METABOLISM ASSAY KITS

ARBOR ASSAYS
Interactive Assay Solutions™

METABOLISM

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DetectX® Assay Kits

Ordering

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Call 734-677-1774 or Toll Free: 855-677-1774. Monday-Friday 8:30 am to 5:30 pm, EST.

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20-Hydroxyecdysone ELISA Kits

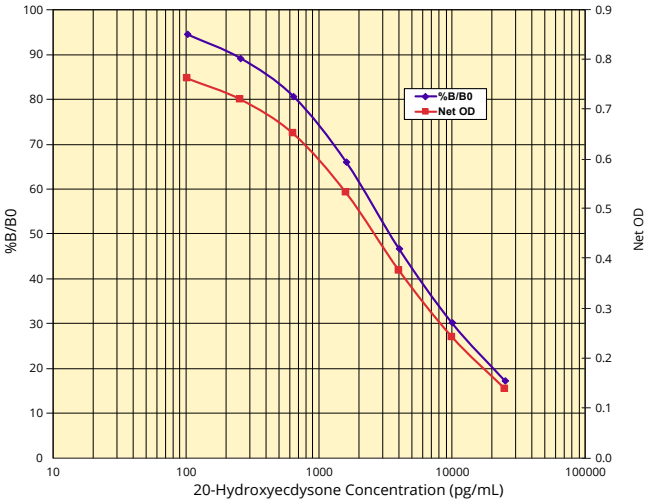
K066-H1 (1 Plate) | K066-H5 (5 Plate)

FEATURES

MULTI SPECIES

Use	Measure 20-Hydroxyecdysone in Arthropods and Plants
Sample	Tissue Extracts
Time to Answer	2.5 Hours
Samples/Kit	39 or 231 in Duplicate
Stability	Liquid 4°C Stable Reagents
Readout	Colorimetric, 450 nm

SCIENTIFIC RELEVANCE



The first insect molting hormone was isolated from silkworm pupae and determined to be a steroid, so named ecdysone, in 1954. Later, 20-hydroxyecdysone was identified in crayfish and recognized as a derivative of ecdysone. These molecules and related forms are a family of steroid hormones that regulate metamorphosis, cell death, reproduction in arthropods, and are widely distributed in plant species (phytoecdysteroids). Of the many ecdysteroids, 20-hydroxyecdysone is the most functionally active and widely distributed in arthropods. To accommodate growth during all immature stages of insects and other arthropods, 20-hydroxyecdysone levels change and activate signaling through an ecdysone receptor that results in the synthesis of a new exoskeleton and ecdysis of the old cuticle. In female mosquitoes and flies, 20-hydroxyecdysone regulates egg development. In plants, 20-hydroxyecdysone facilitates the defense mechanisms against insects. Recent studies of vertebrate animals have discovered the ability of 20-hydroxyecdysone to increase osteogenesis and bone mass by reducing cartilage degradation and increasing protein synthesis in humans. There is also medical research and marketing interest in the use of 20-hydroxyecdysone as a bodybuilding supplement to increase muscle mass.

2′,3′-Cyclic GAMP ELISA Kits – IMPROVED SENSITIVITY

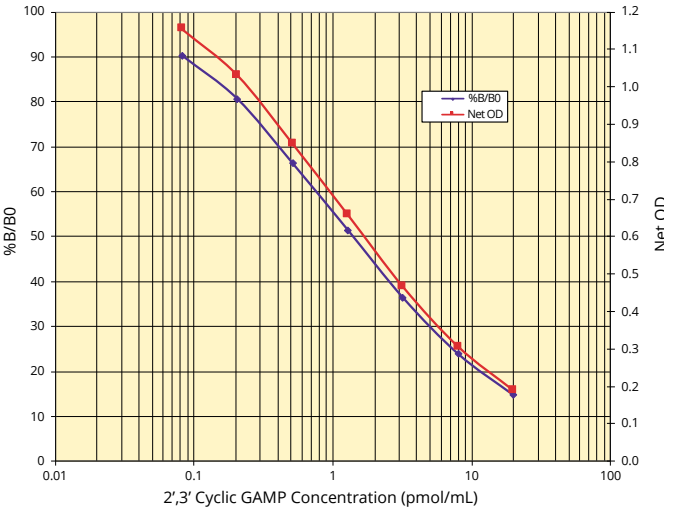
K067-H1 (1 Plate) | K067-H5 (5 Plate) | K067-H1W (1 Whole Plate)
K1067-H5W (5 Whole Plate) | K067-H1D (384-Well Plate)

FEATURES

▶ Use	Measure 2′,3′-cGAMP in tissues and cells
▶ Sample	Cell Lysates, Tissue Extracts, TCM
▶ Sensitivity	0.04 pmol/mL, 2 fmol/well
▶ Samples/Kit	96-well: 39 or 231 in Duplicate 384-well: 183 in Duplicate
▶ Stability	Liquid 4°C Stable Reagents
▶ Readout	Colorimetric, 450 nm

SCIENTIFIC RELEVANCE

2′,3′-Cyclic guanosine monophosphate–adenosine monophosphate (cyclic GMP-AMP, cGAMP, cyclic [G(2′,5′)pA(3′,5′)p]) is referred to as "noncanonical" cGAMP due to the presence of the atypical 2′-5′ phosphodiester linkage between the guanosine and the adenosine. 2′,3′-Cyclic GAMP is a novel second messenger in innate immunity that regulates type I interferon (IFN) production. Produced in mammalian cells by cGAS (cGAMP synthase) in response to double-stranded DNA in the cytoplasm binding to cGAS, cGAMP binds to the stimulator of interferon genes (STING). Subsequently STING induces the TBK1-IRF3-dependent production of IFN-β. This cGAS-cGAMP-STING pathway has been shown to play a critical role in pathogen detection and physiological conditions such as metabolic dysregulation, autoimmunity, and cancer.



Alkaline Phosphatase Colorimetric Activity Kit

K082-H1 (1 Plate)

FEATURES

MULTI SPECIES

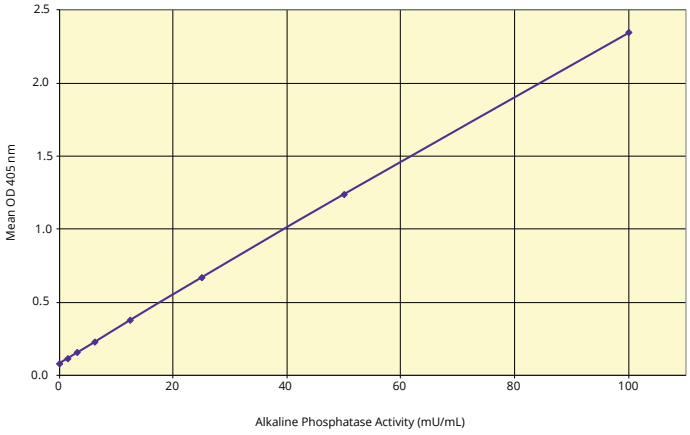
- Use: Measure Alkaline Phosphatase in a variety of samples
- Sample: Serum, non-EDTA plasma, and other biological samples
- Time to answer: 30 minutes end-point assay
- Standard Range: 1.563 – 100 mU/mL
- Samples/Kit: Up to 88 samples in duplicate
- Sensitivity: 0.06 mU/mL
- Stability: 4˚C liquid reagents
- Readout: Colorimetric, 405 nm

SCIENTIFIC RELEVANCE

Found in many higher organisms, Alkaline Phosphatase (ALP) plays an active role in regulating many biological processes, ranging from metabolism, signal transduction, molecule transportation, and the expression of genetic information. The measurement of ALP activity aids in the study of physiological conditions, disease states, mostly involving the skeletal system and liver, and the structure-activity relationships in inhibitor research.

