LNG has also been shown to be an effective treatment modality for a variety of gynecological conditions including: idiopathic, myoma-, or adenomyosis-related heavy menstrual bleeding, endometriosis- or adenomyosis-related pelvic pain, endometrial hyperplasia, and early stage endometrial cancer. LNG works by decreasing ovulation, changing the mucus in the cervix to prevent the passage of sperm and altering the uterine lining.

Application

Quantitative measurement of LNG in biological samples can be useful for determining if target therapeutic concentrations are being met and maintained. This kit can also be used to measure LNG in surface water and other samples to monitor the impact of LNG on the environment. LNG has been measured in fish plasma at levels of up to 12 ng/mL.

Our Assay

The DetectX® Levonorgestrel EIA Kits are designed to quantitatively measure LNG present in a variety of sample types. An LNG standard is provided to generate a standard curve. Standard or diluted samples are pipetted into a clear microtiter plate coated with an antibody to capture rabbit antibodies. A levonorgestrel-peroxidase conjugate is added to the wells, and the binding reaction is initiated by the addition of a rabbit polyclonal antibody to LNG. After an hour incubation the plate is washed and a substrate added. After a short incubation the generated color is read at 450 nm.



Human Myeloperoxidase (MPO) EIA Kit

Scientific Relevance

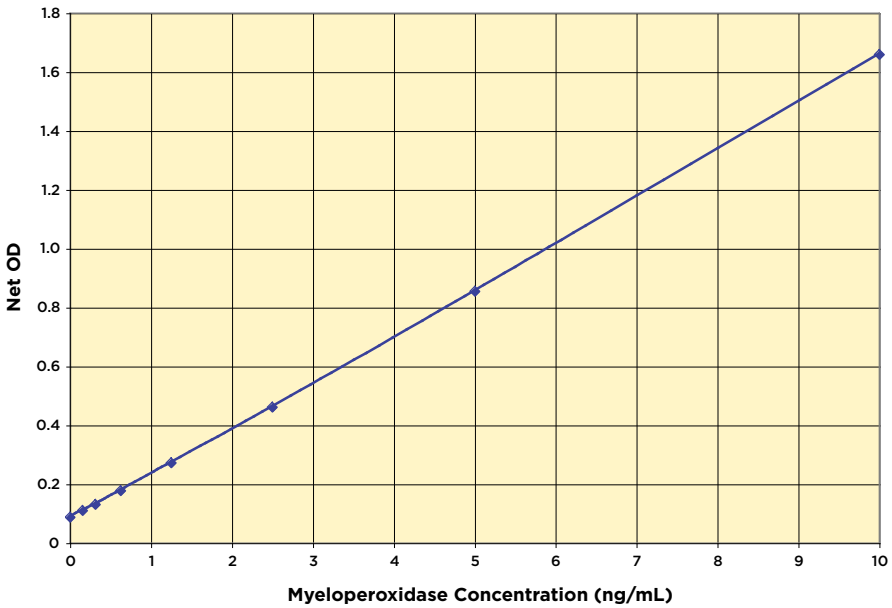
Myeloperoxidase (MPO) is a tetrameric heme-containing protein abundantly produced in neutrophil granulocytes where it plays an important anti-microbial role. During degranulation MPO is released into the extracellular space. There, as part of the neutrophils "respiratory burst", it produces hypochlorous acid from hydrogen peroxide and Cl^-. MPO also uses hydrogen peroxide to oxidize tyrosine to the tyrosyl radical. Both hypochlorous acid and tyrosyl radicals are cytotoxic and when present can kill bacteria and other pathogens. Hereditary deficiency of myeloperoxidase predisposes individuals to immune deficiency.

Application

Studies have shown an association between elevated MPO levels and coronary artery disease. In 2003 it was suggested MPO may serve as a sensitive predictor of myocardial infarction in patients complaining of chest pain. Since that time the clinical utility of MPO testing in cardiac patients has been solidly established in the literature with well over 100 papers published. In 2010 this clinical application was further refined by additional studies which determined measuring both MPO and C-reactive protein (CRP) provided more accurate prediction of mortality risk than measuring just CRP alone.

Our Assay

The human Myeloperoxidase (MPO) EIA Kit is designed to quantitatively measure MPO present in a variety of samples and tissue culture media. Standards or diluted samples are pipetted into a clear microtiter plate coated with antibody to MPO. After a 60 minute incubation, the plate is washed and peroxidase conjugated MPO antibody is added. The plate is again incubated. Substrate is then added to the plate, which reacts with the bound MPO conjugated antibody.



Catalog Number

K060-H1 (1 Plate)

Features

- **Use**
  Measure Human MPO in a Variety of Matrices
- **Sample**
  Serum, Platelet-Poor Heparin Plasma, Saliva, Urine or TCM
- **Species**
  Human
- **Samples/Kit**
  40 in Duplicate
- **Sensitivity**
  0.068 ng/mL
- **Time to Answer**
  2.5 Hours
- **Readout**
  Colorimetric, 450 nm

Related Products

Prostaglandin E_2 (PGE_2) Multi-Format EIA Kits
Catalog No. K051-H1/H5

Human ST2 EIA Kit
Catalog No. K055-H1

Glutathione Fluorescent Detection Kits
Catalog No. K006-F1/F5/F1D

AbX™ Glutathione Antibodies
Catalog No. A001/A001F/A001T

Superoxide Dismutase (SOD) Activity Kit
Catalog No. K028-H1

Hydrogen Peroxide Detection Kits
Catalog No. K034-H1, K034-F1

Catalase Detection Kits
Catalog No. K033-H1, K033-F1

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Nitric Oxide Colorimetric Detection Kit

Catalog Number

K023-H1 (2 Plate)

Features

- **Use**
  NO Detection
- **Samples**
  Serum, Plasma, Urine, Saliva, Water, Buffers, Media
- **Time to Answer**
  5 or 25 Minutes
- **Samples/Kit**
  88 in Duplicate
- **Stability**
  Liquid 4˚C Stable Reagents

Related Products

Cyclic GMP (cGMP) EIA & CLIA Kits
Catalog No. K020-H1/H5, K020-C1/C5

Prostaglandin E_2 (PGE_2) Multi-Format EIA Kits
Catalog No. K051-H1/H5

Cyclic AMP (cAMP) EIA & CLIA Kits
Catalog No. K019-H1/H5, K019-C1/C5

Urea Nitrogen (BUN) Detection Kits
Catalog No. K024-H1/H5

DNA Damage EIA Kits
Catalog No. K059-H1/H5

Scientific Relevance

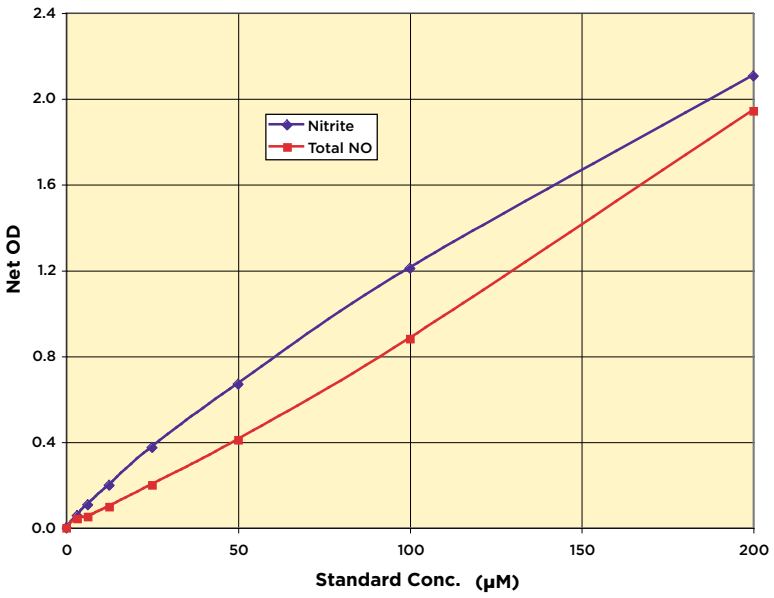
Nitric oxide (NO) is a diffusible, transient, reactive molecule that has physiological effects in the picomolar-to-micromolar range. Acting through soluble guanylate cyclase activation, NO is an important physiological regulator of the cardiovascular, nervous, and immune systems. NO is bioavailable by two routes. It can be endogenously generated by constitutive or induced enzymes like nitric oxide synthase or it can be orally ingested as nitrates/nitrites for rapid uptake into circulation and subsequent conversion.

Application

The reactive nature of nitric oxide allows it to act as a cytotoxic factor when released during an immune response by cells such as macrophages. The reactivity also allows NO to be easily converted to a toxic radical that can produce nitrosative damage to cells, organelles, and molecules such as DNA. Nitrosylation however can be a regulated post-translational modification in cell signaling. The balance and dynamics of the regulatory/damage facets of NO are major forces in mitochondrial signaling and dysfunction. NO is linked not only to coronary heart disease, endothelial dysfunctions, erectile dysfunction, and neurological disorders, but also diabetes, chronic periodontitis, autism, cancer, and assorted age-related diseases.

Our Assay

The DetectX® Nitric Oxide Detection Kit is designed to quantitatively measure Nitrate and Nitrite present in a variety of samples. Nitric Oxide content is derived from the sum of Nitrate (NO_3^-) and Nitrite (NO_2^-). NIST-calibrated nitrate and nitrite standards are provided. For Nitrite detection, standard and samples are pipetted into clear plates and Color Reagents A and B are added and incubated for 5 minutes. For Total Nitric Oxide content, standards and samples are incubated with Nitrate Reductase and NADH. After a 20 minute incubation at room temperature, Color Reagents A and B are added and incubated for 5 minutes. The colored product is read at 550 – 570 nm for both Nitrite and Total Nitric Oxide measurements.



Human Osteopontin EIA Kit

Scientific Relevance

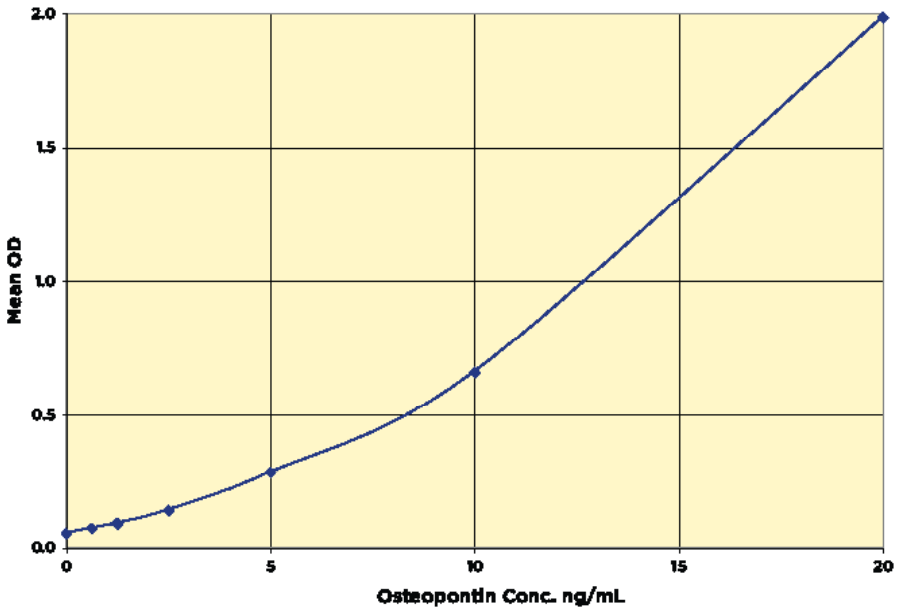
Osteopontin (OPN) is an acidic glycine-arginine-glycine-aspartate-serine containing phosphoprotein. This sequence is an integrin-binding motif common to many extracellular matrix (ECM) proteins, which can mediate cell attachment. The human OPN gene occurs on the long arm of chromosome 4 (4q21–4q25).

Application

OPN has an important role in mineralization, blood vessel formation, cell survival, inflammation, and inhibition of expression of iNOS. It is also a key molecule in neoplastic transformation and cancer development in a variety of tumors. Plasma OPN has been shown to be a positive indicator of colon and lung cancers as well as metastatic carcinomas. The presence of OPN in a variety of tumors suggests its critical role in tumor invasiveness, progression and metastasis. In addition, OPN inhibits inducible nitric oxide synthase activity, thereby protecting tumor cells from NO-mediated macrophage cytotoxic attack. It has also been shown that OPN mRNA expression increases 37-40 fold in infarct tissue after a myocardial infarction.

Our Assay

The DetectX® Human Osteopontin EIA Kit is designed to quantitatively measure human OPN. A human OPN standard is provided. Standards or diluted samples are pipetted into a clear microtiter plate coated with a monoclonal antibody to capture OPN. After a 60 minute incubation, the plate is washed and a peroxidase conjugated OPN monoclonal antibody is added. The plate is again incubated for 60 minutes, washed, and substrate is added. The intensity of the generated color is read after 30 minutes.



Catalog Number

K021-H1 (1 Plate)

Features

- **Use**
  Quantitate OPN as a Breast and Prostate Cancer Marker
- **Sample**
  Plasma, Urine, Milk, TCM
- **Species**
  Human
- **Samples/Kit**
  41 in Duplicate
- **Time to Answer**
  2.5 Hours
- **Stable**
  Liquid 4˚C Stable Reagents

Related Products

Protein Kinase A (PKA) Activity Kit
Catalog No. K027-H1

Cyclic AMP (cAMP) EIA & CLIA Kits
Catalog No. K019-H1/H5, K019-C1/C5

Prostaglandin E_2 (PGE_2) Multi-Format EIA Kits
Catalog No. K051-H1/H5

Nitric Oxide Detection Kit
Catalog No. K023-H1

Oxytocin EIA and CLIA Kits

EIA Catalog Number

K048-H1 (1 Plate)
K048-H5 (5 Plate)

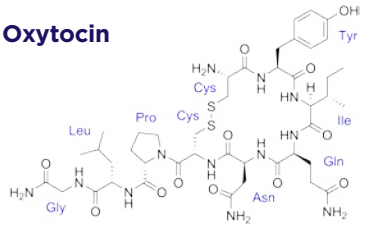
CLIA Catalog Number

K048-C1 (1 Plate)
K048-C5 (5 Plate)

Features

- **Use**
  Measure Oxytocin/Isotocin/Mesotocin
- **Sensitive**
  < 17 pg/sample EIA
  < 6.33 pg/sample CLIA
- **Sample**
  Serum, Plasma, Milk, Saliva, TCM
- **Species**
  Mammalian, Bird, Fish
- **Samples/Kit**
  38 or 230 in Duplicate

Oxytocin



Related Products

Arg⁸-Vasopressin (AVP) CLIA Kits
Catalog No. K049-C1/C5

Estradiol EIA Kits
Catalog No. K030-H1/H5, KB30-H1/H5

Estrone EIA Kits
Catalog No. K031-H1/H5

Estrone-3-Glucuronide (E1G) EIA Kits
Catalog No. K036-H1/H5

Progesterone EIA Kits
Catalog No. K025-H1/H5

PGFM EIA Kits
Catalog No. K022-H1/H5

Ceruloplasmin (Cp) Activity Kit
Catalog No. K035-H1

MULTI SPECIES
N-CAL™ KIT
MOST SENSITIVE

Scientific Relevance

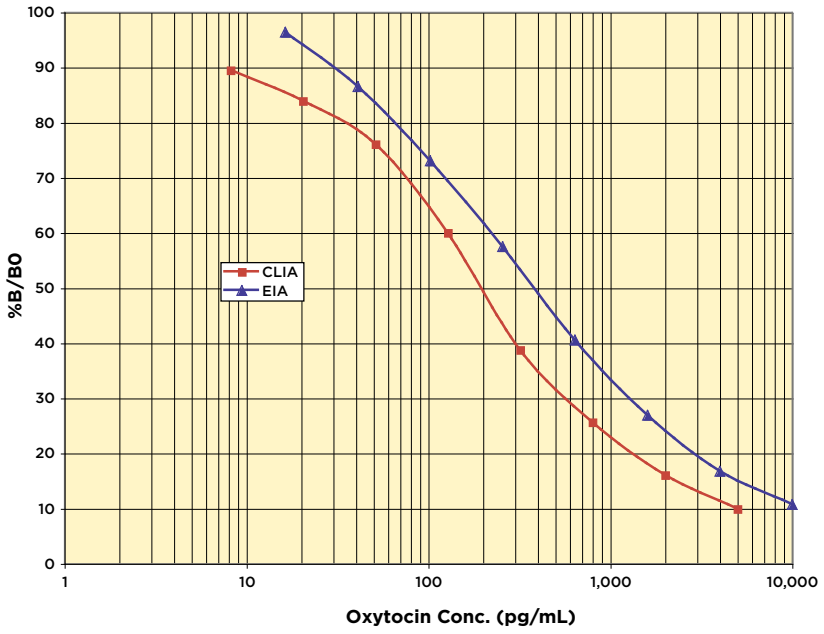
The neuropeptides, oxytocin and vasopressin were isolated and synthesized by Vincent du Vigneaud in 1953, work for which he received the Nobel Prize in Chemistry in 1955. Oxytocin is a neurohypophysial peptide which is produced in the paraventricular nuclei of the hypothalamus and stored in the posterior pituitary. The molecule consists of nine amino acids linked with a [1-6] disulfide bond and a semi-flexible carboxyamidated tail. Highly conserved across species boundaries, oxytocin-like neurohypophysial peptides are substituted primarily at residues 4 and/or 8. In the oxytocin-like peptide, mesotocin, a common peptide found in some fishes, reptiles, birds, amphibians, marsupials and non-mammalian tetrapods, the leucine at residue 8 is substituted for isoleucine. Acting in classical endocrine fashion, oxytocin elicits regulatory effects by binding specific cell surface receptors which in turn initiate a secondary intracellular response cascade via a phosphoinositide signaling pathway.

