WEB 220106

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Adrenocorticotropic Hormone (ACTH) ELISA Kits

K072-H1 (1 Plate) | K072-H5 (5 Plate)

FEATURES

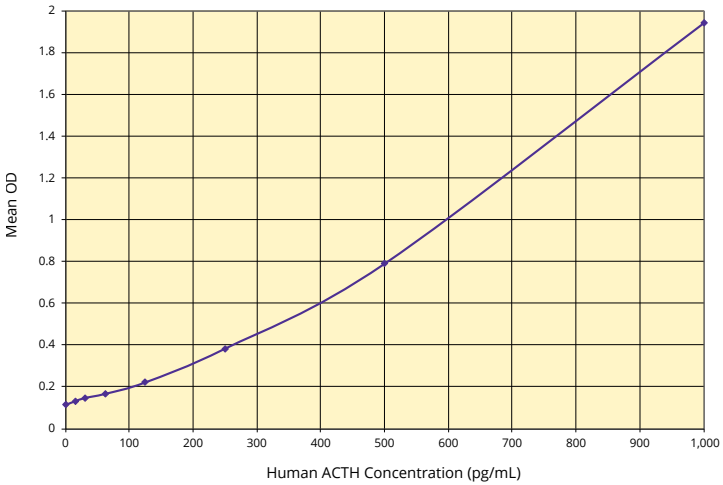
- Use — Measure ACTH in Plasma Samples
- Sample — Plasma
- Sensitivity — 12.71 pg/mL
- Samples/Kit — 40 or 232 in Duplicate
- Stability — Liquid 4°C Stable Reagents
- Readout — Colorimetric, 450 nm

MULTI SPECIES

MOST SENSITIVE

SCIENTIFIC RELEVANCE

Adrenocorticotropic hormone (ACTH, also adrenocorticotropin, corticotropin) is an important component of the hypothalamic-pituitary-adrenal axis (HPA) and is produced in response to biological stress. Its principal effects are increased production and release of glucocorticoids (GCs). Stress-induced secretion of the peptide hormone Corticotropin Releasing Hormone (CRH) stimulates pituitary ACTH secretion. Circulating ACTH binds to melanocortin receptors on the surface of adrenal zona cells, inducing the synthesis and release of all adrenal steroids, aldosterone, GCs and adrenal androgens. ACTH is also the principal modulator of cortisol and corticosterone. In addition to the stress response, ACTH synthesis is related to the circadian rhythm in many organisms. Measurement of plasma ACTH is helpful in the differential diagnosis of pituitary Cushing's disease, Addison's disease, adrenal tumors, adrenal hyperplasia, and ectopic ACTH syndrome.



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Catalase Colorimetric Activity Kits

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

MULTI SPECIES

MOST SENSITIVE

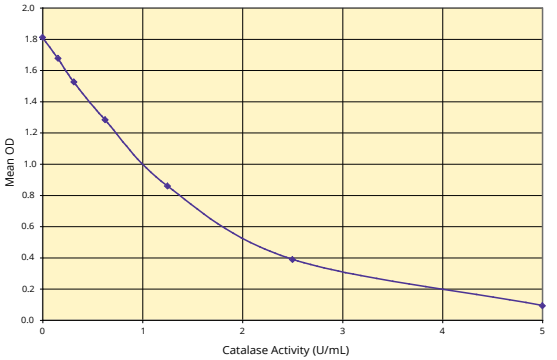
FEATURES

▶ Use	Measure Catalase Activity in Any Sample
▶ Time to Answer	45 Minutes
▶ Sensitivity	Measure as Little as 0.052 U/mL
▶ Samples/Kit	89 in Duplicate
▶ Stability	Liquid 4°C Stable Reagents
▶ Species	Species Independent
▶ Readout	Colorimetric, 560 nm Fluorescent, 590 nm em/520 nm ex