The DetectX® Alkaline Phosphatase Colorimetric Activity Kit is designed to quantitatively measure ALP activity in a variety of biological samples. The assay is formulated to measure ALP activity in physiologically relevant samples and includes a calibrated ALP standard.

Assay Kit developed by 21 Grams Assays, Inc., www.21gramsassays.com.



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Androstenedione ELISA Kits

K070-H1 (1 Plate) | K070-H5 (5 Plate)

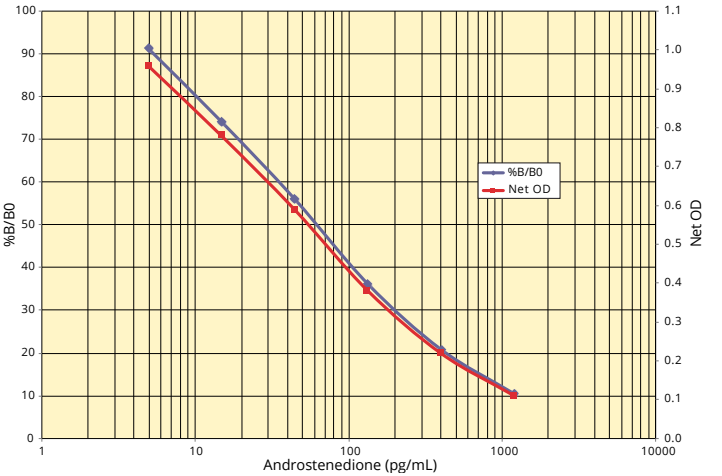
FEATURES

MULTI SPECIES

- Use: Measure Androstenedione in a variety of species
- Sample: Saliva, Urine, Extracted Serum or Plasma
- Sensitivity: 2.3 pg/mL
- Time to Answer: 2.5 Hour
- Samples/Kit: 40 or 232 in Duplicate
- Stability: Liquid 4°C Stable Reagents
- Readout: Colorimetric, 450 nm

SCIENTIFIC RELEVANCE

Androstenedione, also known as androst-4-ene-3,17-dione, is synthesized from dehydroepiandrosterone (DHEA) or 17-hydroxyprogesterone. By itself, androstenedione is a weak androgen, though it is a precursor for biosynthesis of stronger androgens, such as testosterone and estrogens. The production of androstenedione by adrenal glands is partially regulated by andrenocorticotripic hormone (ACTH). The amount of androstenedione in body fluids fluctuates throughout the day, with levels measuring highest in the morning and lowest in the evening. The levels of androstenedione in serum also change with age and physiological conditions. During embryonic development, the levels increase with the highest values at birth, and the levels then decrease during the first few years of development. At puberty, the levels rise again for a few years, then taper down during menopause in females. Generally, a higher level of androstenedione may provide androgenic risk to females indicating higher androgenic activity, hirsutism or polycystic ovarian syndromes. Due to androgenic and estrogenic function of this sex steroid, children and adolescents are highly sensitive to androstenedione exposure; thus, androstenedione is treated as a regulated substance by the DEA.



Corticosterone ELISA & Chemiluminsesecent ELISA Kits

K014-H1 (1 Plate) | K014-H5 (5 Plate)
K014-H1W (1 Whole Plate) | K014-H5W (5 Whole Plate)

MULTI SPECIES

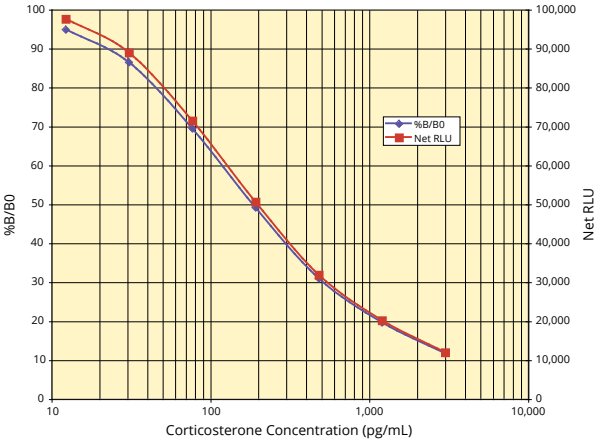
MOST SENSITIVE

FEATURES

▶ Use	Stress Marker in < 2 µL Serum or Plasma
▶ Sample	Serum, Plasma, Urine, Respiratory Vapor, TCM, and extracts of Feces, Feathers and Hair
▶ Multi-Format	Standard range of 10,000–39.06 pg/mL or 5,000–19.53 pg/mL
▶ Sensitivity	ELISA: 50µL Format: 20.9 pg/mL; 100µL Format: 17.5 pg/mL CLIA: 6.7 pg/mL
▶ Validation	Mice, Rats, Humans, Primates, Birds, Cats, Ungulates, Whale, Lizard
▶ Time to Answer	ELISA: 1.5 Hours CLIA: 2 Hours
▶ Species	Species Independent
▶ Samples/Kit	ELISA: 37 or 229 in Duplicate CLIA: 39 or 231 in Duplicate
▶ Stability	Liquid 4°C Stable Reagents
▶ Readout	ELISA: Colorimetric, 450 nm CLIA: Glow Luminescence

SCIENTIFIC RELEVANCE

Corticosterone (Kendall's Compound 'B') is a glucocorticoid secreted by the cortex of the adrenal gland. It is produced in response to stimulation of the adrenal cortex by ACTH and is the precursor of aldosterone. 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 have found evidence of impairment of long term memory retrieval, chronic corticosterone elevation due to dietary restrictions, and corticosterone elevation in response to burn injuries. In addition to stress levels, corticosterone is believed to play a decisive role in sleep-wake patterns.