Application

A hormone once thought to be limited to female smooth muscle reproductive physiology and acting as a neurotransmitter, recent studies have begun to investigate oxytocin's role in various behaviors, including orgasm, social recognition, pair bonding, anxiety, and maternal behaviors, and in male reproductive physiology. Oxytocin and the related neurohypophysial peptide, Arg⁸-Vasopressin, maintain renal water and sodium balance.

Our Assays

The DetectX® Oxytocin EIA & CLIA Kits are designed to quantitatively measure oxytocin present in serum, plasma, clarified milk, saliva, and tissue culture media samples. Oxytocin standard is provided. Standards or diluted samples are pipetted into a coated microtiter plate, and an oxytocin-peroxidase conjugate is added. The binding reaction is initiated by the addition of a polyclonal antibody to oxytocin. After an overnight incubation at 4°C, the plate is washed and substrate is added. The substrate reacts with the bound oxytocin-peroxidase conjugate. For the EIA kits, the plate is read at 450 nm. For the CLIA kits, the luminescent signal is read after 5 minutes. Isotocin and Mesotocin solutions are available for those working with non-mammalian samples, please see page 79.



P450 Demethylating Fluorescent Activity Kit

Scientific Relevance

The cytochromes P450 (CYP P450s) are a superfamily of heme containing enzymes that display tremendous diversity with regard to substrate specificity and catalytic activity. P450s use a plethora of both exogenous and endogenous compounds as substrates in enzymatic reactions. Usually they form part of multicomponent electron transfer reactions. The active site of cytochrome P450 contains a heme iron center.

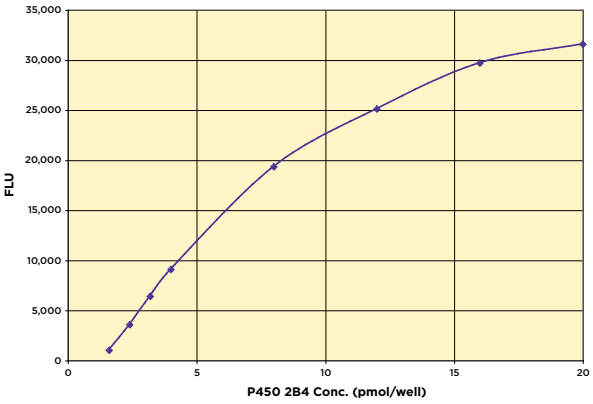
Application

The P450s play a crucial role in the development of new drug entities as drug-drug interactions commonly arise from the inhibition of cytochrome P450 activities. The substrates of CYP enzymes include metabolic intermediates such as lipids and steroidal hormones, as well as xenobiotic substances such as drugs and other toxic chemicals. CYPs are the major enzymes involved in drug metabolism and bioactivation, accounting for about 75% of the total number of different metabolic reactions.

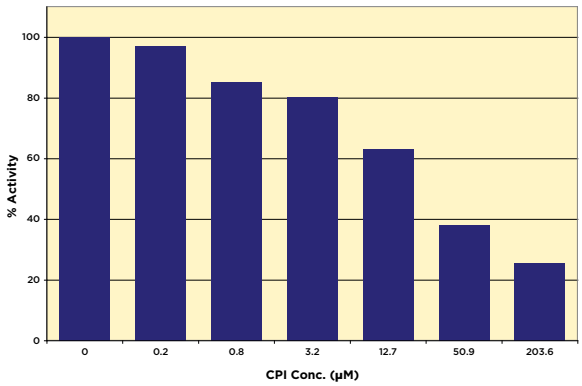
Our Assay

The DetectX® P450 Activity Kit is designed to quantitatively measure the enzymatic activity of formaldehyde-producing enzymes such as Cytochrome P450s. The kit is unique in that the fluorescent substrate is not involved in the multicomponent P450 reaction, but measures the product of the demethylation, formaldehyde. Following the P450 NADPH-induced reaction, the P450 reaction can be stopped by addition of a suitable inhibitor, or the supplied stop solution. The Detection Reagent is then added. If calibration to formaldehyde is needed (for cross lab comparisons) a formaldehyde standard is supplied.

Cyp 2B4 Standard Curve



1-Chlorophenyl Imidazole (CPI) Inhibition of 2B4



Catalog Number

K011-F1 (2 Plate)

Features

- **Use**
  P450 Activity, Drug Metabolism
- **Sample**
  Demethylating P450 Systems
- **Samples/Kit**
  89 in Duplicate
- **Calibrated**
  Measure Formaldehyde Produced
- **Time to Answer**
  30 Minutes
- **Stable**
  Liquid 4˚C Stable Reagents

Related Products

Formaldehyde Fluorescent Detection Kit
Catalog No. K001-F1

HDM Fluorescent Activity Kit
Catalog No. K010-F1

MULTI SPECIES

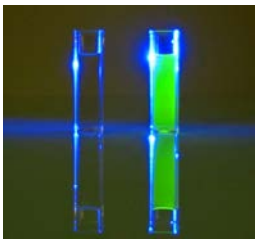
Palladium API Screening Fluorescent Detection Kit

Catalog Number

K007-F1 (1 Plate)

Features

- **Use**
  Measure Pd Contamination in APIs
- **Convenient**
  Residual Pd Using Fluorescent Signal
- **Sensitive**
  < 3 nM Pd
- **Samples/Kit**
  41 in Duplicate
- **Stability**
  Reagents Stable at Room Temperature



Scientific Relevance

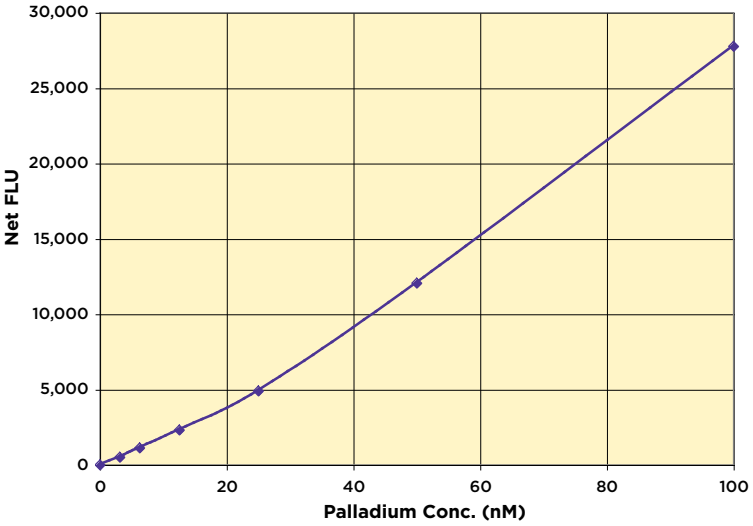
In recent years, many new synthetic transformations have been developed that use palladium (Pd) compounds for the catalysis of carbon-carbon and carbon-heteroatom coupling reactions such as the Buchwald-Hartwig, Heck, Kumada, Negishi, Nozaki-Hiyama, Sonogashira, Stille, Suzuki-Miyaura, and Tsuji-Trost transformations. These reactions have found increased popularity for pharmaceutical processes as they utilize a wide-range of functional groups and can therefore be used to build complicated molecules.

Application

Palladium-catalyzed reactions present a problem in that the palladium can often be retained in the isolated product. The LD_{50} values are very dependent on the physical form of the Pd compounds or catalysts used. For rats, mice, or rabbits, water soluble $PdCl_2$ administered intravenously as an LD_{50} of 3 mg/kg body weight while relatively insoluble PdO given orally has an LD_{50} >4900 mg/kg body weight. Current European regulations limit all platinum group metal contamination to less than 5 ppm. A variety of methods are available for removing Pd from active pharmaceutical ingredients (APIs), however these methods cannot remove 100% of the Pd contamination. The standard method of quantifying palladium in APIs is inductively-coupled plasma mass spectroscopy (ICP-MS). Cross-contamination of the instrument can limit the throughput of this analysis and in developing methods for purification protocols for APIs, the use of ICP-MS is a limit on high throughput analysis of Pd levels.

Our Assay

The PdX™ Palladium (Pd) Detection Kit is designed to allow the rapid determination of the relative amounts of Pd present in active pharmaceutical ingredient (API) scavenging steps. The kit uses a patent-pending, exclusively licensed non-fluorescent detection molecule that, under reducing conditions, palladium cleaves to yield a brightly fluorescent product. The relative concentrations of Pd in samples from various scavenging methods are measured in 30 minutes at 522 nm with excitation at 485 nm.



Pregnanediol-3-Glucuronide (PDG) EIA Kits

Scientific Relevance

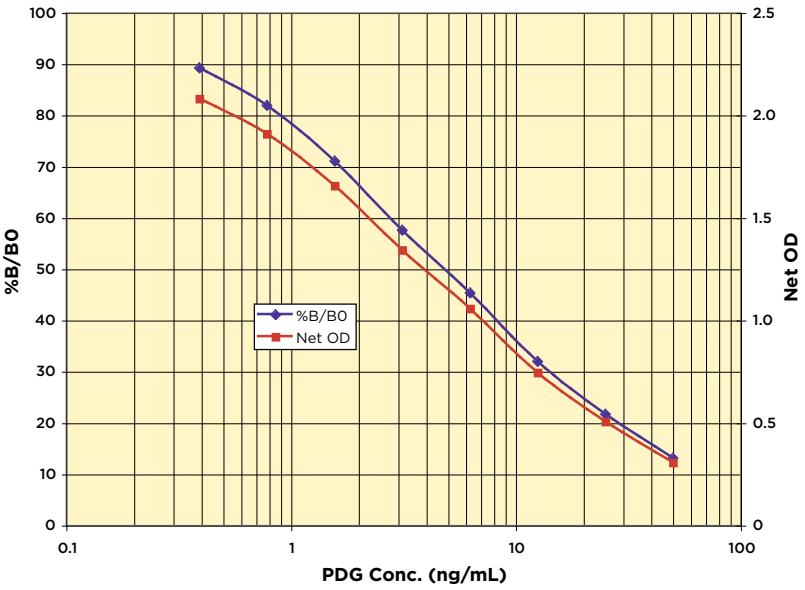
Pregnanediol-3-Glucuronide, also known as PDG, is the major metabolite of progesterone. Progesterone is an essential regulator of female reproductive function in the uterus, ovary, mammary gland and brain, and plays an important role in non-reproductive tissues such as the cardiovascular system, skeletal system and the central nervous system.

Application

Progesterone action is conveyed by two isoforms of the nuclear progesterone receptor (PR), PRA and PRB. PRA and B are expressed in a variety of normal breast tissue from humans, rats and mice and is also expressed in breast cancer cells. Progesterone also has neurotrophic roles in the peripheral nervous system as it activates the growth and maturation of axons and stimulates the repair and replacement of myelin sheaths in regenerating nerve fibres.

Our Assay

The DetectX® Pregnanediol-3-Glucuronide (PDG) EIA Kits are designed to measure PDG present in urine and extracted dried fecal, serum, plasma and media samples. A PDG standard is provided for the assays. Standards or samples are pipetted into a coated microtiter plate, and PDG-peroxidase conjugate is added to the wells. The binding reaction is initiated by the addition of a polyclonal antibody to PDG. After a 2-hour incubation, the plate is washed and substrate is added. The substrate reacts with the bound PDG conjugate. The color generated is measured at 450 nm.



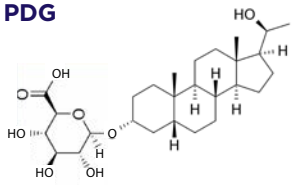
Catalog Number

K037-H1 (1 Plate)
K037-H5 (5 Plate)

Features

- **Use**
  Non-Invasive Pregnancy Marker
- **Sample**
  Dried Fecal Extracts, Urine, TCM, Extracted Serum and Plasma
- **Species**
  Species Independent
- **Time to Answer**
  2.5 Hours
- **Samples/Kit**
  41 or 233 in Duplicate

PDG



Related Products

Estradiol EIA Kits
Catalog No. K030-H1/H5, KB30-H1/H5

Estrone EIA Kits
Catalog No. K031-H1/H5

Estrone-3-Glucuronide (E1G) EIA Kits
Catalog No. K036-H1/H5

Progesterone EIA Kits
Catalog No. K025-H1/H5

PGFM EIA Kits
Catalog No. K022-H1/H5

Ceruloplasmin (Cp) Activity Kit
Catalog No. K035-H1

MULTI SPECIES
MOST SENSITIVE

Progesterone EIA Kits

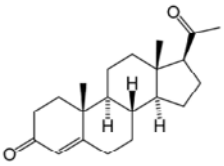
Catalog Number

K025-H1 (1 Plate)
K025-H5 (5 Plate)

Features

- **Use**
  Non-Invasive Pregnancy Determination
- **Sample**
  Urine, Fecal Extract, Buffer, Extracted Serum and Plasma
- **Species**
  Species Independent
- **Time to Answer**
  2.5 Hours
- **Samples/Kit**
  39 or 231 in Duplicate

Progesterone



Related Products

Estradiol EIA Kits
Catalog No. K030-H1/H5, KB30-H1/H5

Estrone EIA Kits
Catalog No. K031-H1/H5

Estrone-3-Glucuronide (E1G) EIA Kits
Catalog No. K036-H1/H5

PGFM EIA Kits
Catalog No. K022-H1/H5

Ceruloplasmin (Cp) Activity Kit
Catalog No. K035-H1

Pregnanediol-3-Glucuronide (PDG) EIA Kits
Catalog No. K037-H1/H5

MULTI SPECIES

Scientific Relevance

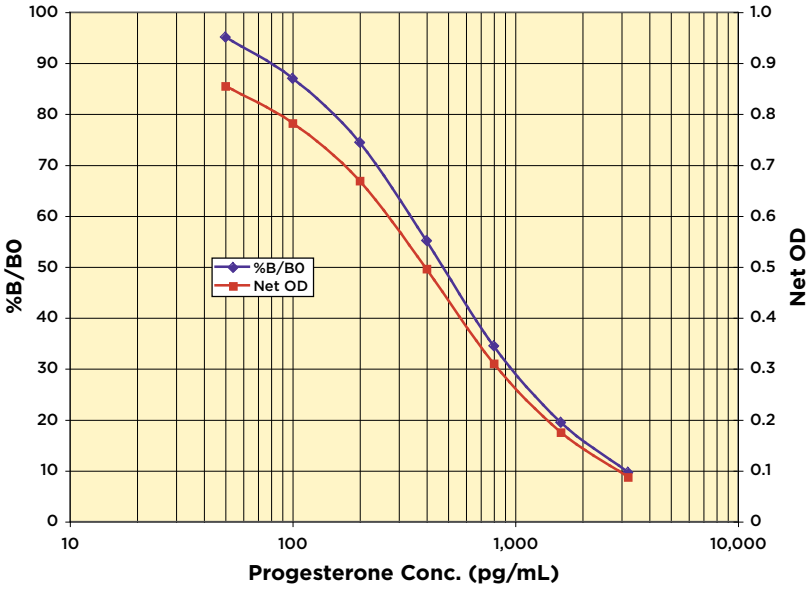
Progesterone, also known as P4, is a C-21 steroid hormone involved in the female menstrual cycle, gestation and embryogenesis of humans and other species. Progesterone belongs to a class of hormones called progestogens, and is the major naturally occurring human progestogen.