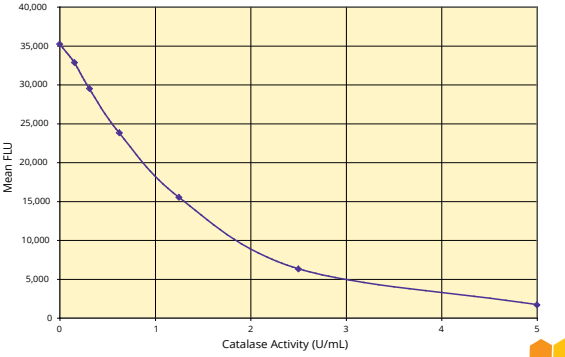
SCIENTIFIC RELEVANCE

Hydrogen peroxide, (H_2O_2) is one of the most frequently occurring reactive oxygen species. It is formed either in the environment, 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, are harmful for most cell components. Its rapid removal is essential for all aerobically living prokaryotic and eukaryotic cells. 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. Mammals, including humans and mice, express catalase in all tissues. A high concentration of catalase can be found in the liver, kidneys and erythrocytes. The expression is regulated at transcription, post-transcription and post-translation levels. High catalase activity is detected in peroxisomes.

Colorimetric



Fluorescent



Ceruloplasmin (Cp) Colorimetric Activity Kit

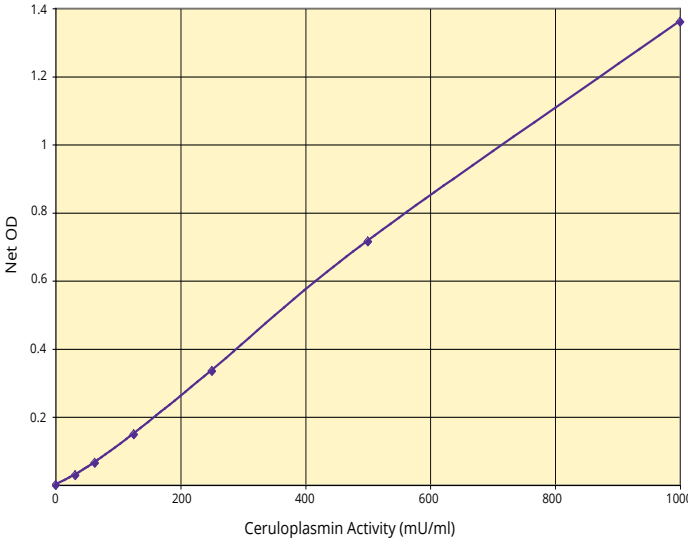
K035-H1 (2 Plate)

FEATURES

Use	Non-Invasive Pregnancy Marker
Sample	Urine, Serum
Validation	Humans, Felids, Polar Bear, Panda
Species	Multiple Species
Time to Answer	60 Minutes
Format	96-Well
Samples/Kit	89 in Duplicate
Stability	Liquid 4°C Stable Reagents
Readout	Colorimetric, 560 nm

SCIENTIFIC RELEVANCE

Ceruloplasmin (Cp) is an acute phase multicopper oxidase enzyme that normally plays a protective role in responses to immune-provoking stimuli and is also associated with reproduction. Estrogens alter the subcellular distribution of copper in the liver, leading to an increase in plasma copper levels and subsequent ceruloplasmin synthesis. Serum levels of Cp have been shown to increase during normal pregnancy in some species possibly as a protection against the oxidative costs of reproduction. In giant pandas and some felids, urinary Cp activity has been shown to be elevated in pregnant vs. pseudopregnant animals beginning in the first week of gestation and continuing throughout the luteal phase.