Cortisol ELISA Kits

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

FEATURES

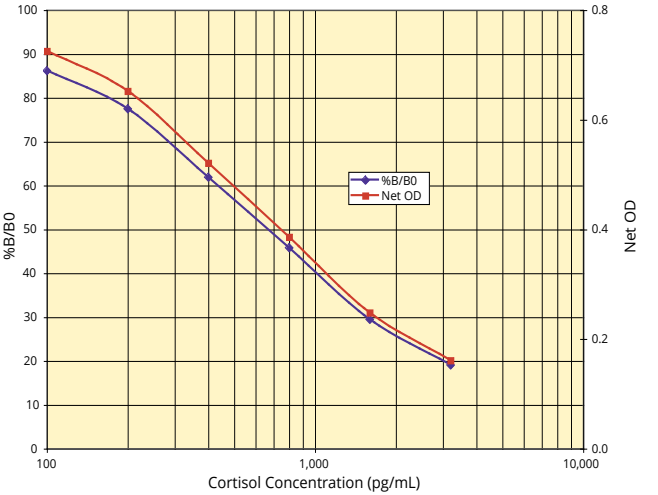
MULTI SPECIES

MOST SENSITIVE

Use	Stress Marker in as Little as 1 µL Serum or Plasma
Sample	Serum, Plasma, Saliva, Urine, Respiratory Vapor, and extracts of Feces, Feathers and Hair
Validation	Rodent, Primates, Ungulates, Fish, Whale, Canine
Time to Answer	1.5 Hours
Format	96-Well, Break-Apart Strip or Whole Plates
Species	Species Independent
Samples/Kit	39 or 231 in Duplicate
Stability	Liquid 4°C Stable Reagents
Readout	Colorimetric, 450 nm

SCIENTIFIC RELEVANCE

Cortisol (hydrocortisone, Kendall's Compound 'F') is the primary glucocorticoid produced and secreted by the adrenal cortex. It is often referred to as the "stress hormone" as it affects blood pressure, blood sugar levels, and other actions of stress adaptation. Immunologically, cortisol functions as an important anti-inflammatory and plays a role in hypersensitivity, immunosuppression, and disease resistance. In the metabolic aspect, cortisol promotes gluconeogenesis, liver glycogen deposition, and the reduction of glucose utilization. Production of cortisol follows an ACTH-dependent circadian rhythm, with a peak level in the morning and decreasing levels throughout the day. All but 4% of serum cortisol is bound to proteins including corticosteroid binding globulin and serum albumin. Abnormal cortisol levels are being evaluated for correlation with a variety of different conditions, such as prostate cancer, depression, schizophrenia, Cushing's Syndrome, and Addison's Disease.



Cortisone ELISA & Chemiluminescent ELISA Kits

ELISA: K017-H1 (1 Plate) | K017-H5 (5 Plate)
Chemiluminescent ELISA: K017-C1 (1 Plate) | K017-C5 (5 Plate)

FEATURES

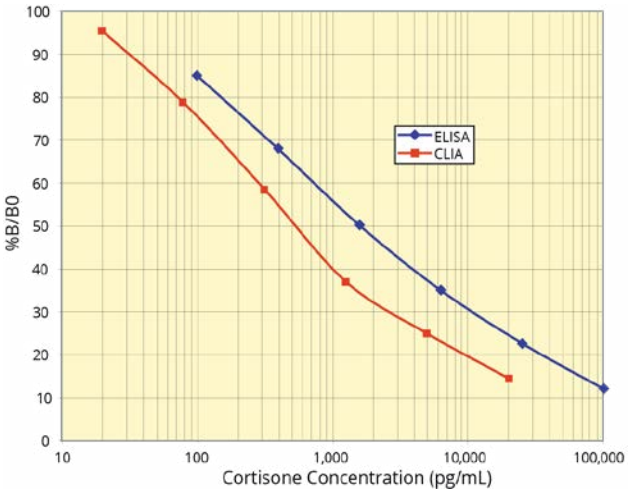
MULTI SPECIES

MOST SENSITIVE

▶ Use	Stress Marker in as Little as 1 µL Serum or Plasma
▶ Sample	Serum, Plasma, Urine, Saliva, Fecal Extracts
▶ Validation	Mice, Rats, Humans, Monkeys, Felids, Ungulates, Canine
▶ Time to Answer	2.5 Hours (ELISA) 2 Hours (Chemiluminescent ELISA)
▶ Species	Species Independent
▶ Samples/Kit	ELISA: 40 or 232 in Duplicate CLIA: 37 or 229 in Duplicate
▶ Stability	Liquid 4°C Stable Reagents
▶ Readout	ELISA: Colorimetric, 450 nm CLIA: Glow Luminescent

SCIENTIFIC RELEVANCE

Cortisone (C21H28O5, Kendall's Compound 'E') was identified by extraction from bovine suprarenal gland tissue. Cortisol and cortisone concentrations vary due to the activity of two 11β-hydroxysteroid dehydrogenases (11β-HSD). 11β-HSD1 is found primarily in the liver where it converts cortisone to cortisol while 11β-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.



Creatinine Serum Detection Kits

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

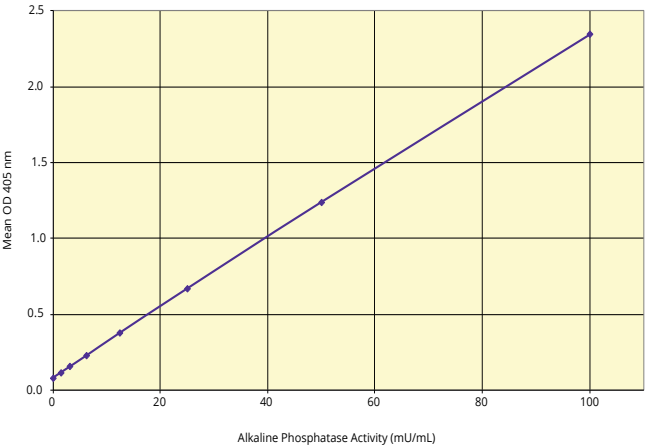
FEATURES

Use	Kidney Damage Assessment
Sample	Serum, Plasma
Species	Species Independent
Calibrated	NIST Standard Reference #914a
Samples/Kit	91 or 187 in Duplicate
Stability	Liquid 4°C Stable Reagents
Readout	Colorimetric, 490 nm

N-CAL™ KIT
MULTI SPECIES
MOST SENSITIVE

SCIENTIFIC RELEVANCE

Creatinine (2-amino-1-methyl-5H-imadazol-4-one) is a metabolite of phosphocreatine (p-creatine), a molecule used as a store for high-energy phosphate that can be utilized by tissues for the production of ATP. Creatine and p-creatine are converted non-enzymatically to the metabolite creatinine, which diffuses into the blood and is excreted by the kidneys. Its formation occurs at a rate that is relatively constant and intra-individual variation is <15% from day to day. Increased levels of creatinine in the serum are useful in diagnosis of kidney disease. A rise in blood creatinine levels is observed only with marked damage to functioning nephrons.