Application

Progesterone is an essential regulator of human female reproductive function in the uterus, ovary, mammary gland and brain, and plays an important role in non-reproductive tissues such as the cardiovascular system, bone and the central nervous system. Progesterone action is conveyed by two isoforms of the nuclear progesterone receptor (PR), PRA and PRB. PRA and B are expressed in a variety of normal breast tissue from humans, rats, and mice and is also expressed in breast cancer cells. Progesterone also has neurotrophic roles in the peripheral nervous system as it activates the growth and maturation of axons and stimulates the repair and replacement of myelin sheaths in regenerating nerve fibers.

Our Assays

The DetectX® Progesterone EIA Kits use a specifically generated antibody to measure progesterone and its metabolites in urine and fecal samples, or in extracted serum and plasma. The kit will quantitatively measure progesterone present in diluted buffer samples and tissue culture media samples. A progesterone standard is provided. Standards or diluted samples are pipetted into a coated clear microtiter plate and a progesterone-peroxidase conjugate is added. The binding reaction is initiated by the addition of a monoclonal antibody to progesterone. After a 2 hour incubation, the plate is washed, substrate is added and the color is measured at 450 nm



Prolactin (PRL) EIA Kit

Scientific Relevance

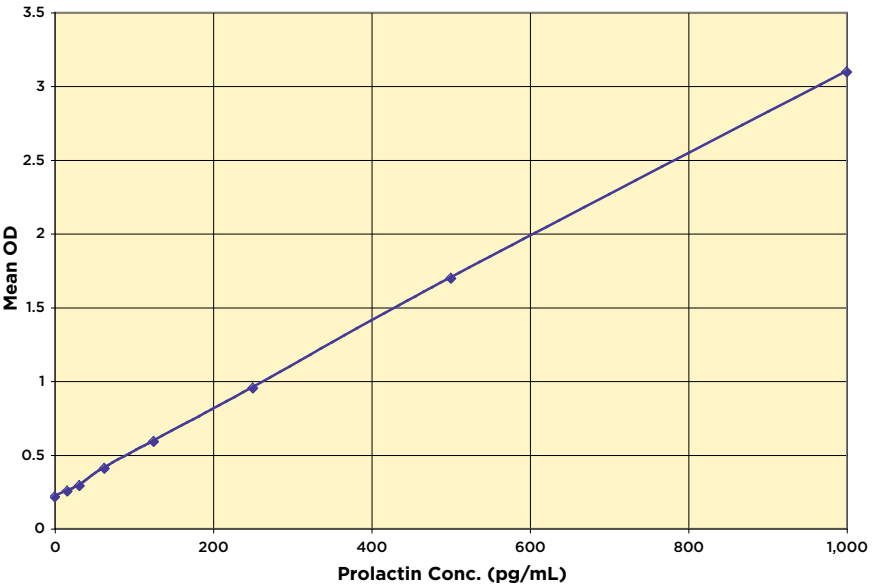
Prolactin (PRL) is a polypeptide hormone that is synthesized and secreted from specialized cells of the anterior pituitary gland. The hormone was given its name based on the fact that an extract of bovine pituitary gland would cause growth of the crop sac and stimulate the production of milk in pigeons or promote lactation in rabbits. However it is now appreciated that prolactin has over 300 separate biological activities. The prolactin gene is composed of 5 exons and 4 introns. Transcription of the prolactin gene is regulated by two independent promoter regions. The sequence homology can vary from up to 97% among primates to as low as 56% between primates and rodents. In rats and mice, pituitary prolactin consists of 197 amino acids, whereas in sheep, pigs, cattle, and humans it consists of 199 amino acids with a molecular weight of about 23,000 Da. The prolactin molecule is arranged in a single chain of amino acids with three intramolecular disulfide bonds between six cysteine residues (Cys^{4}-Cys^{11}, Cys^{58}-Cys^{174}, and Cys^{191}-Cys^{199} in humans).

Application

Prolactin has multiple roles in reproduction other than lactation, and it also plays multiple homeostatic roles in the organism. Prolactin signal transduction involves the JAK/STAT families and Src kinase family.

Our Assay

The DetectX® Prolactin (PRL) EIA Kit is designed to quantitatively measure PRL present in serum, plasma and tissue culture media. A human prolactin standard is provided. Standards or diluted samples are pipetted into a clear microtiter plate coated with a monoclonal antibody to PRL. After incubation, the plate is washed and a peroxidase conjugated PRL antibody is added. The plate is again incubated and washed. Substrate is then added to the plate, which reacts with the bound PRL conjugated antibody and the generated color is measured at 450 nm.



Catalog Number

K040-H1 (1 Plate)

Features

- **Use**
  Pregnancy Marker
- **Sensitive**
  < 12 pg/mL Human Prolactin
- **Sample**
  Serum, Plasma, TCM
- **Species**
  Human, Elephants
- **Samples/Kit**
  40 in Duplicate
- **Time to Answer**
  2.5 Hours

Related Products

Estradiol EIA Kits
Catalog No. K030-H1/H5, KB30-H1/H5

Progesterone EIA Kits
Catalog No. K025-H1/H5

PGFM EIA Kits
Catalog No. K022-H1/H5

Ceruloplasmin (Cp) Activity Kit
Catalog No. K035-H1

Estrone EIA Kits
Catalog No. K031-H1/H5

Oxytocin EIA & CLIA Kits
Catalog No. K048-H1/H5, K048-C1/C5

N-CAL™ KIT
MULTI SPECIES

13,14-dihydro-15-keto-Prostaglandin $F_{2\alpha}$ (PGFM) EIA Kits

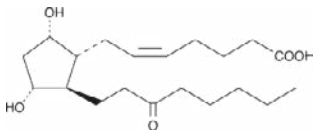
Catalog Number

K022-H1 (1 Plate)
K022-H5 (5 Plate)

Features

- **Use**
  Non-Invasive Pregnancy Marker
- **Sample**
  Fecal Extracts, Urine, Serum, Plasma, TCM
- **Time to Answer**
  90 Minutes
- **Samples/Kit**
  39 or 231 in Duplicate
- **Selective**
  No Cross Reactivity to Other Related PGF Metabolites

PGFM



Related Products

Estradiol EIA Kits
Catalog No. K030-H1/H5, KB30-H1/H5

Progesterone EIA Kits
Catalog No. K025-H1/H5

Ceruloplasmin (Cp) Activity Kit
Catalog No. K035-H1

Estrone EIA Kits
Catalog No. K031-H1/H5

Estrone-3-Glucuronide (E1G) EIA Kits
Catalog No. K036-H1/H5

Pregnanediol-3-Glucuronide (PDG) EIA Kits
Catalog No. K037-H1/H5

MULTI SPECIES
MOST SENSITIVE

Scientific Relevance

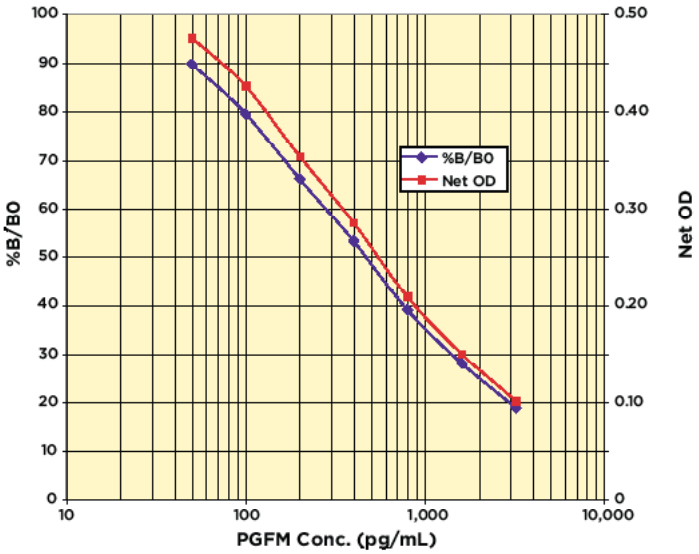
In many species, uterine and placental Prostaglandin $F_{2\alpha}$ ($PGF_{2\alpha}$) is involved in the regulation of reproductive and pregnancy-related processes such as embryonic development, initiation of parturition, and resumption of ovarian activity. In domestic ruminants, uterine tissue is a primary source of $PGF_{2\alpha}$, and secretion of uterine $PGF_{2\alpha}$ is a key regulator for the cyclical regression of the corpus luteum. Prostaglandin $F_{2\alpha}$ is metabolized to PGFM (13,14-dihydro-15-keto-$PGF_{2\alpha}$) during the first passage through the lungs. PGFM has a longer half-life in peripheral circulation than $PGF_{2\alpha}$ and has been applied as a useful analytical marker of $PGF_{2\alpha}$.

Application

PGFM has been suggested as a useful non-invasive marker of pregnancy when measured in both urine and fecal samples. It has been shown to be a precise, practical method for this application in these matrices. Parallel courses were obtained when comparing urinary and fecal PGFM in a variety of felids and other species, and only a simple dilution of fecal extracts is necessary prior to analyses. Fecal PGFM analyses may allow pregnancy diagnosis in captive and free-ranging felids. Recent evidence has suggested that PGFM may also be a useful pregnancy marker in some other non-felid species, especially panda bears.

Our Assay

The DetectX® 13,14-dihydro-15-keto-$PGF_{2\alpha}$ (PGFM) EIA Kits are designed to measure PGFM present in urine, extracted dried fecal, and extracted serum, and plasma samples. A PGFM standard is provided for the assays. Standards or samples are pipetted into a coated microtiter plate, and PGFM-peroxidase conjugate is added to the wells. The binding reaction is initiated by the addition of a polyclonal antibody to PGFM. After a 2 hour incubation, the plate is washed and substrate is added. The substrate reacts with the bound PGFM conjugate. After a short incubation the intensity of the generated color is measured at 450 nm.



Prostaglandin E_2 (PGE_2) Multi-Format EIA Kits

Scientific Relevance

Eicosanoid signal transduction pathways are highly conserved and are involved in a number of physiological processes. Prostaglandins are synthesized from arachidonic acid by cyclooxygenase (COX)-1 or -2, which converts the acid into PGH_2. This is further processed by cytosolic or microsomal prostaglandin synthases to become PGE_2 or one of several other prostanoids. Prostacyclin is the major cyclooxygenase product in blood vessel walls and it is present in inflammatory fluids in similar concentrations to PGE_2. Prostacyclin is a potent vasodilator and is more potent than PGE_2 in producing hyperalgesia.

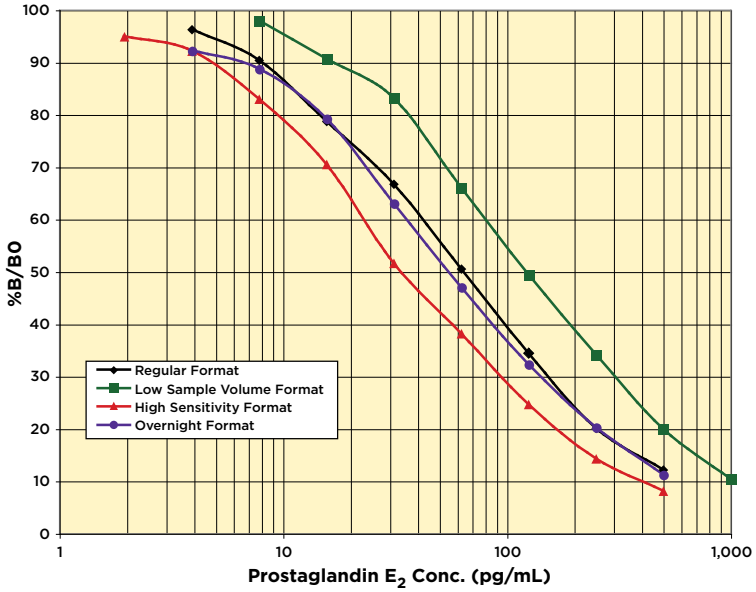
Application

PGE_2 is produced by a wide variety of tissues and in several pathological conditions, including inflammation, arthritis, fever, tissue injury, endometriosis, and a variety of cancers. Other biological actions of PGE_2 include vasodilation, modulation of sleep/wake cycles, and facilitation of human immunodeficiency virus replication. It elevates cAMP levels, stimulates bone resorption, and has thermoregulatory effects. It has been shown to be a regulator of sodium excretion and renal hemodynamics.

Our Assay

The DetectX® E_2 (PGE_2) Multi-Format EIA Kits are designed to quantitatively measure PGE_2 present in serum, plasma, urine, tissues, saliva and culture media samples. This EIA allows all samples to be measured with just one kit. The monoclonal antibody shows the same binding characteristics at 2 or 16 hour incubation. These kits allow samples as low as 2 pg/mL to be measured in less than 3 hours. They exhibit excellent cross reactivity and low sample requirements.

A PGE_2 standard is provided to generate a standard curve for the assay and all samples should be read off the standard curve. Standards or diluted samples are pipetted into a clear microtiter plate coated with an antibody to capture mouse antibodies. A PGE_2-peroxidase conjugate is added to the standards and samples in the wells. The binding reaction is initiated by the addition of a monoclonal antibody to PGE_2. After incubation, the plate is washed and substrate is added. The substrate reacts with the bound PGE_2-peroxidase conjugate. After a short incubation, the intensity of the generated color is read at 450nm.



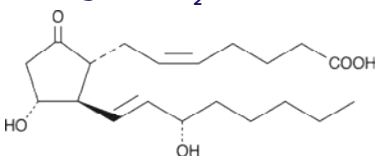
Catalog Number

K051-H1 (1 Plate)
K051-H5 (5 Plate)

Features

- **Use**
  Measure PGE_2 Between 1,000 - 2 pg/mL
- **Sample**
  Serum, Plasma, Urine, Tissues, Saliva, and TCM
- **Convenient**
  One Kit for Rapid, Sensitive, Low Sample Volumes
- **Samples/Kit**
  39 or 231 in Duplicate
- **Sensitivity**
  3.07 pg/mL
- **Versatile**
  Works directly with Mouse and Rat Serum

Prostaglandin E_2



Related Products

Protein Kinase A (PKA) Activity Kit
Catalog No. K027-H1

Cyclic AMP (cAMP) EIA & CLIA Kits
Catalog No. K019-H1/H5, K019-C1/C5

Cyclic GMP (cGMP) EIA & CLIA Kits
Catalog No. K020-H1/H5, K020-C1/C5

Nitric Oxide Detection Kit
Catalog No. K023-H1

Endothelin-1 (ET-1) EIA Kit
Catalog No. K045-H1

Human Myeloperoxidase (MPO) EIA Kit
Catalog No. K060-H1

MULTI SPECIES
MOST SENSITIVE

Protein Kinase A (PKA) Colorimetric Activity Kit

Catalog Number

K027-H1 (1 Plate)

Features

- **Use**
  Measure PKA Activity in Cell Lysate, Tissue Extracts and Buffers
- **Quantitative**
  Recombinant Active PKA Standard
- **Convenient**
  DualRead™ System Allows Detection of a Wide Range in Activity
- **Sensitive**
  < 0.4 U/mL
- **Samples/Kit**
  42 in Duplicate

Related Products

Prostaglandin E_2 (PGE_2) Multi-Format EIA Kits
Catalog No. K051-H1/H5

Cyclic AMP (cAMP) EIA & CLIA Kits
Catalog No. K019-H1/H5, K019-C1/C5

Cyclic GMP (cGMP) EIA & CLIA Kits
Catalog No. K020-H1/H5, K020-C1/C5

Nitric Oxide Detection Kit
Catalog No. K023-H1

IBMX Phosphodiesterase Inhibitor
Catalog No. P019-100MG, P019-1GM

BRL-504481 Phosphodiesterase Inhibitor
Catalog No. P020-10MG, P020-50MG

Scientific Relevance

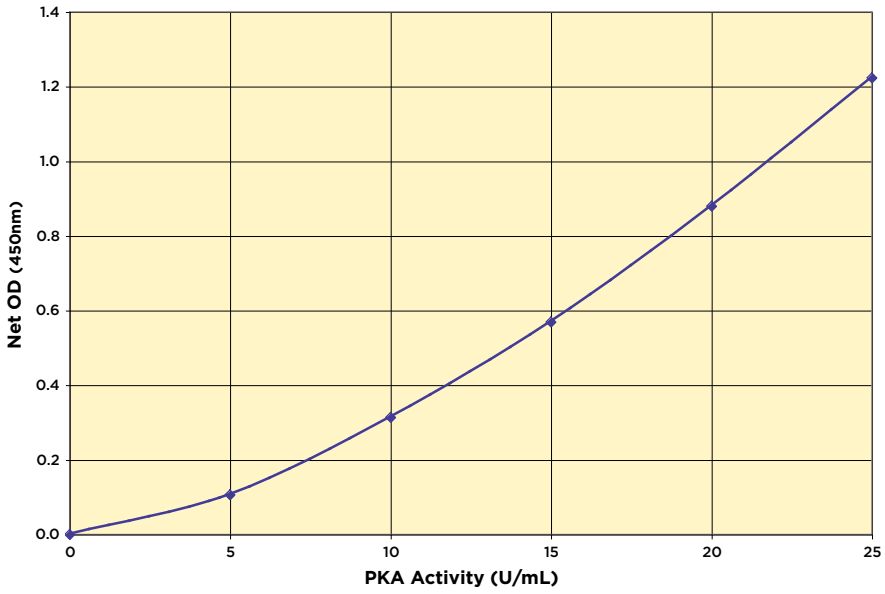
PKA was discovered in the laboratory of Edwin G. Krebs in the 1960's. This important class of kinases, referred to as Arg-directed kinases or AGC-family kinases, includes cAMP-dependent protein kinase (PKA or cAPK), cGMP-dependent protein kinase (PKG), protein kinase C, Akt and RSK. These kinases share a substrate specificity characterized by Arg at position 3, relative to the phosphorylated serine or threonine. The second messenger cyclic AMP (cAMP) activates PKA in mammalian cells and controls processes such as gene transcription, ion transport, and protein phosphorylation. Inactive PKA is a heterotetramer composed of a regulatory subunit dimer and a catalytic subunit dimer. PKA shares substrate specificity with Akt (PKB) and PKC. Substrates that present this consensus sequence and are phosphorylated by PKA are Bad (Ser^{155}), CREB (Ser^{133}), and GSK-3 (GSK-3α Ser^{21} and GSK-3ß Ser^{9}).