Corticosterone Chemiluminescent ELISA Kits

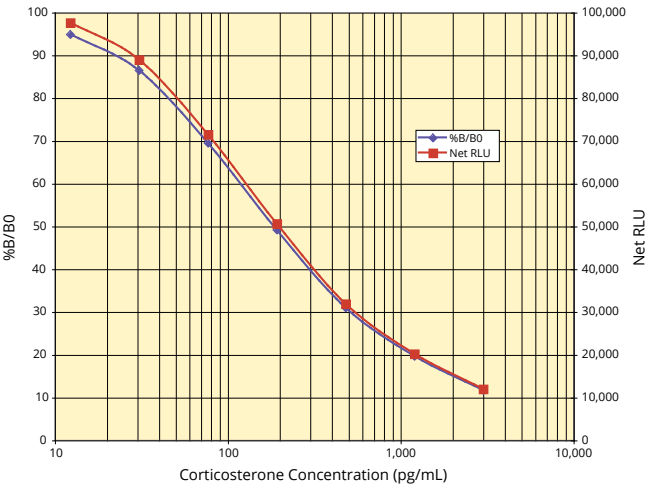
K014-C1 (1 Plate) | K014-C5 (5 Plate)

FEATURES

Use	Stress Marker in < 2µL Serum or Plasma
Sample	Serum, Plasma, Urine, Respiratory Vapor, TCM. and extracts of Feces, Feathers and Hair
Validation	Mice, Rats, Humans, Primates, Birds, Cats, Ungulates, Whale, Lizard
Sensitivity	6.7 pg/mL
Time to Answer	2 Hours
Format	96-Well, Break-Apart Strip
Species	Species Independent
Samples/Kit	39 or 231 in Duplicate
Stability	Liquid 4°C Stable Reagents
Readout	Glow Luminescent

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.

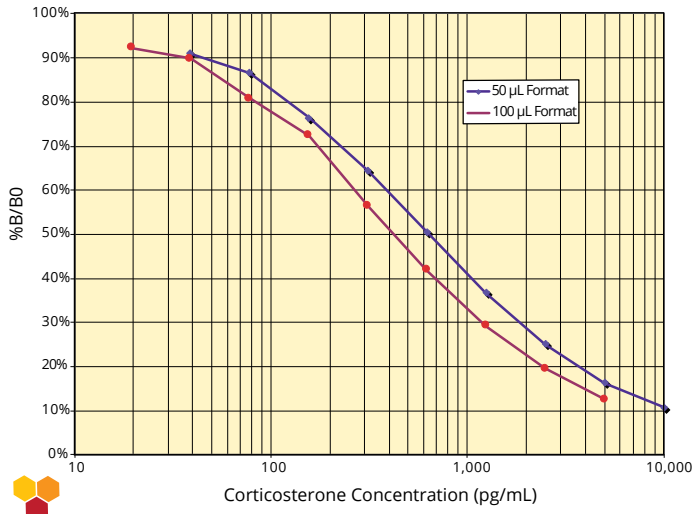


Corticosterone Multi-Format ELISA Kits

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

FEATURES

Use	Stress Marker in < 2µL Serum or Plasma
Sample	Serum, Plasma, Urine, Respiratory Vapor, TCM and Feather, Hair and Fecal Extracts
Multi-Format	Standard range of 10,000–39.06 pg/mL or 5,000–19.53 pg/mL
Sensitivity	50µL Format: 20.9 pg/mL 100µL Format: 17.5 pg/mL
Validation	Mice, Rats, Humans, Primates, Birds, Cats, Ungulates, Whale, Lizard
Time to Answer	1.5 Hours
Format	96-Well, Break-Apart Strip
Species	Species Independent
Samples/Kit	37 or 229 in Duplicate
Stability	Liquid 4°C Stable Reagents
Readout	Colorimetric, 450 nm



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.