Cyclic AMP ELISA & Chemiluminescent ELISA Kits

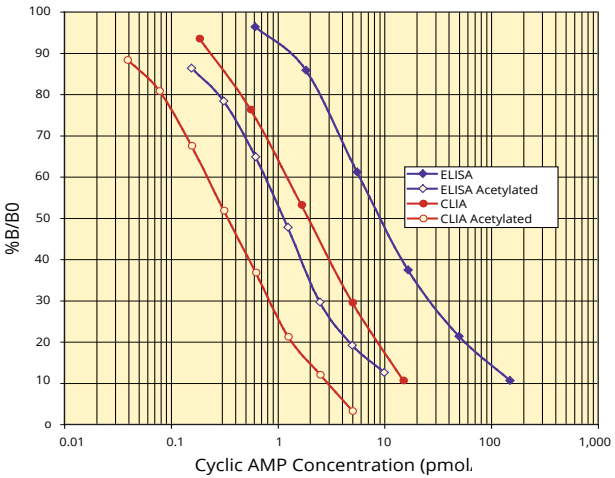
ELISA: K019-H1 (1 Plate) | K019-H5 (5 Plate)
Chemiluminescent ELISA: K019-C1 (1 Plate) | K019-C5 (5 Plate)

FEATURES

▶ Use	Measure cAMP Directly
▶ Sample	Cells, Saliva, Urine, Plasma ,Tissue
▶ Convenient	Lyse, Stabilize and Measure in One Step
▶ Sensitivity	ELISA: 4.2 fmol /well CLIA: 0.75 fmol/well
▶ Samples/Kit	ELISA: 39 or 231 in Duplicate CLIA: 38 or 230 in Duplicate
▶ Time to Answer	ELISA: 2.5 Hours CLIA: 2 Hours
▶ Readout	ELISA: Colorimetric, 450 nm CLIA: Glow Luminescent

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. 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. The Human Metabolome Database lists 166 metabolic enzymes that convert cAMP.



Cyclic GMP Direct ELISA & Chemiluminescent ELISA Kits

Chemiluminescent ELISA: K020-C1 (1 Plate) | K020-C5 (5 Plate)
ELISA: K020-H1 (1 Plate) | K020-H5 (5 Plate)

FEATURES

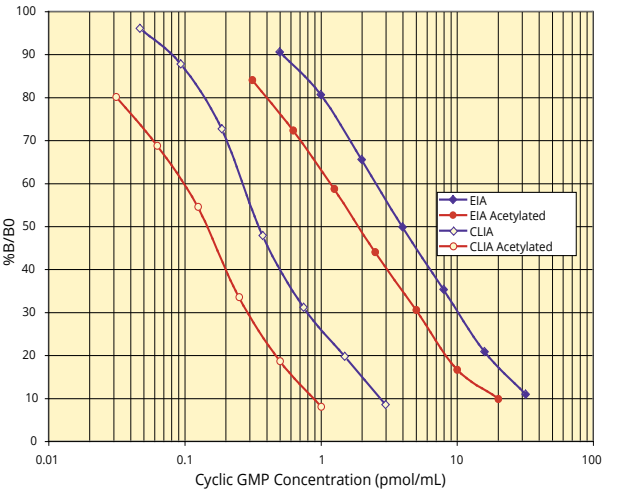
MULTI SPECIES

MOST SENSITIVE

Use	Measure cGMP Directly
Sample	Cells, Saliva, Urine, Plasma, TCM
Convenient	Lyse, Stabilize and Measure in One Step
Sensitivity	ELISA: 0.188 pmol/mL CLIA: 1.15 fmol cGMP/well
Samples/Kit	39 or 231 in Duplicate
Species	Species Independent
Stability	Liquid 4°C Stable Reagents
Readout	ELISA: Colorimetric, 450 nm CLIA: Glow Luminescent

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. 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.



Cyclic GMP Direct ELISA Kits - IMPROVED

K065-H1 (1 Plate) | K065-H5 (5 Plate)

FEATURES

MULTI SPECIES

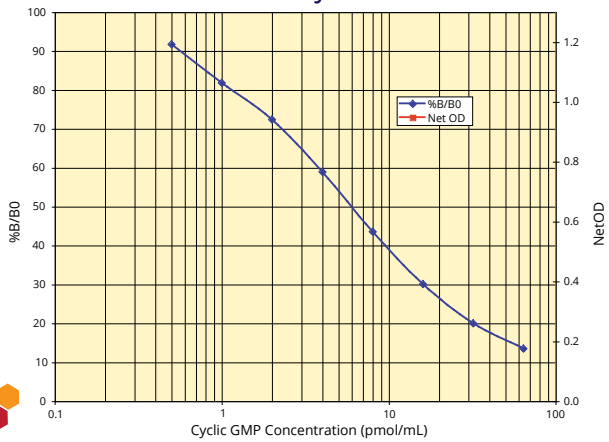
MOST SENSITIVE

Use	Measure cGMP Directly
Sample	Cell and Tissue Lysates, Urine, Plasma, Saliva, TCM
Convenient	Lyse, Stabilize and Measure in One Step
Sensitivity	0.091 pmol/mL, 4.55 fmol/well
Samples/Kit	38 or 230 in Duplicate
Time to Answer	Results in 2.5 Hours
Readout	Colorimetric, 450 nm
Comparison	Improved Sensitivity and Enhanced Signal over K020-H

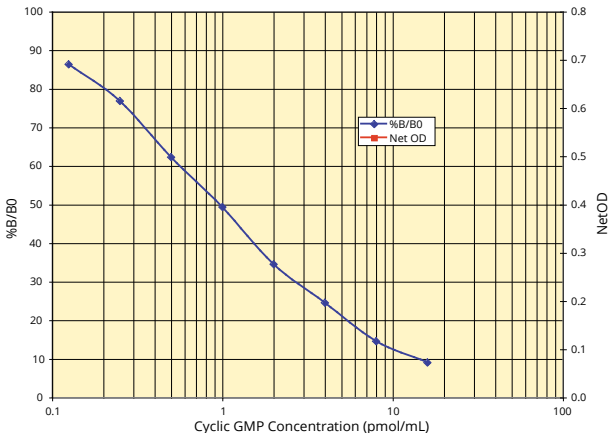
SCIENTIFIC RELEVANCE

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. 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.

Non-Acetylated



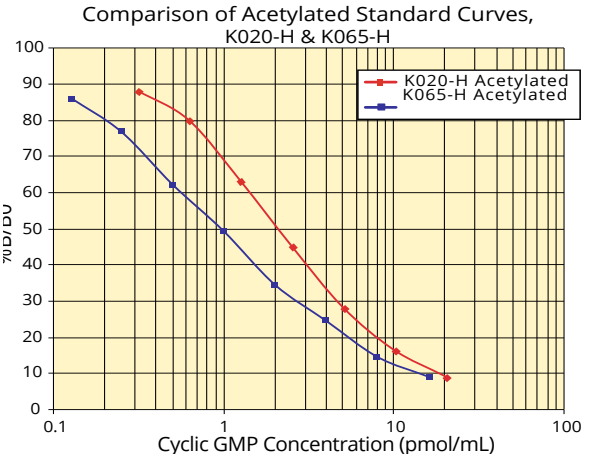
Acetylated



Comparison of cGMP ELISA Kits (K065-H vs. K020-H)