Application

PKA has been implicated in numerous cellular processes, including modulation of other protein kinases, regulation of intracellular calcium concentration, and regulation of transcription. Transcriptional responses to increased cAMP occur through activation of the cAMP response element–binding protein (CREB), cAMP response element modulator (CREM), and activating transcription factor 1 (ATF1). Each of these transcription factors contains a kinase-inducible domain containing a conserved site for phosphorylation by PKA.

Our Assay

The DetectX® PKA (Protein Kinase A) Activity Kit is designed to quantitatively measure PKA activity. A recombinant enzymatically active PKA standard is provided. The kit utilizes an immobilized PKA substrate bound to a microtiter plate. Samples containing PKA will phosphorylate the immobilized PKA substrate. A rabbit antibody specific for the phospho-PKA substrate binds to the modified immobilized substrate. An antibody specific for rabbit IgG labeled with peroxidase is then added to the plate to bind to the rabbit anti-phospho-PKA substrate. After incubation and wash, substrate is added and the color is measured at 450 nm.



“ Arbor Assay is the most friendly, helpful company that I have ever worked with. The products that I have utilized are straight forward and provide reproducible results. I would recommend the products and the advice from staff to anyone.”

JC, University of Virginia Medical School

Retinol Binding Protein (RBP) Multi-Format EIA Kits

Catalog Number

Serum RBP

K062-H1 (1 Plate)
K062-H5 (5 Plate)

Features

- **Use**
  Measure a Broad Range of RBP Concentrations in a Variety of Samples
- **Sample**
  Serum, Plasma, Urine, Dried Blood Spots
- **Species**
  Species Independent
- **Time to Answer**
  90 Minutes
- **Samples/Kit**
  38 or 230 in Duplicate

Related Products

BCA Protein Dual Range Detection Kit
Catalog No. K041-H1

Hemoglobin Detection Kit
Catalog No. K013-H1

Human Cystatin C EIA Kit
Catalog No. K012-H1

Creatinine Serum Detection Kits
Catalog No. KB02-H1/H2/H1D

Creatinine Urinary Detection Kits
Catalog No. K002-H1/H5

Thiol Fluorescent Detection Kit
Catalog No. K005-F1

Urea Nitrogen (BUN) Detection Kits
Catalog No. K024-H1/H5

MULTI SPECIES
MOST SENSITIVE

Scientific Relevance

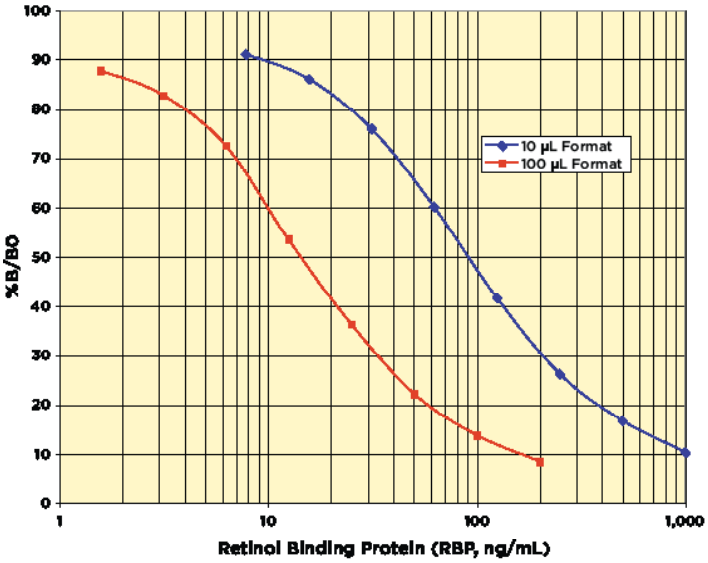
Retinol binding protein (RBP) is from a family of structurally related proteins that bind small hydrophobic molecules such as bile pigments, steroids, odorants, etc. RBP is a 21 kDa highly conserved, single-chain glycoprotein, consisting of 182 amino acids with 3 disulfide bonds, and a hydrophobic pocket which binds retinol.

Application

In urine RBP has been shown to be a useful marker for renal function as it is totally filtered by the glomeruli and reabsorbed by proximal tubules. This has made RBP a tool to study renal function in heart or kidney transplant recipients, type 1 and 2 diabetics, and in people exposed to uranium from mining operations. Modulating RBP4 levels may lead to new strategies in treating type 2 diabetes. When in serum, the majority of RBP bound with retinol is reversibly complexed with transthyretin. This complex transports retinol to specific receptors of various tissues in the body. Vitamin A status is reflected by serum concentration as it is homeostatically controlled and does not fall until stores are drastically reduced. RBP has been shown to be a useful surrogate marker for retinol because of the correlation between retinol and RBP in serum, which implies that RBP may be used to monitor vitamin A deficiency (VAD). The WHO has estimated that 250 million children have moderate to severe VAD due to lack of adequate nutrition, and the rising cost of food staples around the world further exacerbates this problem. In addition to nutritional deficiencies, infectious stresses have been shown to depress retinol concentrations and individuals with diseases such as cystic fibrosis and HIV-1 also run the risk of VAD due to the infectious stresses that contribute to the disease.

Our Assay

The DetectX® Retinol Binding Protein (RBP) Multi-Format EIA Kits are designed to allow for the measurement of both high and low RBP levels in a variety of samples including dried blood spots, serum, EDTA and heparin plasma and urine with the same kit. The kits use native human RBP as a standard. Standards or diluted samples are added to a coated microtiter plate along with a RBP-peroxidase conjugate and the binding reaction initiated by addition of a RBP-specific sheep antibody. After a 60-minute incubation, the plate is washed and TMB substrate solution added. After 30 minutes, the color development is stopped and the intensity of the generated signal is read at 450nm.



Human ST2 EIA Kit

Scientific Relevance

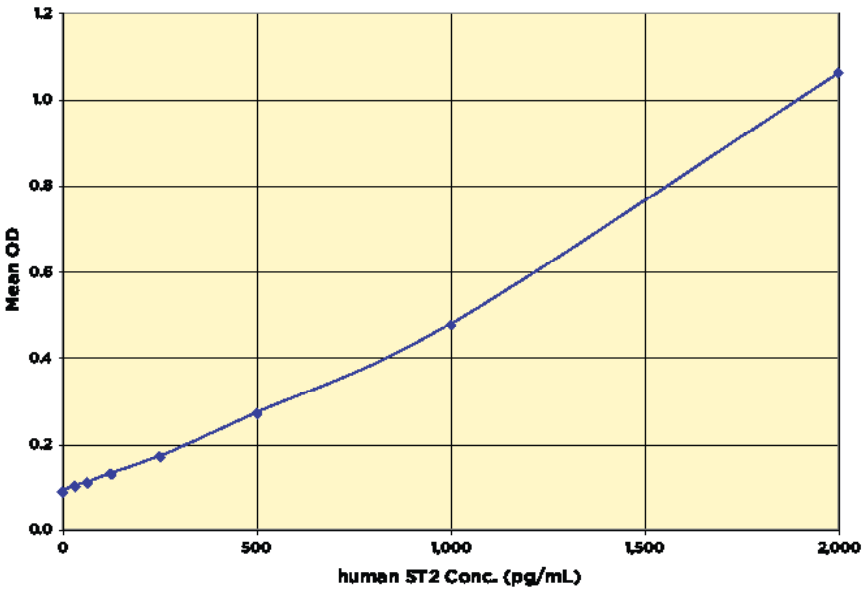
ST2 (also known as IL1RL1, DER4, T1 and FIT-1) is a member of the Toll-like/IL-1-receptor superfamily. The interleukin-1 (IL-1) receptor family has several members, including the classical interleukin-1 receptor (IL-1R) and the interleukin-18 receptor (IL-18R). In 1989, one member of the family, ST2, was identified as an orphan receptor. Investigation into the function of ST2 revealed its participation in inflammatory processes, particularly regarding mast cells, type 2 $CD4^+$ T-helper cells, and the production of Th2-associated cytokines. ST2 was characterized as a specific cellular marker that differentiated Th2 from Th1 T-cells. The gene for ST2 spans ~40 kb on human chromosome 2q12, and is part of the larger human IL-1 gene cluster of ~200 kb. ST2 is conserved across species, with homologues in the genomes of mouse, rat, and fruitfly. The ~37 kD unglycosylated secreted protein is converted into a 60–70 kD glycosylated product, which is the soluble form of ST2, sST2.

Application

Clinical and experimental observations led to the association of ST2 with diseases such as asthma, pulmonary fibrosis, rheumatoid arthritis, collagen vascular diseases, and septic shock. Serum levels of ST2 are elevated in patients with acute cases of bronchial asthma, and in emergency-room patients presenting with shortness of breath, serum levels of ST2 can discriminate between heart failure and non-cardiovascular etiologies.

Our Assay

The DetectX® ST2 EIA Kit is designed to quantitatively measure ST2 present in a variety of samples and tissue culture media. A recombinant human ST2 standard is provided. Standards or diluted samples are pipetted into a clear microtiter plate coated with a monoclonal antibody to capture ST2 present in the sample. After a 60 minute incubation, the plate is washed. A biotin-labeled ST2 antibody is added and the plate is again incubated for 60 minutes and washed. Peroxidase conjugated to streptavidin is added and the plate is incubated for 30 minutes and washed. Substrate is then added to the plate, which reacts with the bound ST2 conjugated antibody. After a fourth incubation, the reaction is stopped and the intensity of the generated color is read at 450 nm.



Catalog Number

K055-H1 (1 Plate)

Features

- **Use**
  Serum, Plasma, TCM
- **Species**
  Human
- **Time to Answer**
  3 Hours
- **Samples/Kit**
  40 in Duplicate

Related Products

Hemoglobin Detection Kit
Catalog No. K013-H1

Human Myeloperoxidase (MPO) EIA Kit
Catalog No. K060-H1

Prostaglandin E_2 (PGE_2) Multi-Format EIA Kits
Catalog No. K051-H1/H5

Cortisol EIA Kits
Catalog No. K003-H1/H5/H1W/H5W

> The order process with you is always quick and easy, it's always a pleasure to speak with you!
>
> PM

Superoxide Dismutase (SOD) Activity Kit

Catalog Number
K028-H1 (2 Plate)

Features
- **Use**
  Oxidative Stress Marker
- **Samples**
  Serum, Plasma, Cells, Tissues, Buffers, Erythrocyte Lysates
- **Rapid**
  20 Minutes
- **Samples/Kit**
  89 in Duplicate
- **Stability**
  Liquid 4˚C Stable Reagents

Related Products
Hydrogen Peroxide Detection Kits
Catalog No. K034-H1, K034-F1

Catalase Activity Kits
Catalog No. K033-H1, K033-F1

FRAP™ (Ferric Reducing Antioxidant Power) Detection Kit
Catalog No. K043-H1

Glutathione Fluorescent Detection Kits
Catalog No. K006-F1/F5/F1D

Glutathione Colorimetric Detection Kits
Catalog No. K006-H1/H1C-H/H1C-L

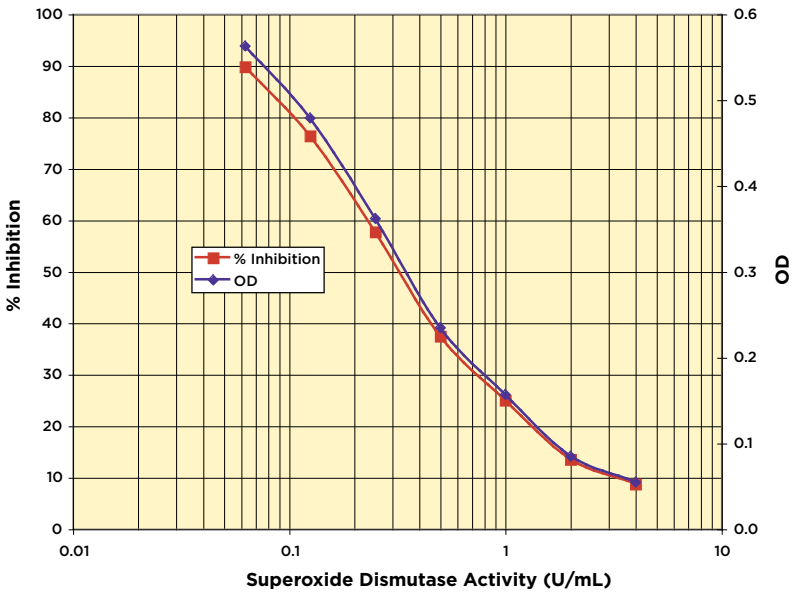
Glutathione Reductase (GR) Activity Kit
Catalog No. K009-F1

MULTI SPECIES
MOST SENSITIVE

Scientific Relevance
Short-lived and highly reactive oxygen species (ROS) such as $O_2^{-}\cdot$ (superoxide), ·OH (hydroxyl radical), and H_2O_2 (hydrogen peroxide) are continuously generated *in vivo*. In the resting state, the balance between antioxidants and oxidants is sufficient to prevent the disruption of normal physiologic functions; however, either increases in oxidants or decreases in antioxidants can disrupt this balance giving rise to elevated levels of ROS. The cellular levels of ROS are controlled by antioxidant enzymes and small molecule antioxidants. The major antioxidant enzymes, superoxide dismutases (SODs), including copper-zinc superoxide dismutase (Cu/ZnSOD, SOD1), manganese superoxide dismutase (MnSOD, SOD2) and extracellular superoxide dismutase (EC-SOD, SOD3), all play critical roles in scavenging $O_2^{-}\cdot$.

Application
Decreased SOD activity results in an elevated level of superoxide which in turn leads to decreased NO but increased peroxynitrite concentrations. The major intracellular SOD is a 32-kD copper and zinc containing homodimer (Cu/Zn SOD). The mitochondrial SOD (MnSOD) is a manganese-containing 93-kD homotetramer that is synthesized in the cytoplasm and translocated to the inner matrix of mitochondria. EC-SOD is the primary extracellular SOD enzyme and is highly expressed in many organs. Increased SOD activity levels are seen in Downs Syndrome while decreased activity is seen in diabetes, Alzheimer's disease, rheumatoid arthritis, Parkinson's disease, uremic anemia, atherosclerosis, some cancers, and thyroid dysfunction.

Our Assay
The DetectX® Superoxide Dismutase (SOD) Activity Kit is designed to quantitatively measure SOD activity. The assay measures all types of SOD activity, including Cu/Zn, Mn, and Fe SOD types. A bovine erythrocyte SOD standard is provided. Samples are diluted in our specially colored Sample Diluent and added to the wells. The Substrate is added, followed by Xanthine Oxidase Reagent and incubated for 20 minutes. The Xanthine Oxidase generates superoxide in the presence of oxygen, which converts the colorless substrate into a yellow colored product. The colored product is read at 450 nm. Increasing levels of SOD in the samples causes a decrease in superoxide concentration.