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Cortisol ELISA Kits

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

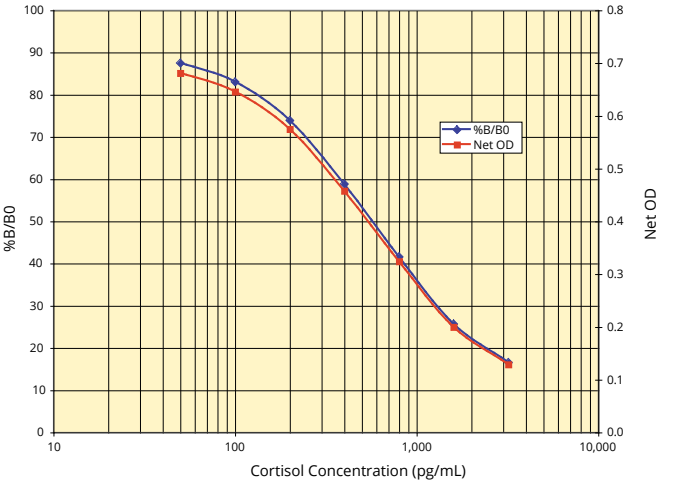
FEATURES

- Use — Stress Marker in as Little as 1 µL Serum or Plasma
- Sample — Serum, Plasma, Saliva, Urine, Respiratory Vapor, and Hair and Fecal Extracts
- 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

N-CAL™ KIT MULTI SPECIES

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 Chemiluminescent ELISA Kits

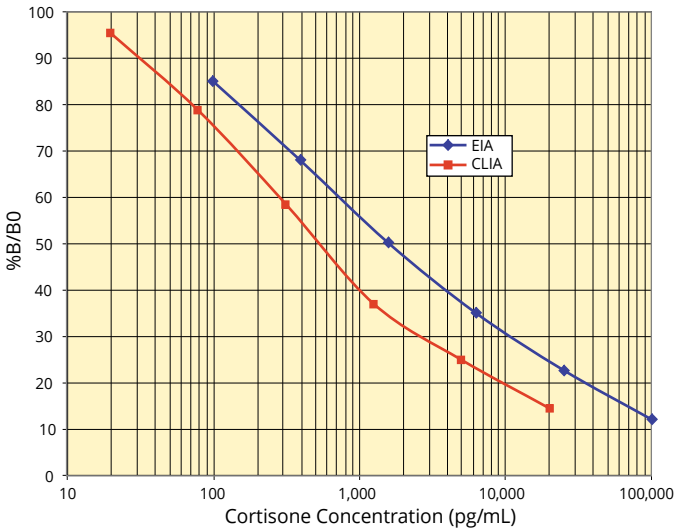
K017-C1 (1 Plate) | K017-C5 (5 Plate)

FEATURES

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 Hours
Species	Species Independent
Samples/Kit	37 or 229 in Duplicate
Stability	Liquid 4°C Stable Reagents
Readout	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.



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Cortisone ELISA Kits

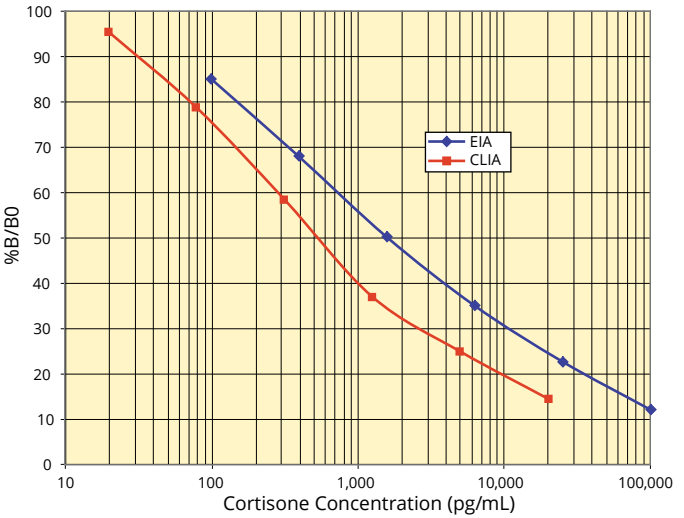
ELISA: K017-H1 (1 Plate) | K017-H5 (5 Plate)

FEATURES

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
Species	Species Independent
Samples/Kit	40 or 232 in Duplicate
Stability	Liquid 4°C Stable Reagents
Readout	Colorimetric, 450 nm