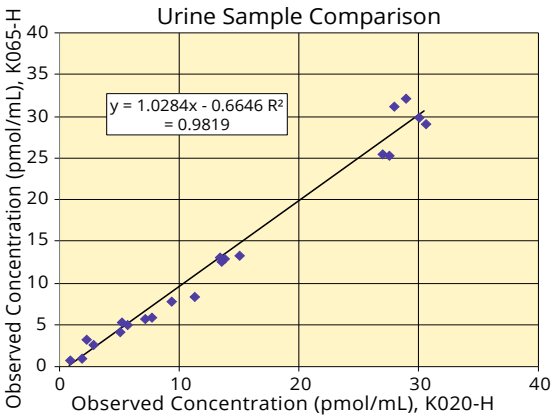
ADDITIONAL INFORMATION

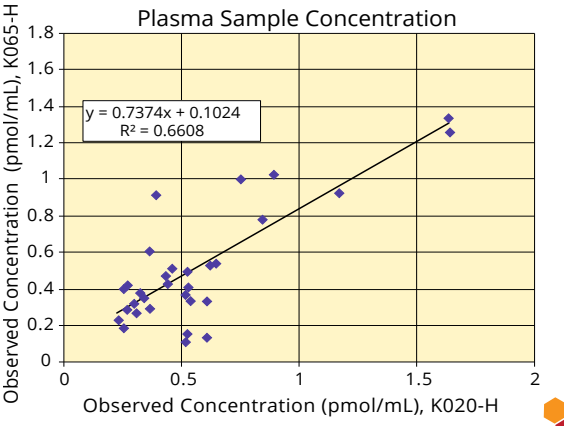
Cyclic GMP levels in most systems are an order of magnitude lower than those found for cyclic AMP and in our constant effort to deliver the easiest, most reliable and sensitive assays we have developed a new cGMP antibody to give you enhanced sensitivity. Our new Cyclic GMP ELISA Kits (K065-H) are 2-fold more sensitive than our current cGMP assay (K020-H).



The improvement in sensitivity is shown by the Limits of Detection and calculated Sensitivity for the 2 assays, with K065-H being half that of K020-H.

Urine dilutions were run in the nonacetylated format of K065-H and K020-H, side by side, and measured cGMP concentrations were similar. Plasma dilutions were run in the acetylated format for each kit with only a slightly larger difference seen between the measured concentrations.





Dehydroepiandrosterone Sulfate (DHEA-S) ELISA Kits

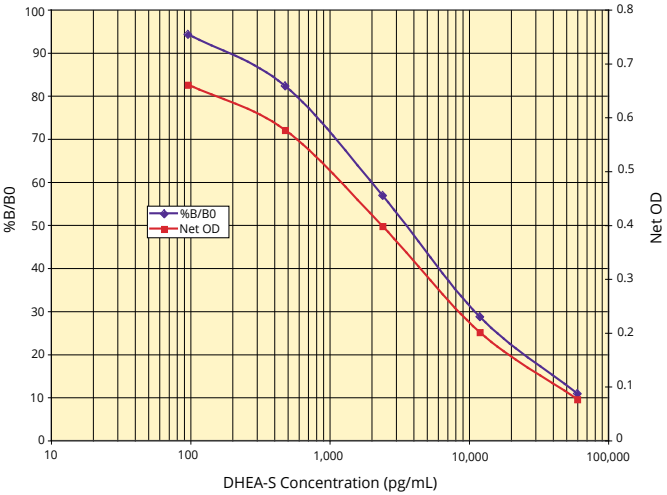
K054-H1 (1 Plate) | K054-H5 (5 Plate)

FEATURES

Use	Determination of Estrogen Deficiency
Sample	Serum, Plasma, Saliva, Urine, Media, Fecal Extracts
Validation	Human, Monkey, Felids, Ungulates
Time to Answer	2.5 Hours
Format	96-Well, Break-Apart Strip
Species	Species Independent
Samples/Kit	41 or 233 in Duplicate
Stability	Liquid 4°C Stable Reagents
Readout	Colorimetric, 450 nm

SCIENTIFIC RELEVANCE

Dehydroepiandrosterone sulfate (DHEA-S) is the major C19 steroid secreted by the adrenal cortex, and is a precursor to 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. Due to the presence of a 17-ketone group rather than a hydroxyl group, DHEA-S has relatively low androgenic activity. The bioactivity of DHEA-S may be high due to its serum concentrations being 100-1,000 -fold higher than testosterone or DHEA in addition to its weak affinity for sex-hormone binding globulin.



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Galactose Colorimetric Detection Kit

K042-H1 (2 Plate)

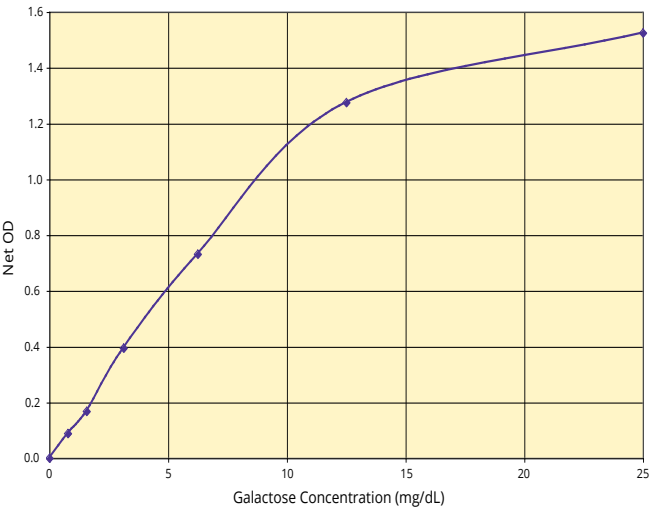
FEATURES

MULTI SPECIES

- Use — Measurement of Galactose
- Sample — Serum, Plasma, Buffers, Media
- Time to Answer — 30 Minutes
- Samples/Kit — 88 in Duplicate
- Stability — Liquid 4°C Stable Reagents

SCIENTIFIC RELEVANCE

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



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, β-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. The 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.

Glucose Colorimetric & Fluorescent Detection Kits

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
- Samples/Kit — 88 in Duplicate
- Stability — Liquid 4°C Stable Reagents
- Detection — Colorimetric, 560 nm
  Fluorescent, 590 nm em / 520 nm ex

MULTI SPECIES

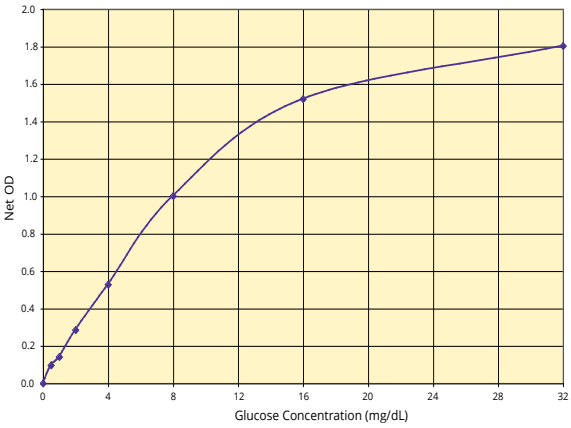
MOST SENSITIVE

SCIENTIFIC RELEVANCE

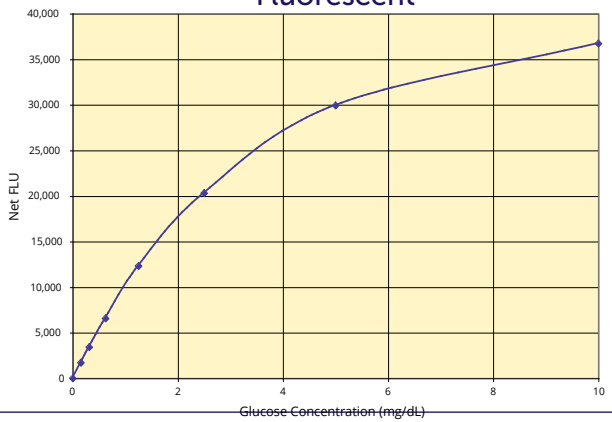
Glucose is by far the most common carbohydrate energy source for the cell. It is a monosaccharide, an aldose, a hexose, and a reducing sugar. It is also known as dextrose because it is dextrorotatory (rotates polarized light clockwise). For all biological and molecular events and for multiple cellular 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, or excitotoxicity and may impede mitochondrial DNA repair.