Testosterone EIA Kits

Scientific Relevance

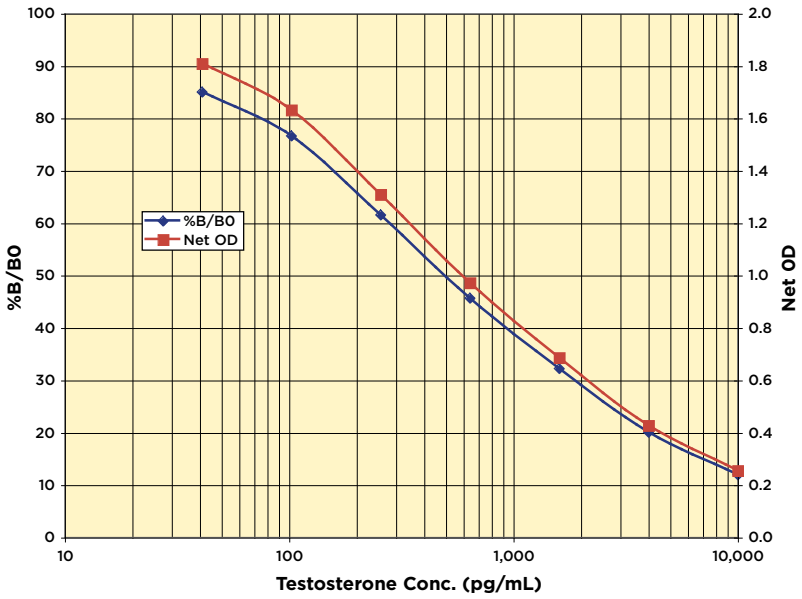
Testosterone is a steroid hormone from the androgen group found in mammals, reptiles, birds, and other vertebrates. In mammals, testosterone is primarily secreted in the testes of males and the ovaries of females, although small amounts are also secreted by the adrenal glands. It is the principal male sex hormone and an anabolic steroid.

Application

In men, testosterone plays a key role in the development of male reproductive tissues such as the testis and prostate as well as promoting secondary sexual characteristics. In the absence of testosterone stimulation, spermatogenesis does not proceed beyond the meiosis stage. Testosterone also plays a significant role in glucose homeostasis and lipid metabolism. Metabolic syndrome is a clustering of risk factors predisposing to type 2 diabetes, atherosclerosis, and cardiovascular morbidity and mortality. Testosterone is observed in most vertebrates. Fish make a slightly different form called 11-ketotestosterone. Its counterpart in insects is ecdysone. These ubiquitous steroids suggest that sex hormones have an ancient evolutionary history.

Our Assays

The DetectX® Testosterone EIA Kits use a specifically generated antibody to measure testosterone and its metabolites in urine and fecal samples, or in extracted serum and plasma. A testosterone standard is provided. Standards or diluted samples are pipetted into coated clear microtiter plates and a testosterone-peroxidase conjugate is added to the standards and samples. The binding reaction is initiated by the addition of a polyclonal antibody to testosterone. After a 2-hour incubation, the plate is washed and substrate is added that reacts with the bound testosterone-peroxidase conjugate and the generated color is measured at 450 nm.



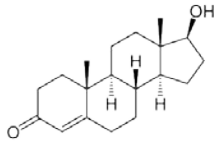
Catalog Number

K032-H1 (1 Plate)
K032-H5 (5 Plate)

Features

- **Use**
  Non-Invasive Androgen Determination
- **Sample**
  Dried Fecal Extracts, Urine, Extracted Serum and Plasma, TCM
- **Species**
  Species Independent
- **Time to Answer**
  2.5 Hours
- **Samples/Kit**
  39 or 231 in Duplicate

Testosterone



Related Products

Estradiol EIA Kits
Catalog No. K030-H1/H5, KB30-H1/H5

Estrone-3-Glucuronide (E1G) EIA Kits
Catalog No. K036-H1/H5

Progesterone EIA Kits
Catalog No. K025-H1/H5

PGFM EIA Kits
Catalog No. K022-H1/H5

Ceruloplasmin (Cp) Activity Kit
Catalog No. K035-H1

Pregnanediol-3-Glucuronide (PDG) EIA Kits
Catalog No. K037-H1/H5

MULTI SPECIES

Thiol (SH) Fluorescent Detection Kit

Catalog Number

K005-F1 (1 Plate)

Features

- **Use**
  Measure SH Groups in Proteins and Peptides in Biological Buffers
- **Convenient**
  Measure SH Easily, Even in GuHCl
- **Sensitivity**
  4.62 nM
- **Samples/Kit**
  39 in Duplicate
- **Stability**
  Liquid 4˚C Stable Reagents

Related Products

Glutathione Fluorescent Detection Kits
Catalog No. K006-F1/F5/F1D

Glutathione Colorimetric Detection Kits
Catalog No. K006-H1/H1C-H/H1C-L

Glutathione Reductase (GR) Activity Kit
Catalog No. K009-F1

Scientific Relevance

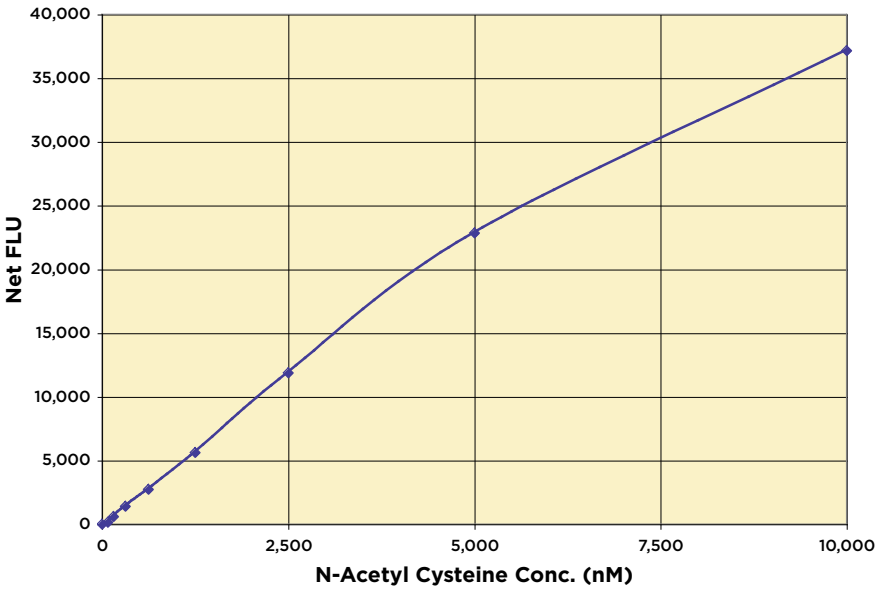
Free thiols in biological systems have important roles. Oxidatively modified thiol groups of cysteine residues are known to modulate the activity of a growing number of proteins.

Application

A pressing problem is to accurately determine the extent of modification of specific amino acids, such as cysteine residues, in a complex protein sample, especially in the presence of chaotropic agents such as guanidine hydrochloride. Ellman's Reagent, 5,5′-dithio-bis-[2-nitrobenzoic acid], has traditionally been used to determine SH content by its conversion to thio-2-nitrobenzoic acid (NTB). However NTB has an extinction coefficient that limits the sensitivity of SH determination to about 5 µM SH content. ThioStar® detection can easily measure SH content 1,000-fold lower.

Our Assay

The DetectX® Thiol Detection Kit is designed to quantitatively measure thiol groups generated or present in biological samples. A standard is provided. Samples and standards are pipetted into a black microtiter plate. After mixing the sample or standard with ThioStar® and incubating at room temperature for 30 minutes, the fluorescent product is read at 510 nm in a fluorescent plate reader with excitation at 390 nm.



Thyroxine (T_4) EIA Kits

Scientific Relevance

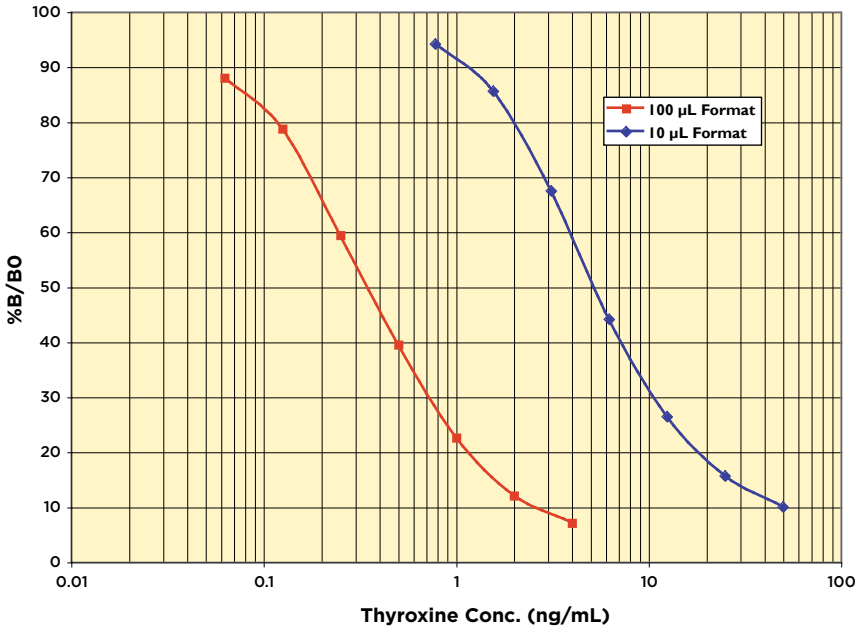
The thyroid hormones, triiodothyronine (T_3) and thyroxine (T_4), are tyrosine-based hormones produced by the thyroid gland that are primarily responsible for regulation of metabolism. Iodine is necessary for the production of T_3 and T_4. The major form of thyroid hormone in the blood is T_4, which has a longer half-life than T_3. The ratio of T_4 to T_3 released into the blood is roughly 20 to 1. T_4 is converted to the active T_3 (three to four times more potent than T_4) within cells by deiodinases (5'-iodinase). These are further processed by decarboxylation and deiodination to produce iodothyronamine (T_1a) and thyronamine (T_0a).

Application

A deficiency of iodine leads to decreased production of T_3 and T_4, enlarges the thyroid tissue and will cause the disease known as goitre. All three isoforms of the deiodinases are selenium-containing enzymes, thus dietary selenium is essential for T_3 production. Hypothyroidism is the condition that results from under-production of thyroxine by the thyroid gland either because the gland is naturally underactive or because radioiodine therapy or surgery for an overactive gland has resulted in underactivity. Thyroxine is commonly taken to replace the deficiency which exists in such situations and therefore to restore normal metabolic activity. The concentration of T_3 and T_4 in the blood regulates the pituitary release of thyrotropin in a negative feedback loop such that when T_3 and T_4 concentrations are high, TSH production is decreased.

Our Assay

The DetectX® Thyroxine (T_4) EIA Kits use a specifically generated antibody to measure T_4 in fecal samples, serum and plasma. A T_4 standard is provided. Standards or diluted samples are pipetted into coated clear microtiter plates, and a T_4-peroxidase conjugate is added. The binding reaction is initiated by the addition of a monoclonal antibody to T_4. After an hour incubation the plate is washed and substrate is added which reacts with the bound T_4-peroxidase conjugate and the generated color is measured at 450 nm.



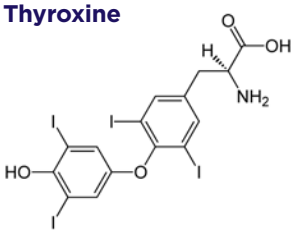
Catalog Number

K050-H1 (1 Plate)
K050-H5 (5 Plate)

Features

- **Use**
  Non-Invasive Metabolic Determination
- **Sample**
  Dried Fecal Extracts, Serum, Plasma, Urine, and Media
- **Species**
  Species Independent
- **Time to Answer**
  90 Minutes
- **Samples/Kit**
  39 or 231 in Duplicate

Thyroxine



Related Products

Glucose Detection Kits
Catalog No. K039-H1, K039-F1

Urea Nitrogen (BUN) Detection Kits
Catalog No. K024-H1/H5

BCA Protein Dual Range Detection Kit
Catalog No. K041-H1

Creatinine Urinary Detection Kits
Catalog No. K002-H1/H5

Triiodothyronine (T_3) EIA Kits
Catalog No. K056-H1/H5

MULTI SPECIES

Triiodothyronine (T_3) EIA Kit

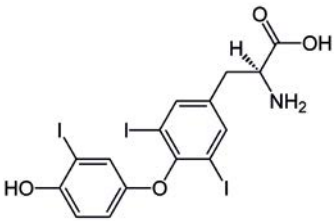
Catalog Number

K056-H1 (1 Plate)
K056-H5 (5 Plate)

Features

- **Use**
  Non-Invasive Metabolic Determination
- **Sample**
  Dried Fecal Extracts, Serum, Plasma, Urine, and TCM
- **Species**
  Species Independent
- **Time to Answer**
  2.5 Hours
- **Samples/Kit**
  39 or 221 in Duplicate

Triiodothyronine



Related Products

Thyroxine (T_4) EIA Kits
Catalog No. K050-H1/H5

Glucose Detection Kits
Catalog No. K039-H1, K039-F1

Urea Nitrogen (BUN) Detection Kits
Catalog No. K024-H1/H5

BCA Protein Dual Range Detection Kit
Catalog No. K041-H1

Creatinine Urinary Detection Kits
Catalog No. K002-H1/H5

MULTI SPECIES

Scientific Relevance

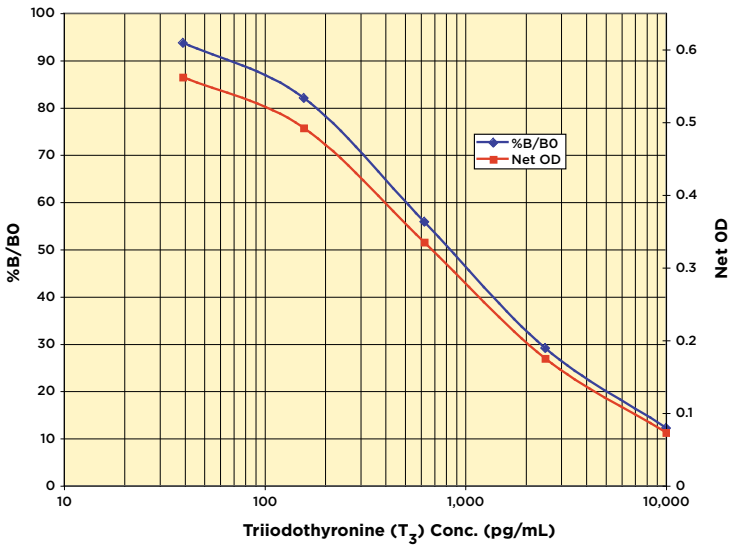
Triiodothyronine, also known as T_3, is a thyroid hormone. Thyroid hormones regulate a number of developmental, metabolic, and neural activities throughout the body. T_3 affects almost every physiological process in the body, including growth and development, metabolism, body temperature, and heart rate. Production of T_3 and its prohormone, thyroxine (T_4), is activated by thyroid-stimulating hormone (TSH), which is released from the pituitary gland. This pathway is part of a closed-loop feedback process when elevated concentrations of T_3 and T_4 in the blood inhibit the production of TSH in the pituitary gland. As concentrations of these hormones decrease, the pituitary gland increases production of TSH, and by these processes, a feedback control system stabilizes the amount of thyroid hormones that is in the bloodstream. Roughly 85% of the circulating T_3 is formed in the liver and pituitary by removal of the iodine atom from carbon atom number five of the outer ring of T_4.

Application

Circulating levels of T_4 are much greater than T_3 levels, but T_3 is metbolically the most active hormone (3-4 times more potent than T_4) although its effect is briefer due to its shorter half-life compared to T_4. In hyperthyroidism, both T_4 and T_3 levels are usually elevated, but in a small subset of hyperthyroid patients only T_3 is elevated (T_3 toxicosis). Triiodothyronine values greater than 2 ng/mL in adults or in children are consistent with hyperthyroidism or increased thyroid hormone-binding proteins. In hypothyroidism, T_4 and T_3 levels are decreased. T_3 levels are frequently low in sick or hospitalized euthyroid patients.

Our Assay

The DetectX® Triiodothyronine (T_3) EIA Kits are designed to quantitatively measure T_3 present in serum, plasma, urine, extracted dried fecal samples, and tissue culture media samples. A T_3 standard is provided. Standards or diluted samples are pipetted into a clear microtiter plate coated with an antibody to capture sheep antibodies. A T_3-peroxidase conjugate is added to the standards and samples in the wells. The binding reaction is initiated by the addition of a sheep polyclonal antibody to T_3 to each well. After a 2 hour incubation the plate is washed and substrate is added. The substrate reacts with the bound T_3-peroxidase conjugate and the generated color is read at 450nm.



Urea Nitrogen (BUN) Detection Kits

Scientific Relevance

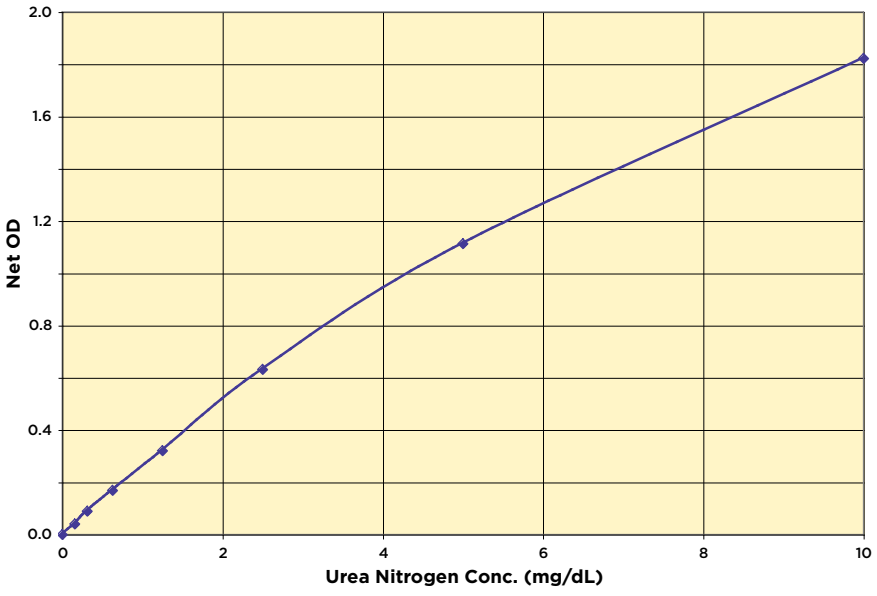
Urea is a by-product of protein metabolism in the liver, and is removed from the blood by the kidneys. Urea freely filters through the glomerulus, but is reabsorbed by the renal tubules in a flow-dependent fashion. The higher the flow rate, the greater amount of urea nitrogen is cleared from circulation and eliminated through the kidneys.

Application

The level of circulating urea nitrogen, along with serum creatinine, serves as a primary measure of kidney function. Azotemia, poor kidney function, will cause elevated BUN levels (≥ 50 mg/dL) and is associated with acute kidney failure or injury, severe acute pancreatitis, congestive heart failure or gastrointestinal bleeding. Azotemia also can occur with dehydration, as a result of alcohol abuse, or high protein diets. Urine and saliva are considered to be acceptable non-invasive samples for measurement of urea nitrogen.

Our Assay

The DetectX® Urea Nitrogen (BUN) Detection Kits are designed to quantitatively measure urea nitrogen in a variety of samples. A urea nitrogen standard calibrated to NIST reference materials is provided. Standards or samples are mixed with Color Reagents A and B and incubated at room temperature for 30 minutes. The colored product is read at 450 nm. The results are expressed in terms of mg/dL urea nitrogen. If samples are to be expressed in terms of mg/dL urea, the data can be converted using the multiplier 2.14.



Catalog Number

K024-H1 (2 Plate)
K024-H5 (10 Plate)

Features

- **Use**
  Urea Nitrogen (BUN) Determination
- **Sample**
  Urine, Saliva, Serum, Plasma, and TCM
- **Validation**
  Calibrated to NIST Standard Reference #912a
- **Species**
  Species Independent
- **Time to Answer**
  30 Minutes
- **Samples/Kit**
  88 or 472 in Duplicate

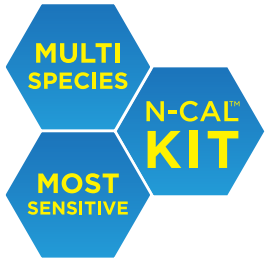
Related Products

Hemoglobin Detection Kit
Catalog No. K013-H1

Cystatin C EIA Kit
Catalog No. K012-H1

RBP Multi-Format EIA Kits
Catalog No. K062-H1/H5

Creatinine Serum Detection Kits
Catalog No. KB02-H1/H2/H1D



> Wonderful. Thank you very much for all of your help and assistance!
>
> KC

“ You guys are so quick! We love working with you!”

JC, USDA, Texas

Solid Phase Reagents for Plates

DESCRIPTION	USES	SIZE	CATALOG NO.
Blocking Buffer Concentrate (10x)	Block for Coated Plates	25 mL 250 mL	X109-25ML X109-250ML
Coating Buffer Concentrate (20x)	Coating Plates w/ Antibodies	10 mL 100 mL	X108-10ML X108-100ML

General Reagents

DESCRIPTION	USES	SIZE	CATALOG NO.
Creatinine Solution	Calibration	100 mL	X116-100ML
HRP Conjugate Stabilizer	HRP Stabilizer	300 mL	X076-300ML
Kathon™ CG Preservative	HRP Preservative	25 mL	X129-25ML
Stop Solution	TMB Stop	25 mL	X020-25ML
TMB Substrate for HRP	Signal Generation Substrate	55 mL	X019-55ML
Wash Buffer Concentrate (20x)	Plate Washing	125 mL	X007-125ML

Accessory Reagents

DESCRIPTION	USES	SIZE	CATALOG NO.
Isotocin Solution	Standard for Oxytocin Kits, page 60	625 µL	X128-625UL
Mesotocin Solution	Standard for Oxytocin Kits, page 60	625 µL	X127-625UL

Features

- **Uses**
  Enzyme Immunoassay (EIA)
- **Stability**
  Liquid 4˚C Stable Reagents
- **Consistent**
  Minimal Lot-to-Lot Variability
- **Convenient**
  Buffer Concentrates for Optimum Coating and Blocking

AbX™ Monoclonal and Polyclonal Antibodies

Features

- **Uses**
  Enzyme Immunoassay (EIA)
- **Purified**
  Column Isolated Against Pure Species IgG Molecules
- **Stability**
  Liquid 4˚C Stable Reagents
- **Consistent**
  Minimal Lot-to-Lot Variability

Plate Coating/Detection

DESCRIPTION	HOST	USES	SIZE	CATALOG NO.
Mouse IgG, Fc, Affinity Purified	Goat	EIA, ELISA	10 mg 25 mg	A008-10MG A008-25MG
Rabbit IgG, Fc, Affinity Purified	Goat	EIA, ELISA	10 mg 25 mg	A009-10MG A009-25MG
Sheep IgG, Affinity Purified	Donkey	EIA, ELISA	10 mg 25 mg	A010-10MG A010-25MG

Green Fluorescent Protein (GFP) Antibodies and Protein

DESCRIPTION	HOST	USES	SIZE	CATALOG NO.
GFP Polyclonal Antibody, Affinity Pure	Rabbit	IB/WB (1:10,000)	25 µg	A013-25UG
GFP Polyclonal Antibody, Protein A Purified	Rabbit	IB/WB (1:1,000) EIA (1:2,000)	25 µg	A012-25UG
GFP	Rec. WT	Control Protein	25 µg	L003-25UG

Epigenetics

DESCRIPTION	HOST	USES	SIZE	CATALOG NO.
LSD1	Rabbit	WB, IP	100 µL	A003-100UL
Histone H3	Rabbit	WB, IP, ChIP	100 µL	A004-100UL
MonoMe-Lys[4]-Histone H3	Rabbit	WB, IP, ChIP	100 µL	A005-100UL
DiMe-Lys[4]-Histone H3	Rabbit	WB, IF	100 µL	A006-100UL
TriMe-Lys[4]-Histone H3	Rabbit	WB, IF, IP, ChIP	100 µL	A007-100UL

Inflammation/Developmental

DESCRIPTION	HOST	USES	SIZE	CATALOG NO.
Prostaglandin E_2 Monoclonal	Mouse		50 µg	A011-50UG
Zebrafish Id1 Polyclonal, Protein A Purified	Rabbit	WB, IHC	25 µg	A014-25UG

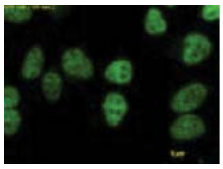
Oxidative Stress

DESCRIPTION	HOST	USES	SIZE	CATALOG NO.
Glutathione	Mouse	WB, IF, IP, ELISA	50 µg	A001-50UG
Glutathione-DyLight® 488	Mouse	WB, IF, FACS	50 µg	A001F-50UG
Glutathione-DyLight® 549	Mouse	WB, IF, FACS	50 µg	A001T-50UG
L-Cysteine	Mouse	WB, IF, IHC, IP, ELISA	50 µg	A002-50UG

Features

- **Histone Modifications**

Detection of Specific Antigens
Western Blotting (WB),
Immunoprecipitation(IP)
Immunofluorescence (IF)
Immunohistochemistry (IHC)
Enzyme Immunoassay (EIA)
ELISA
Chromatin Immunoprecipitation (ChIP)



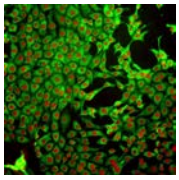
HeLa + A005

Features

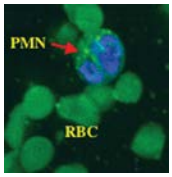
- **Sulfhydryl Determinations**

Detection of Specific Antigens
Western Blotting (WB),
Immunoprecipitation(IP)
Immunofluorescence (IF)

DyLight® is a registered trademark of Thermo Fisher Corp

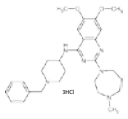
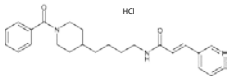
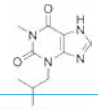
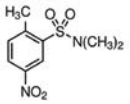
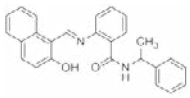
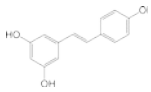
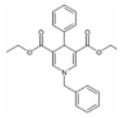
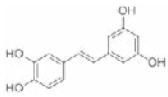
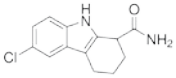
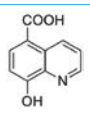


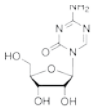
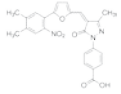
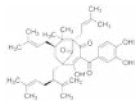
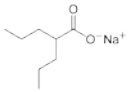
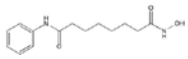
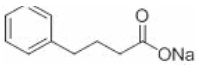
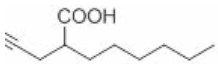
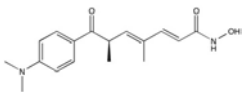
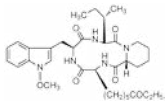
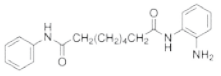
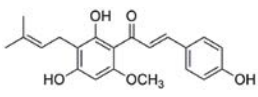
HeLa Cells with A001



PMNs + A002

PdX™ Enzyme Inhibitors and Activators

DESCRIPTION	USES	SIZE	CATALOG NO.	STRUCTURE
Histone MethylTransferase Inhibitors				
BIX-01294	G9a & GLP HMTase inhibitor	5 & 25 mg	P018-5/25MG	
NAD Biosynthesis Inhibitor				
FK-866, HCl	Specific inhibitor of NAMPT	5 & 25 mg	P006-5/25MG	
Phosphodiesterase Inhibitor				
IBMX	Pan-specific inhibitor of PDEs	100 mg & 1g	P019-100MG/1G	
BRL-50481	Specific inhibitor of PDE7	10 & 50 mg	P020-10/50MG	
SIRT Inhibitors and Activators				
Sirtinol	NAD-dependant HDAC inhibitor	5 & 25 mg	P016-5/25MG	
Resveratrol	SIRT1 activator	100 & 500 mg	P002-100/500MG	
BML-278	Novel SIRT activator	5 & 25 mg	P003-5/25MG	
Piceatannol	Activator of SIRT1	5 & 25 mg	P009-5/25MG	
EX-527	Selective SIRT1 inhibitor	5 & 25 mg	P005-5/25MG	
Histone Demethylase Inhibitors				
Tranylcypromine	LSD1 Inhibitor	10 mM	X042-1EA	
IOX1	*Jumonji* HDM inhibitor	5 & 25 mg	P022-5/25MG	

DESCRIPTION	USES	SIZE	CATALOG NO.	STRUCTURE
DNA Hypermethylation Agents				
5-Azacytidine	DNA Methyltransferase Inhibitor	50 & 250 mg	P012-50/250MG	
Decitabine	DNA Methyltransferase Inhibitor	10 & 50 mg	P015-10/50MG	
Histone AcetylTransferase Inhibitors				
C-646	p300/CBP HAT inhibitor	5 & 25 mg	P014-5/25MG	
Garcinol	Potent HAT inhibitor	5 & 25 mg	P017-5/25MG	
HDAC Inhibitors				
Sodium Valproate	HDAC inhibitor	5 g	P001-5GM	
SAHA (Vorinostat)	Catalytic HDAC inhibitor	50 & 250 mg	P004-50/250MG	
Phenylbutyrate, Na Salt	HDAC inhibitor	1 g	P007-1GM	
Hexyl-4-pentynoic acid (HPA)	Histone hyperacetylation inhibitor	10 & 50 mg	P008-10/50MG	
Trichostatin A	Potent, Reversible inhibitor	1 mg	P010-1MG	
Apicidin	Potent HDAC inhibitor	1 & 5 mg	P011-1/5MG	
BML-210	Potent HDAC inhibitor	5 & 25 mg	P013-5/25MG	
Xanthohumol	DGAT inhibitor	10 & 50 mg	P021-10/50MG	

Catalog Number

L001-50UG (50 µg)
L001-100UG (100 µg)
L001-250UG (250 µg)

Calcium Chelator Free:

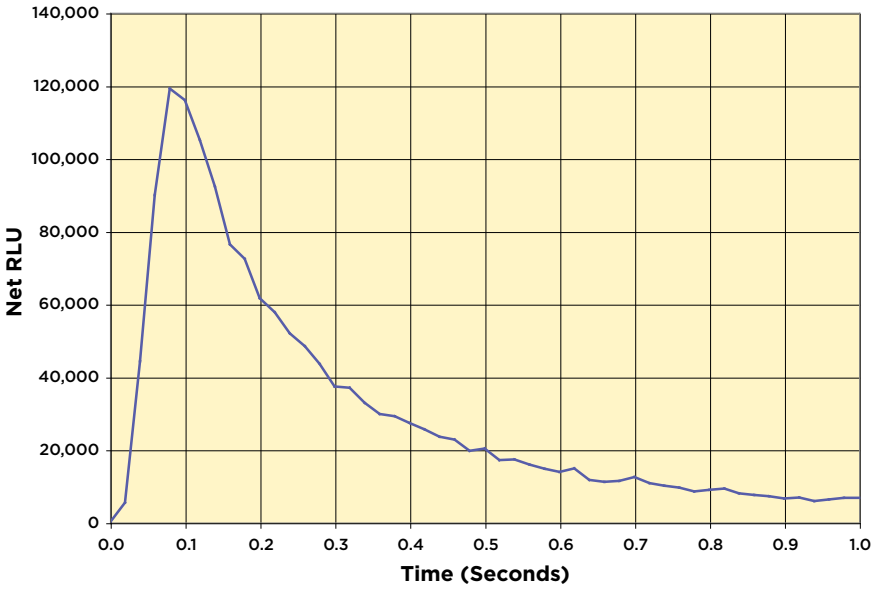
L001C-50UG (50 µg)
L001C-100UG (100 µg)
L001C-250UG (250 µg)

Features

- **Use**
  Measure Low Concentration of Calcium
- **Bioluminescent**
  Ideal for HTS Applications
- **Sensitive**
  No Background Signal

Recombinant Obelin

Recombinant bioluminescent photoprotein from *Obelia longissima*. The photoprotein is approximately 21,000 molecular weight and contains the luminescent substrate, native coelenterazine, and oxygen bound to the protein. Upon addition of excess calcium ions that fill the 3 calcium binding sites, the oxygen reacts with the substrate to yield a rapid flash of blue light centered at 485 nm. This emission reaches a peak within 100 msec and decays in less than 1 second.