A serious drop 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 β-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.

Colorimetric



Fluorescent



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Glutathione (GSH) Colorimetric Detection Kits

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

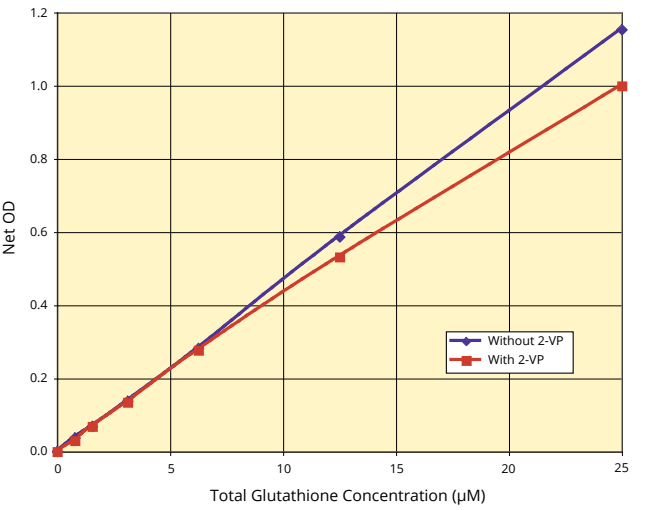
MULTI SPECIES

FEATURES

Use	Measure Total GSH and GSSG to Determine Oxidative Stress
Samples	Whole Blood, Serum, Plasma, Erythrocytes, Urine, Lysates, TCM
Sensitivity	0.634 µM (Plate-based Format)
Format	96-Well or Cuvette
Species	Species Independent
Samples/Kit	K006-H1: 89 (Total and GSSG) in Duplicate K006-H1C-H/L: 43 (Total and GSSG) in Duplicate
Stability	Liquid 4°C Stable Reagents
Readout	Colorimetric, 405 nm

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 is a tripeptide that contains an unusual peptide linkage between the amine group of cysteine and the carboxyl group of the glutamate side-chain. It is an antioxidant, preventing damage to important cellular components caused by reactive oxygen species such as free radicals and peroxides. Glutathione reduces disulfide bonds formed within cytoplasmic proteins to cysteines by serving as an electron donor. In the process, glutathione is converted to its oxidized form, glutathione disulfide (GSSG). Glutathione is found mostly in its reduced form since the enzyme that reverts it from its oxidized form, glutathione reductase, is constitutive and inducible upon oxidative stress. The ratio of reduced glutathione to oxidized glutathione within cells is often used as a measure of cellular toxicity.



Glutathione (GSH) Fluorescent Detection Kits

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

FEATURES

MULTI SPECIES

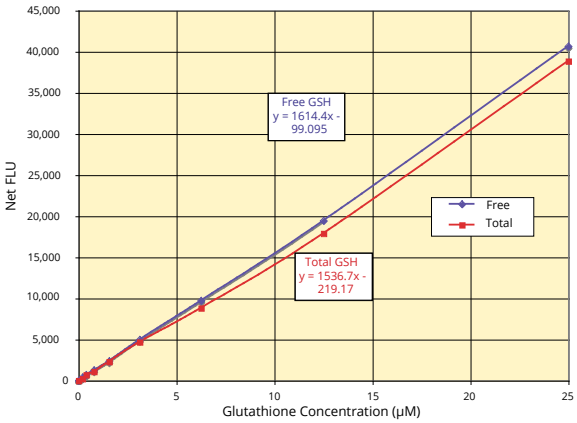
MOST SENSITIVE

▶ Use	Measure GSH/GSSG to Determine Oxidative Stress
▶ Sample	Whole Blood, Serum, Plasma, Erythrocytes, Urine, Lysates, TCM
▶ Species	Species Independent
▶ Sensitivity	45 nM Free GSH, 48 nM Total GSH
▶ Samples/Kit	39 or 231 in Duplicate (K006-F1/F5) 183 in Duplicate (K006-F1D)
▶ Stability	Liquid 4°C Stable Reagents
▶ Readout	Fluorescent, 510 nm em/370-410 nm ex

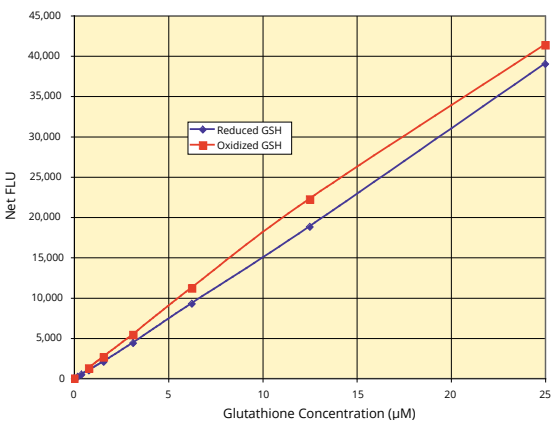
SCIENTIFIC RELEVANCE

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 is a tripeptide that contains an unusual peptide linkage between the amine group of cysteine and the carboxyl group of the glutamate side-chain. It is an antioxidant, preventing damage to important cellular components caused by reactive oxygen species, such as free radicals and peroxides. Glutathione reduces disulfide bonds formed within cytoplasmic proteins to cysteines by serving as an electron donor. In the process, glutathione is converted to its oxidized form, glutathione disulfide (GSSG). Glutathione is found mostly in its reduced form, since the enzyme that reverts it from its oxidized form, glutathione reductase, is constitutive and inducible upon oxidative stress. The ratio of reduced glutathione to oxidized glutathione within cells is often used as a measure of cellular toxicity.

K006-F1/F5



K006-F1D



Insulin Human ELISA Kit

K046-H1 (1 Plate)

FEATURES

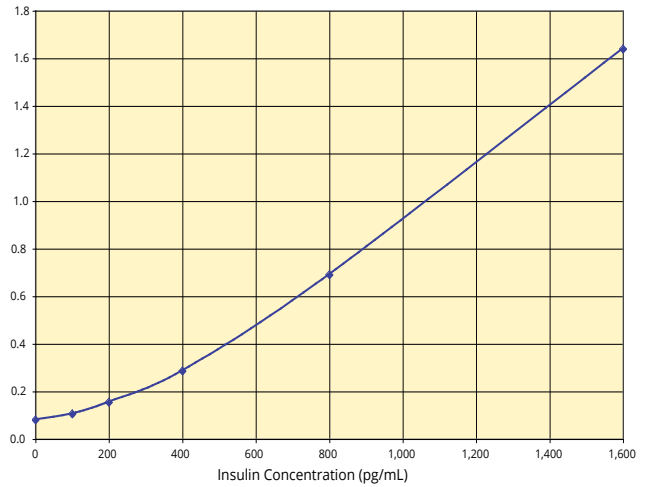
- Use — Measure Human Insulin
- Sample — Serum, Plasma, TCM
- Samples/Kit — 42 in Duplicate
- Range — 1,600 to 100 pg/mL
- Calibrated — WHO 1st International Standard 1975 (66/304)
- Time to Answer — 2 Hours

N-CAL™ KIT

MULTI SPECIES

SCIENTIFIC RELEVANCE

The human insulin protein is a 51 amino acid anabolic peptide-hormone that is secreted by the pancreatic β-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, thereby serving a major role in glucose homeostasis and 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. By 1923, these pancreatic 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 and 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.