Catalog Number

L002-50UG (50 µg)
L002-100UG (100 µg)
L002-250UG (250 µg)
L002-500UG (500 µg)

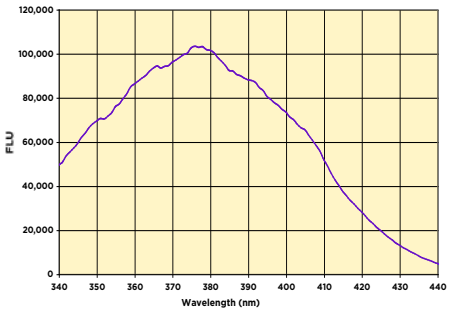
Features

- **Use**
  Measure Low Concentration of Thiols
- **Fluorescent**
  Ideal for HTS Applications
- **Rapid**
  10-20 Minute Assays

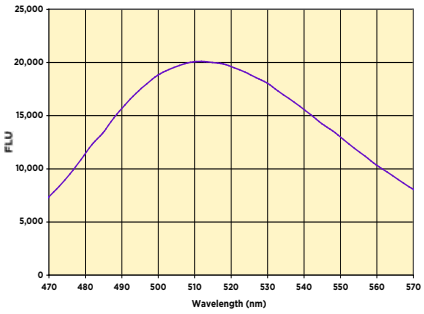
ThioStar®

The ThioStar® Thiol Detection Reagent allows users to accurately determine the extent of free thiol content in samples. ThioStar® is converted to a brightly fluorescent product upon reaction with thiols in the sample. The thiol in the sample can either be one that is generated by a reaction, such as the end product of an enzymatic reaction, or can be the cysteine content of the protein to be measured. ThioStar® is used by simply diluting the ThioStar® reagent in dry DMSO and adding it to the thiol sample in buffer. ThioStar® will work in almost any buffer.

Excitation Spectra



Emission Spectra

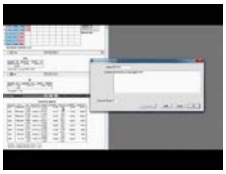


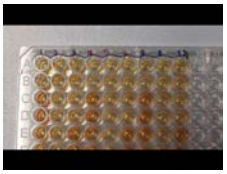
Before You Begin

1. Consult the Videos and Protocols

We offer a library of quick video tutorials demonstrating tried and tested techniques for things like sample prep, extractions, assay set up, and data analysis. Available on our website at: www.ArborAssays.com/resources


Setting up EIA


Data Analysis


Assay Tricks


Fecal Extraction

2. Expected Values

There are several factors that have to be taken into account to get reliable results from your experiments and the most economical use of our kits. Consider the assay range and check expected sample values. If you can, check PubMed and see if anyone has run a similar experiment. Consider their reported sample values and perhaps check to see if a "normal" sample of yours gives similar values.

Because most DetectX® kits will work with a wide variety of species and sample types, we often do not have specific information about expected levels for an individual researcher's samples. On the product specific webpage for each assay, publications citing use of the product are listed, and that is usually the best place to initially look for information about expected levels. If no publications match, a general literature search in PubMed and Google Scholar will often provide more information about what values have been reported using other testing methods. If there is still no available information, the only other option is to test a few representative samples in the assay. When doing that kind of initial validation work, it is not necessary to find the best dilution, but rather to find the general area where dilutions will fall within the range of the standard curve. To that end, we recommend making fairly large serial dilutions over a wide range, for example: five-fold dilutions of 1:5, 1:25, 1:125, 1:625, 1:3125, or even 1:10, 1:100, 1:1000. Look for a dilution that will bring the majority of the samples within the range of the standard curve; fine tuning of the dilution for individual samples can then be determined from there.

3. Sample Matrix

Your samples MUST be in the identical matrix as the standards to obtain a valid reading. Sometimes simple dilution in the kit assay buffer will meet this requirement, but it normally takes at least a 1:10 dilution to make the sample matrix similar to the standards.

4. Instrumentation

Typically the measurement of optical density (OD) for our EIA or Colorimetric Detection kits is no problem. However, for fluorescent assays and for CLIA kits there are some instrumentation considerations. The most complicated are fluorescence assays.

For most of our fluorescent assays the excitation and emission spectra for the signal generated are quite broad making the selection of appropriate readout wavelength or filter relatively easy. Fluorescent plate readers may be either filter or monochromator readers. Filter readers require that the excitation (Ex) and emission (Em) filters are appropriate for the kit. Monochromator readers allow the precise wavelength to be set. For example, for assays using ThioStar® the emission of the thiol adduct has a large Stokes shift between the maxima for excitation (385 nm) and emission (510 nm). Excitation filters with maxima from 350 to 440 nm will work well. Similarly emission filters from 470 to 550 nm will give respectable signals. Filters have a bandpass associated with them. For example, for a 510/20 filter, the 20 refers to the width of the wavelength range the filter transmits. The 510/20 filter passes light from 490 to 530 nm.

Technical Index

Things To Consider

The other consideration with fluorescent and chemiluminescent assays is the gain associated with measurement. These assays give readouts as RFU and RLU, Relative Fluorescent/Luminescent Units. The numbers generated in these measurements are purely arbitrary and one plate reader may give RFU or RLU that differ by orders of magnitude from another. Some have auto gain settings to give optimum readouts for the assay.

(a). We suggest for fluorescent assays you pipet the assay's highest signal generating standard into a well and the assay's blank into another well. Add the readout system and incubate for the specified time. Read those 2 wells, optimizing gain for the high standard and emission/excitation settings to obtain the best signal to noise (S/N) ratio.

(b). Similarly for our Chemiluminescent Immunoassay (CLIA) protocols there are specific instructions for setting optimized conditions for the readout. Chemiluminescence is read without any filters or wavelength selection so the only parameter that needs to be addressed is the Gain setting. Some instruments will allow you to alter the gain and you need to set the lowest signal well to be close to zero RLU. Your highest signal well should be set at about 90% of the dynamic range of the reader. These settings will give you the best S/N ratio.

5. Data Analysis

We suggest that you always use the 4PLC software that is available for almost all plate readers. For small molecule assays, such as cortisol, cAMP or PGE_2, a 4PLC program MUST be used. Most programs have provisions to flag out of range values and to give you CVs for both the signal and the concentration. For all of our assays there is a free simple 4PLC web-based program for calculations from MyAssays.com. It is already preprogrammed with the suggested standard values for all of our assays. Just enter your data in an Excel spreadsheet and copy into the selected protocol. To use MyAssays.com to calculate data, first search for the correct template on the site, or use the link or QR code found in the kit's insert to jump directly to the assay-specific page. Once there, follow the directions for entering data and indicating where on the plate your standards and samples are located. The results can be exported to an Excel document for further analysis. There is a video available in the "Resources" page on our website outlining the MyAssays.com analysis tool and other data analysis tips for some DetectX® kits.

6. Sample Range

Our recommendation for a lot of cases where we are asked what dilution is needed for a sample is to carry out a mini-experiment first. Here are 2 examples:

(a). You are trying to measure Glutathione (GSH) in your samples using our Fluorescent Detection kits (K006-F1, -F5 or -F1D) and are unsure about the dilution of samples. We suggest taking a "normal" sample and diluting it in serial 1:4 or 1:10 dilutions, starting with the required minimum dilutions listed in the kit protocol, and carrying out the Free GSH determination in singlet wells. You should see very high RFU that decrease with dilution. From that dilution you will be able to assess the dilution for your samples, taking into account if you expect the GSH to go up or down for your samples.

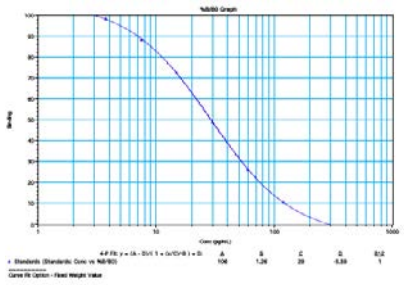
(b). Suppose you are measuring the stress steroid corticosterone in mice serum using our Corticosterone EIA kits (K014-H1 or -H5). This kit allows you to take a few µL of serum, add the Dissociation Reagent, vortex and dilute with Assay Buffer before adding the diluted sample to the EIA well. We would suggest that you carry out the minimum dilution suggested in the kit protocol and then similar 1:4 or 1:10 dilutions as above and run them as a singlet without a standard curve. Our assay is so reliable and reproducible you should see low OD (indicating high corticosterone) going to high OD (low corticosterone) as you dilute. This will give you an estimate of the appropriate dilution for your samples.

MyAssays.com Example

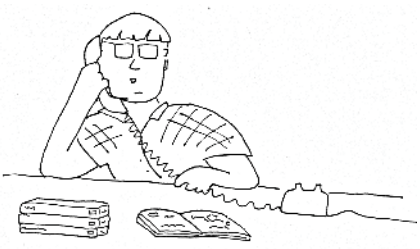
Standards (pg/ml)

Sample	Conc	OD	MeanOD	CV	NetOD	AveNetOD	Binding	%B/B0	BackCalc
Sta01	120.00	0.205 0.193	0.199	4.3	0.149 0.137	0.143	10.9 10.1	10.50	119.477
Sta02	60.00	0.412 0.413	0.413	0.2	0.356 0.357	0.356	26.2 26.3	26.22	60.266
Sta03	30.00	0.719 0.724	0.722	0.5	0.663 0.668	0.665	48.8 49.2	48.99	30.068
Sta04	15.00	1.029 1.056	1.043	1.8	0.973 1.000	0.986	71.6 73.6	72.63	14.765
Sta05	7.50	1.239 1.269	1.254	1.7	1.183 1.213	1.198	87.1 89.3	88.21	7.757
Sta06	3.75	1.345 1.440	1.393	4.8	1.289 1.384	1.336	94.9 101.9	98.42	3.633

MinStd = Smallest standard value = 0.199
MaxStd = Largest standard value = 1.393



www.MyAssays.com



7. Contact Us Before You Run the Assay

If you are in any doubt about the protocol, how to treat your samples, how to handle any of the reagents, etc. please contact us by E-mail at Technical@ArborAssays.com or call us at 734-677-1774 before you start the assay. We will speedily answer your question and make suggestions so you can get the most out of your experiment.

8. Resources

Check the Resources section on our website for protocols and videos such as Sample Handling, Sample Preparation, How to Run an EIA Kit, Data Analysis, etc., as well as PubMed and other databases.

Immunoassays

The basic components of any immunoassay system are three-fold; an antigen or antibody that we would like to detect and quantitate, specific antibodies to this antigen, and a system to measure the amount of the antigen in a given sample. In many cases a number of other assay materials are necessary to allow for quick and convenient measurement. This simplified system has been used in several different ways and the three most common are outlined below. NOTE: "ELISA" has been mistakenly used for all 3 types (and more) of the systems described below. We will interchange EIA and ELISA in marketing materials but, to us, an EIA is either a small molecule immunoassay or a sandwich assay for larger proteins and biomolecules, and a "real" ELISA is an assay to measure antibodies.

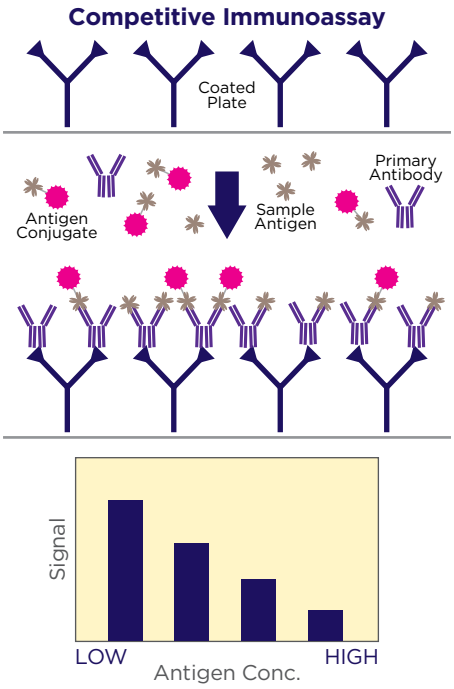
1. EIA

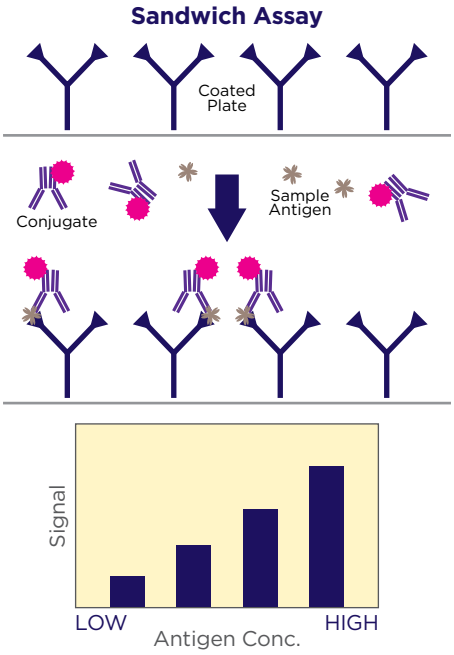
This competitive assay system is best exemplified by a typical EIA system. Here a single antibody to a small molecular weight antigen, typically less than 10,000 Dalton, is used. This antibody, at a very specific, defined, and limited concentration, competitively binds the antigen in the sample and the antigen labeled with some detection system, like Horseradish Peroxidase. The amount of the bound antigen added to the reaction is measured at the end of the immunological binding reaction and the percentage bound is inversely proportional to the amount of unlabeled antigen. Separation at the end of the immunological binding reaction can be done by a number of systems, but typical separation systems use a microtiter plate, or beads. This type of reaction, along with its variations, is the only method possible for small molecular weight antigens, such as steroids, drugs, lipids, and peptides.

The typical format for one of our EIAs is shown. We use peroxidase as the detection enzyme because of its stability, turnover number and lack of interferences. We separate the antibody-bound labeled antigen at the end of the immunological binding reaction using a secondary antibody coated microtiter plate that specifically binds the primary antibody. The excess reagents are washed out of the plate. The resulting signal from the plate bound labeled antigen is **inversely** proportional to the amount of antigen in the sample.

2. Sandwich Assays

Also called immunometric assays, sandwich assays use 2 or more specific antibodies to "sandwich" the antigen. Typically one antibody is bound to the separation system, such as a microtiter plate, and one antibody is used to detect the antigen. It can be seen that the antigen is captured between the 2 antibodies, one attached to the solid phase, the other labeled with an enzyme. Typically the amount of solid phase antibody and enzyme-conjugated antibody are in a large excess over the amount of antigen in the sample. This makes the kinetics of binding of the antigen to the solid phase, and the antibody conjugate to the antigen to be pseudo-first order, resulting in very rapid kinetics and high sensitivity. The result is an assay that produces a signal that is **directly** proportional to the amount of antigen in solution.





3. ELISA

The real "ELISA" format uses a solid phase coated with either a specific protein, killed or neutralized virus, or synthetic peptide fragments. It is commonly used to detect the presence of antibodies to specific antigenic sites on proteins and viruses. These assays have been used extensively in AIDS and hepatitis testing. Samples, typically from donated blood, are applied to the solid phase. Any antibodies to the virus, suggesting viral exposure, will bind to the viral antigen on the solid phase. After a wash step, a second antibody, labeled with an enzyme is added. This second antibody is specific to human IgG or IgM and binds to the sample antibody bound to the solid phase antigen.

4. CLIA

This is an assay where the readout is the emission of light from a Chemiluminescent CLIA substrate, substituted for the TMB, reacting with captured peroxidase labeled antigen molecule or peroxidase conjugated detection antibody. CLIAs use white plates and these are coated using identical conditions as for the clear plates used in EIAs. In our peroxidase based readout CLIA assays, after the final wash step the chemiluminescent substrate is added to the plate and the intensity is read after a 5 minute incubation at room temperature. We specify 0.1 second read time per well using our CLIA substrate. This allows a typical 96-well plate to be read in about 10 seconds.

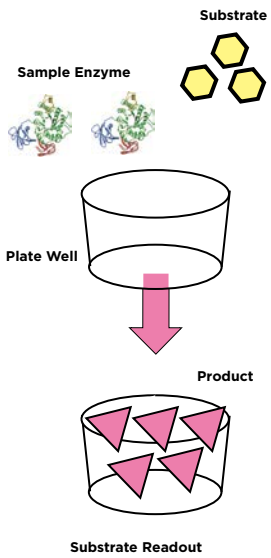
Detection and Activity Assays

In addition to the Immunoassays described above, there are a number of Arbor Assays kits that work on different principles, mainly detection assays and activity assays. These tests use chemicals that react directly with the target analyte or the product of an enzyme reaction, and then change in such a way that the reaction can be measured. For example, it might change color, or create a molecule that fluoresces under the right conditions. Comparing the signal from your sample to the signal from a standard curve generated from several points of known concentration allows you to determine the amount of target in the original sample, just like an immunoassay.

1. Detection Assays

Generally, these kinds of tests can be very straightforward, although some are a bit more complicated. In the simplest tests, the analyte in question reacts directly with a detection molecule in a way that can be measured. The Thiol Detection Assay (K005-F1), for example, works in that manner. Thiol groups present in the sample react directly with the detection molecule ThioStar®, converting it to a fluorescent product. The amount of fluorescence is directly related to how many thiol groups were present in the sample, an amount that can be compared to the amount of fluorescence from a known amount of thiol standard. Colorimetric Detection kits for Nitric Oxide (K023-H1), Urea Nitrogen (K024-H1/H5), and Creatinine (K002-H1/H5) work in this manner. In addition to direct interaction of the analyte with the detection molecule, some assays rely on the sample being processed before it can be measured. The Glucose Detection Assay (K039-F1), for example, uses an enzyme that produces hydrogen peroxide from glucose, the H_2O_2 then being the molecule that reacts with the detection substrate, converting it to a molecule that fluoresces. In the Glutathione Detection Assay (K006-F1), GSH can be detected directly, but to measure the oxidized form (GSSG), it must be reduced by glutathione reductase to GSH that is then measured. The overall principle is the same in all cases, however, the amount of analyte in a sample is determined by measuring its ability to produce a measurable signal without the need for antibodies.

Enzyme Activity Assay



2. Activity Assays

Activity assays work under a slightly different principle than the other kits described to this point. Rather than directly measuring the concentration of a

target molecule, these tests measure ability of the molecule in question to act on a substrate in a way that is measurable. In the Acetylcholinesterase Fluorescent Activity Assay (K015-F1), for example, AChE enzyme present in the samples reacts with a specific AChE substrate added to the wells. That reaction releases a molecule which then converts ThioStar® into its fluorescent product. The fluorescence can be compared to fluorescence from known amounts of activity from the AChE standards. In our PKA Colorimetric Activity Assay (K027-H1), PKA from samples phosphorylates a PKA substrate coated onto a plate. After washing away the enzyme, phosphorylated molecules are detected by a specific antibody in much the same way as an immunoassay. It is important to note, however, that the antibody is only detecting the product of the reaction of PKA, not binding the PKA itself, so it is still an activity assay. Results are compared to the phoshorylation from known amounts of PKA added to standard wells.

Sample Preparation

Visit the resources section of our website for extraction protocols and sample preparation videos at: www.ArborAssays.com/resources/#protocols. There are example protocols for a variety of different sample types. Below are outlines of several helpful protocols for different samples.

Sample Preparation

(a). Cyclic Nucleotides in Tissues Grind a weighed amount of frozen tissue in a homogenizer in the kit Sample Diluent. Use the Sample Diluent supernatant for the cAMP (K019-H/C) or cGMP (K020-H/C) assay, and if you require a protein determination, use the BCA Protein Detection Assay (K041-H1) to determine protein concentration. See the kit manuals for more information.

(b). Prostaglandins in Tissues Grind a weighed amount of frozen tissue in a homogenizer in pH 4 0.1M phosphate buffer:absolute ethanol 30:70 using 10-50 µL per mg of tissue. Centrifuge and speed evaporate the supernatant until dry. Reconstitute in the kit Assay Buffer. See the kit manuals for more information.

(c). Fecal Steroids in Field Situations Take a weighed amount of fecal material and add methanol:water 80:20 using a ratio of extraction media to wet feces of 2.5:1. Samples can be stored in this matrix if kept at -20°C. When processing samples for assay purposes, take the thawed sample and shake for 20 minutes. Centrifuge and collect the supernatant. These samples can be kept at -20°C for later processing; diluted at least 1:50 in kit Assay Buffer for assay immediately; or speed vacuum evaporated to dryness. See the kit manuals for more information.

(d). Steroids in Liquids Add 5 volumes ethyl acetate, vortex for 2 minutes, and allow layers to separate for 5 minutes. Freeze in a dry ice/ethanol bath, then pour the top layer (organic phase) into a clean test tube and add fresh ethyl acetate to the remaining bottom layer. Vortex, separate, and remove the top layer 2 more times, combining the top layers into a single tube. Dry down the pooled solvent in a speedvac and store tightly capped and dry at -20°C, or reconstitute in Assay Buffer for immediate use.

Frequently Asked Questions

What is the Extraction Solution and when should I use it?

Several kits for measuring small peptides are supplied with an Extraction Solution (X123) that can be used to purify samples that would otherwise be unusable in those assays. This acidic organic solvent solution will precipitate proteins and other interfering substances, but leave the analyte of interest in solution. Any sample that might contain contaminants can be treated, but serum, plasma, and saliva must be extracted in order to get usable results from the Oxytocin

(K048-H, K048-C), Arginine-Vasopressin (K049-C), or ET-1 (K045-H1) assays. To prepare samples, 1 volume of sample is mixed with 1.5 volumes of Extraction Reagent, vortexed, and then mixed for 90 minutes. After centrifuging the mixture for 20 minutes at 1660 g, the supernatant is removed to a separate tube and dried down in a SpeedVac. At this point, the sample can be reconstituted in the Assay Buffer supplied with the kit and measured in the assay. Please note samples can also be extracted with C18 solid phase columns if preferred; a protocol for that can be found in the resources section of our website at: www.ArborAssays.com/resources/#protocols.

In an EIA or CLIA, what are NSB, B0, and zero standard?

(a). NSB (non-specific binding) This represents signal from non-specifically bound peroxidase conjugate in a competitive immunoassay. This signal is generated from conjugate retained on the plastic itself, and the background signal from the substrate.

(b). B0 (binding for the zero standard, maximum binding well) This represents the maximum signal from enzyme captured by the specific antibody in competitive EIA or CLIA immunoassays. All other standards and samples are expressed as a percentage of this value.

(c). Zero Standard (background signal for sandwich assay) In an immunometric assay this represents the minimum signal from the assay. The Zero Standard becomes part of your standard curve.

Can I use a non-validated sample type?

Most sample types not specifically tested during kit development can still work, but will require testing and optimization. Samples might need to be diluted or may have to be extracted to eliminate matrix interference. Optimal dilutions to get sample values to fall within the range of the standard curve will also have to be determined. In the end, if the analyte is still present in concentration high enough that it falls within the range of the standard curve after the sample has been diluted sufficiently to eliminate matrix interference, or the sample can be extracted and an acceptable amount of the analyte recovered, then the sample will work.

Unicorn

What about a non-validated species?

Many analytes, such as steroids (Corticosterone etc.), cyclic nucleotides (cAMP and cGMP), or small lipids (PGE_2, PGFM, etc) are exactly the same regardless of their source. Samples of these molecules from any species should therefore be usable in EIAs or CLIAs, even if they have not been specifically tested. In addition, kits that measure the activity of a sample, such as the Glutathione-S-Transferase (K008-F1) or PKA (K027-H1) Activity Assays, or that detect the presence of an analyte without using antibodies, such as the Nitric Oxide (K023-H1) or Hemoglobin (K013-H1) Detection Assays, are not limited in any way by a species-specific interaction and therefore will work with samples from any species. All kits that fall into these categories are indicated as being "Multi Species". Those kits that are limited to certain validated species will include that in their name, such as the Cystatin C Human Immunoassay kit (K012-H1).

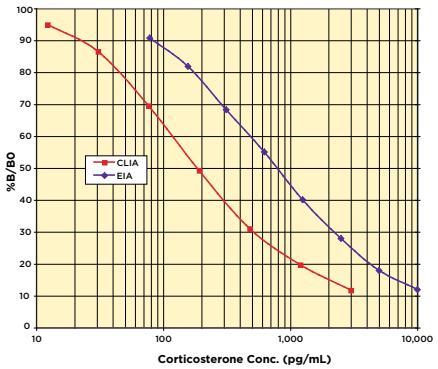
What is matrix interference?

In addition to the analyte you are trying to measure, many samples contain additional elements, such as proteins and lipids, which can interfere with the free association of the target analyte and the specific antibody in the kit. In the standard curve wells, the pure analyte is simply dissolved in assay buffer, so those potentially interfering components are not present. When the assay is performed, you may encounter a situation where the sample well and a standard well contain exactly the same amount of analyte, but additional components in the sample well interfere with binding to the specific antibody. As a result these wells will generate different amounts of signal even though the amount of analyte is the same.

How do I determine the best dilution for samples?
First look up similar studies in PubMed and try to determine what normal levels are. We have optimized recommended dilutions for most validated sample types to minimize any sample interference in the result. If you are running a sample type we do not list please contact us first to see if we have any data on that type. If we do not you may have to run linearity and spiked sample dilution experiments to determine what dilution will give you linear results.

Do I need to use dissociation reagent?
Dissociation reagent is provided in some steroid and other assays to minimize binding of some hormones to sample proteins. It only needs to be used on serum or plasma samples, as steroids in those samples are associated with carrier proteins and not available to be detected in the assay. Samples in matrices such as saliva, feces, and urine will not need dissociation reagent. Most assays for steroid analytes are supplied with a special Dissociation Reagent that should be used to treat serum and plasma samples. The reagent frees steroids for measurement from specialized binding proteins and other carriers such as albumin to which steroids will bind when in circulation. After treating serum and plasma samples with the Dissociation Reagent, samples must be further diluted with Assay Buffer before testing. This dilution is necessary to eliminate matrix interference from the dissociation reagent itself. Check the kit insert for the recommended dilution in each assay.

How do I prepare my samples for GSH measurement?
We get a number of questions about our very popular assays for measuring Glutathione (K006-F, K006-H). In both of these assays, the detector used to quantitate GSH in samples will also react with any free thiol group present in the sample. For this reason, proteins or other potential interfering components must first be removed. This is accomplished by treating all samples with 5% 5-sulfosalicylic acid dihydrate (SSA), which causes larger proteins to precipitate but leaves glutathione in solution. After centrifuging, the supernatant can be collected and diluted with Assay Buffer to a maximum of 1% SSA before testing in the assay. In the Fluorescent kit (K006-F), reduced GSH and oxidized GSSG can be determined in the same well. In the Colorimetric kit (K006-H), treating samples and standards with 2-Vinylpyridine (2VP) — a chemical that prevents reduced glutathione (GSH) from reacting with the detector — allows for the measure of Oxidized Glutathione (GSSG) separate from any Reduced GSH present. To determine the concentration of free GSH, subtract the concentration of Oxidized GSH from the concentration of total GSH determined separately from the same samples not treated with 2VP.



What's the advantage of CLIA vs EIA?
Chemiluminescent assays (CLIA) are usually more sensitive than colorimetric assays (EIA) for the same marker. For example, the cAMP EIA Assay (K019-H1/H5) has a sensitivity of 5 fmol, while the cAMP CLIA Assay (K019-C1/C5) is sensitive to 1 fmol. CLIA assays require a plate reader capable of measuring glow luminescence from the assay, different from the colorimetric readout of optical density.

Why do I have to use 4PL curve fitting?
The sigmoidal shape of the standard curve in competitive assays is most accurately fit by a four-parameter logistic model (4PLC). Alternate models such as linear, exponential, or log-log, give inaccurate readings, particularly at high and low concentrations. Most plate readers have the ability to fit data using 4PLC methods from the standard curve. Check with your plate reader's manufacturer if you are unsure. Alternatively, free data analysis software for all of Arbor Assays' kits can be found online at www.MyAssays.com.

Why do I have to Acetylate my Samples?
All the DetectX® kits for Cyclic Nucleotides (cAMP, K019-H and K019-C, and cGMP, K020-H and K019-C) are supplied with reagents that can be used to acetylate

Setting up an Arbor Assays EIA

standards and samples. The specific antibodies in these kits are more reactive to nucleotides that have been acetylated, so treating samples this way will allow for a more sensitive measurement of cAMP or cGMP. There are a couple things to note about acetylating, however. First, the acetylating reagents will cause proteins and lipids in the samples to precipitate. Only samples that have been diluted to the concentration which will be used in the assay should be treated. Second, acetylation does add another step to the process. In general, we recommend testing samples initially without acetylating. The regular assays are very sensitive, and most samples can be analyzed without the additional step. If the concentration of your samples is too low, or if they need to be diluted very far to eliminate matrix interference, then acetylation can be a useful tool for getting good results from the assay.

Can I change the standard range?

All assays have been tested and designed to give accurate and reproducible results over the range of standards shown in the insert. Additional points higher or lower than those may not improve assay performance. Changed standard concentrations could cause inaccuracies by not giving adequate data at important assay points. Remember also that assays have a limit of sensitivity that is a function of the antibodies and buffers used in the test. Simply adding additional standard concentrations to the lower end of the curve will not make the test more sensitive. Following the standard curve dilution recommendations will generally give you the best results.

What are assay Sensitivity and Lower Limit of Detection (LLD)?

(a). Sensitivity is the lowest value of analyte in assay buffer that the assay can statistically differentiate from background. It is a calculated value, determined by comparing signal from many replicates of low standard wells and zeros. It is possible for the assay's sensitivity to be higher than the lowest standard point. Sample values found to be below the assay's sensitivity should be considered to be too low to detect.

(b). LLD is similar to sensitivity, but determined by testing a native sample. Replicate wells of dilute samples and zeros are compared, and the lowest concentration of sample that can be statistically differentiated from zero is determined. In most cases the LLD is higher than the sensitivity.

There are videos available in the "Resources" page on our website showing best practices for setting up, washing, and reading an assay. Look for the videos titled "Setting up an Arbor Assays EIA" and "Assay Tricks."

Low overall signal

Make sure all reagents are at room temperature before using. Check that the temperature in the lab is at least 21°C. Check that the kit has not expired. Ensure all concentrates have been diluted properly. Make sure all wash buffer has been removed from the wells before adding the next reagent. Keep in mind that even small amounts of azide will interfere with the peroxidase enzyme conjugates. Components that come with the kit do not contain azide, but materials from other manufacturers may, particularly in the wash buffer. If in doubt, wash out any plate washer with deionized water. Only use components supplied with the kit.

Low signal only from samples

For a competitive immunoassay, as the signal is inversely proportional to concentration, low signal means there is too much analyte present. Consider further diluting your sample to get it with the standard range. For an immunometric assay the sample is too dilute. Low signal means there is not enough analyte present. Consider extracting your sample to remove interfering substances and/or concentrate the analyte so the levels fall within detectable range of the assay. Extraction protocols are available in the resources section of our website: www.ArborAssays.com/resources/#protocols.

Well-to well-variability

Most often the result of inaccurate pipetting. Use a repeat pipetter and appropriate tips for adding antibody, conjugate, substrate, stop solution, or any other component of the assay that is added to multiple wells. Use a single channel pipet for individual standards and samples. Also, pre-wet tips by pipetting up and down a few times before dispensing, change tips between standards and samples and between each individual sample, using care not to dispense beyond the first stop of the pipet. Because of their inherent inaccuracy, multichannel (8- and 12-channel) pipettes are not recommended.

Fluorescent and CLIA

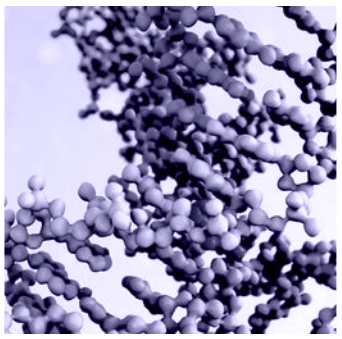
Signal does not match kit insert

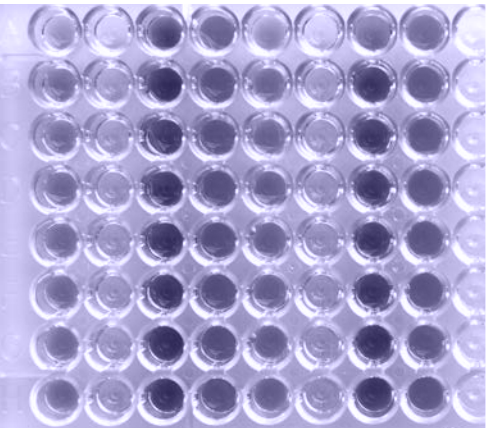
Fluorescent assays and CLIA assays are reported as "Relative Fluorescent Units" (RFUs) or "Relative Luminescent Units" (RLUs). Differences in readers, as well as settings such as gain can dramatically affect the returned values. As long as there is clear signal difference between the background and the standards, and the standard curve titers in a predictable fashion, you can be confident that the assay is performing.

No difference in signal across the standards and samples

Confirm that the instrumentation settings are correct. Adjust gain setting. Make sure that the detector is reading from the top of the wells, not the bottom. Some fluorometric assays (such as the Formaldehyde Detection Assay, K001-F1) use half-area plates, which might require different settings for your detector. Information on plate sizes for all our assays can be found in the resources section of our website.







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