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.

P450 Demethylating Fluorescent Activity Kit

K011-F1 (1 Plate)

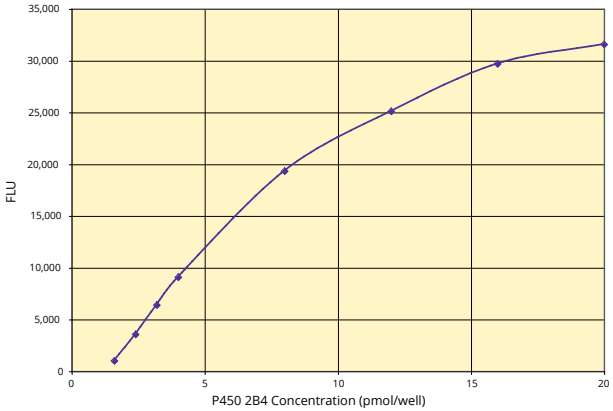
FEATURES

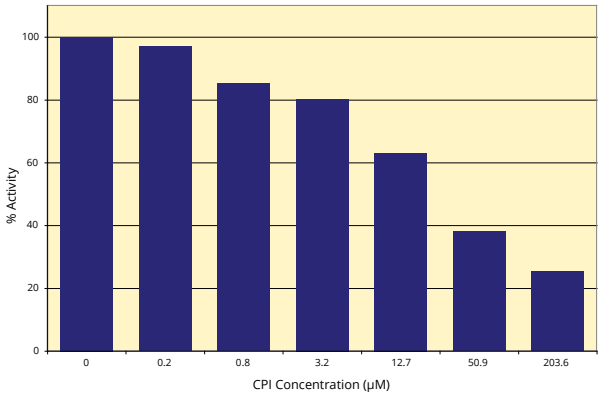
- Use — Detection of P450 Activity, Drug Metabolism
- Sample — P450 Demethylating Systems, Native or Recombinant
- Samples/Kit — 89 in Duplicate
- Time to Answer — 30 Minutes
- Readout — Fluorescent, 510 nm em/450 nm ex

SCIENTIFIC RELEVANCE

The cytochrome P450 enzymes (P450s) are a superfamily of heme containing enzymes that display tremendous diversity with regard to substrate specificity and catalytic activity. Usually they form part of multicomponent electron transfer reactions. The P450s play a crucial role in the development of new drug entities as drug interactions commonly inhibit cytochrome P450 activities.

The DetectX® P450 Fluorescent Activity kit allows activity measurement of any demethylating P450 system **without** any additions to the P450:Substrate reaction. This assay measures the formaldehyde generated by demethylation and the signal is read **after** the P450 reaction has been terminated. It is a convenient plate-based assay with 30 minute fluorescent substrate incubation and detection readout at 510 nm. The kit has been tested in 3A4, 2D6, and 2B4 P450 systems with erythromycin, dextromethorphan or benzphetamine.





Retinol Binding Protein Multi-Format ELISA Kits

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

FEATURES

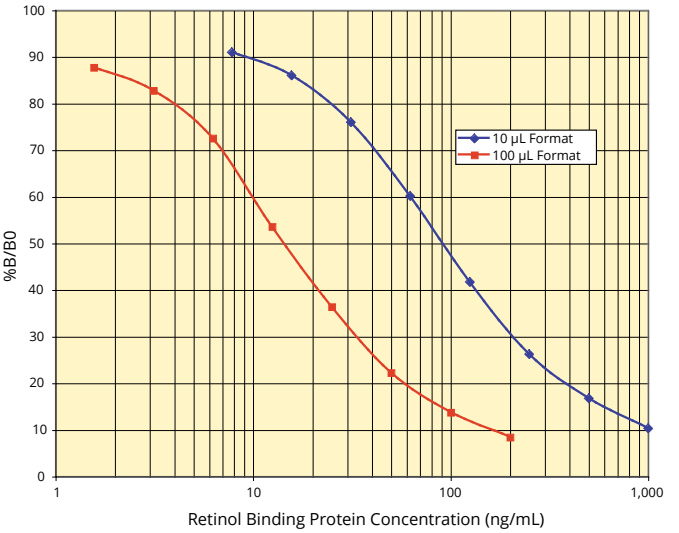
- Use — Measure a Broad Range of RBP Concentrations
- Dual Range — 7.81-1000 ng/mL or 1.56-200 ng/mL
- Sample Type — Serum, Plasma, Urine, Dried Blood Spots
- Samples/Kit — 38 or 230 in Duplicate
- Species — Species Independent
- Time to Answer — 90 Minutes
- Readout — Colorimetric, 450 nm

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 that binds retinol (Vitamin A). RBP is totally filtered by the glomeruli and reabsorbed by proximal tubules. Urinary RBP is used to study renal function in heart or kidney transplant recipients, type 1 and 2 diabetics, and in people exposed to uranium from mining operations. RBP may also be used to monitor Vitamin A deficiency.



Testosterone ELISA Kits

K032-H1 (1 Plate) | K032-H5 (5 Plate)
K032-H1W (1 Whole Plate) | K032-H5W (5 Whole Plate)

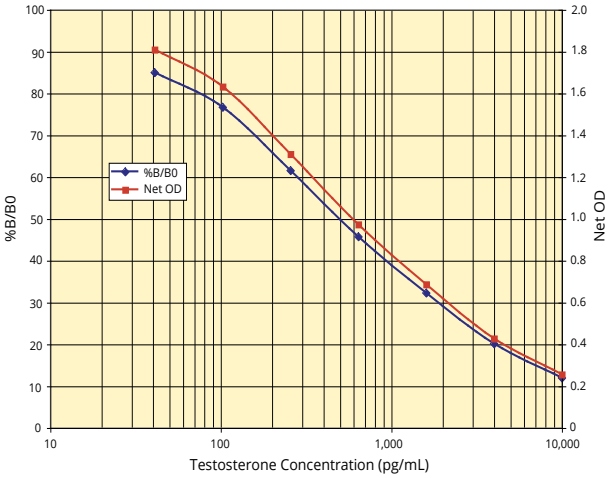
FEATURES

MULTI SPECIES

Use	Non-invasive measurement of Testosterone and Dihydrotestosterone
Sample	Dried Fecal Extracts, Urine and TCH, as well as Extracted Serum and Plasma
Range	40.96 - 10,000pg/mL
Sensitivity	9.92 pg/mL
Time to Answer	2.5 Hours
Species	Species Independent
Samples/Kit	39 or 231 in Duplicate
Stability	Liquid 4°C Stable Reagents
Readout	Colorimetric, 450 nm

SCIENTIFIC RELEVANCE

Testosterone (4-Androsten-17β-ol-3-one) is an anabolic steroid hormone from the androgen group. It is 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 that plays key roles in developing reproductive tissues such as the testis and prostate. It also promotes secondary sexual characteristics such as increased muscle, bone mass, and body hair. In addition, testosterone is essential for health and well-being as well as the prevention of osteoporosis. Testosterone plays a significant role in glucose homeostasis and lipid metabolism. Cross-sectional epidemiological studies have reported a direct correlation between plasma testosterone and insulin sensitivity. Low testosterone levels are associated with an increased risk of type 2 diabetes, dramatically illustrated by androgen deprivation in men with prostate carcinoma.



Testosterone ELISA Kits - Improved Sensitivity

K080-H1 (1 Plate) | K080-H5 (5 Plate)
K080-H1W (1 Whole Plate) | K080-H5W (5 Whole Plate)

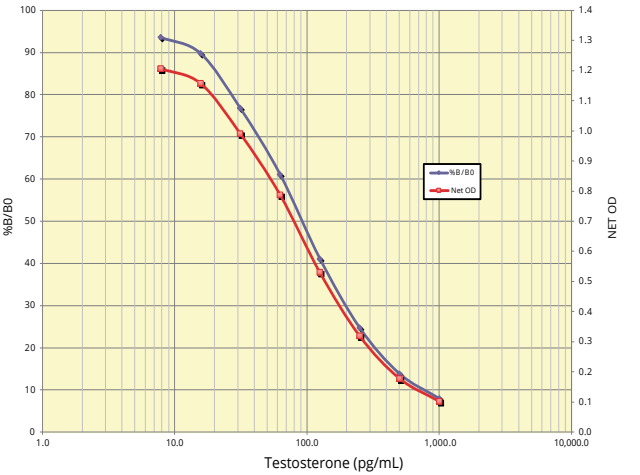
MULTI SPECIES

FEATURES

Use	No Extraction Needed for Serum and Plasma
Sample	Serum, Plasma, Urine and Dried Fecal Extracts
Range	7,813 - 1,000 pg/mL
Sensitivity	2.97 pg/mL
Time to Answer	2.5 Hour
Species	Species Independent
Samples/Kit	38 or 230 in Duplicate
Stability	Liquid 4°C Stable Reagents
Readout	Colorimetric, 450 nm

SCIENTIFIC RELEVANCE

Testosterone (4-Androsten-17β-ol-3-one) is an anabolic steroid hormone from the androgen group. It is 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 that plays key roles in developing reproductive tissues such as the testis and prostate. It also promotes secondary sexual characteristics such as increased muscle, bone mass, and body hair. In addition, testosterone is essential for health and well-being as well as the prevention of osteoporosis. Testosterone plays a significant role in glucose homeostasis and lipid metabolism. Cross-sectional epidemiological studies have reported a direct correlation between plasma testosterone and insulin sensitivity. Low testosterone levels are associated with an increased risk of type 2 diabetes, dramatically illustrated by androgen deprivation in men with prostate carcinoma.



Thyroxine (T_4) ELISA Kits

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

FEATURES

MULTI SPECIES

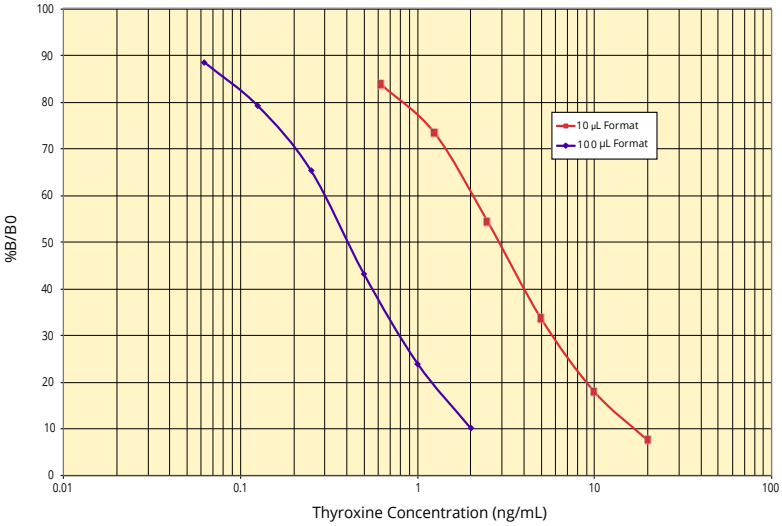
Use	Non-invasive Measurement of T_4
Sample	Dried Fecal Extracts, Serum, Plasma, Urine, Media
Species	Species Independent
Range	50-0.8 ng/mL or 4000-63 pg/mL
Time to Answer	90 Minutes
Samples/Kit	40 or 232 in Duplicate

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. 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.

The major form of thyroid hormone in 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. All three deiodinase isoforms 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 reduced.



Triiodothyronine (T_3) ELISA Kits

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

FEATURES

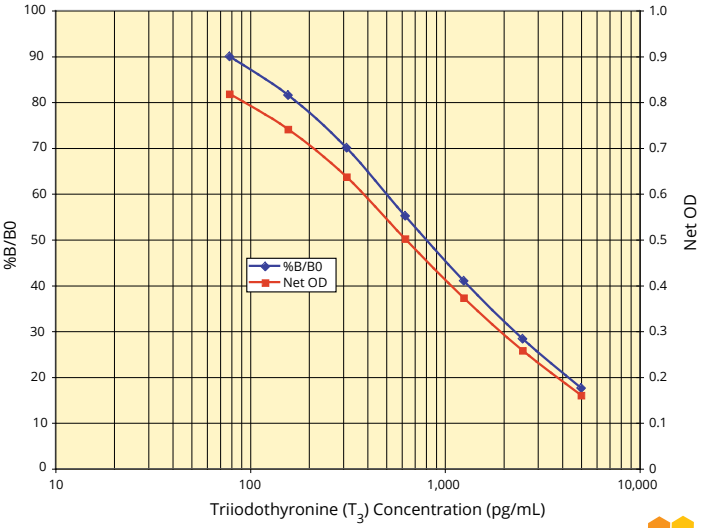
MULTI SPECIES

- Use: Non-invasive Measurement of T_3
- Sample: Urine, Media and Extracted Serum, Plasma and Dried Fecal
- Species: Species Independent
- Sensitivity: 37.4 pg/mL
- Time to Answer: 2.5 hours
- Samples/Kit: 39 or 231 in Duplicate
- Readout: Colorimetric, 450 nm

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 in the bloodstream. The concentration of serum T_4 is 20 times that of T_3.

Circulating levels of T_4 are much greater than T_3 levels, but T_3 is the more metabolically active hormone (3-4 times more potent than T_4) although its effect is briefer due to its shorter half-life. 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 children, are consistent with hyperthyroidism or high 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.



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