SCIENTIFIC RELEVANCE

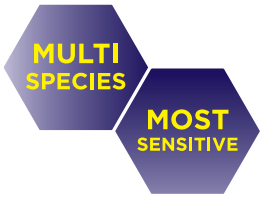
Cortisone (C21H28O5, Kendall's Compound 'E') was identified by extraction from bovine suprarenal gland tissue. Cortisol and cortisone concentrations vary due to the activity of two 11β-hydroxysteroid dehydrogenases (11β-HSD). 11β-HSD1 is found primarily in the liver where it converts cortisone to cortisol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



FRAP™ (Ferric Reducing Antioxidant Power) Detection Kit

K043-H1 (2 Plate)

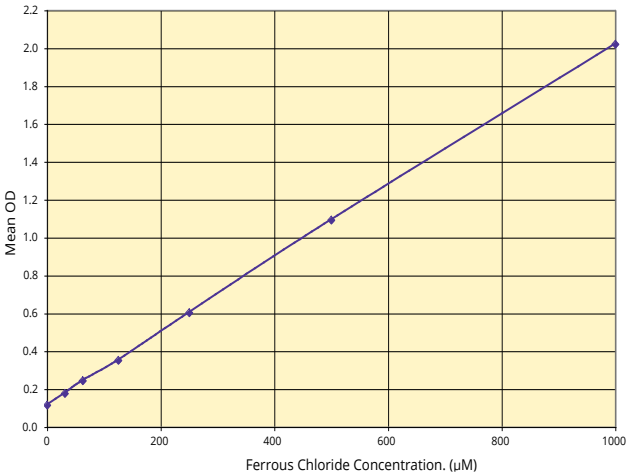
FEATURES



▶ Use	Measure Ferric Reducing Anti-Oxidant Potential (FRAP) of Samples
▶ Samples	Serum, Plasma, Tissue, Saliva, Cell Lysates, Urine, Food, Cosmetics, Additives
▶ Samples/Kit	89 in Duplicate
▶ Stability	Liquid 4°C Stable Reagents
▶ Time to Answer	30 Minutes
▶ Readout	Colorimetric, 560 nm

SCIENTIFIC RELEVANCE

Potentially harmful reactive oxygen species (ROS) are produced as a consequence of normal aerobic metabolism. "Free Radicals" (FR) are usually removed or inactivated in vivo by a team of antioxidants. They are chemically stable atoms and molecules, which have one or more free electrons. 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. Connections between free radicals and some serious diseases, including Parkinson's and Alzheimer's diseases, atherosclerosis, heart attacks, and chronic fatigue syndrome, have been demonstrated. However, short-term oxidative stress, the unbalance between the formation and scavenging of the reactive oxygen species, may be important in preventing aging due to triggering of the process known as mitohormesis. On average, 65 – 70% of the population is excessively impacted by oxidative stress caused by FRs.



Glutathione (GSH) Colorimetric Detection Kits

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

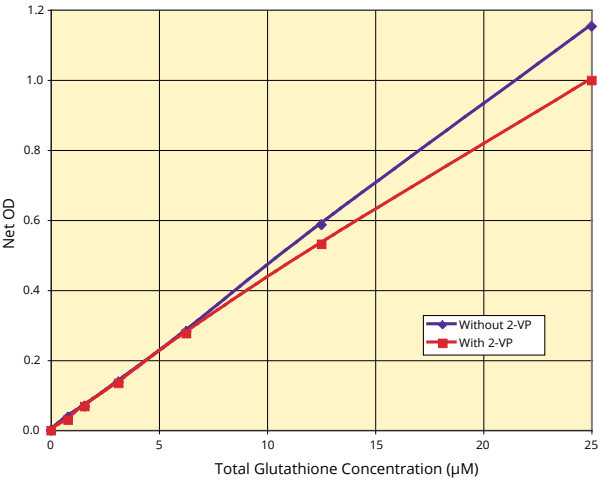
MULTI SPECIES

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

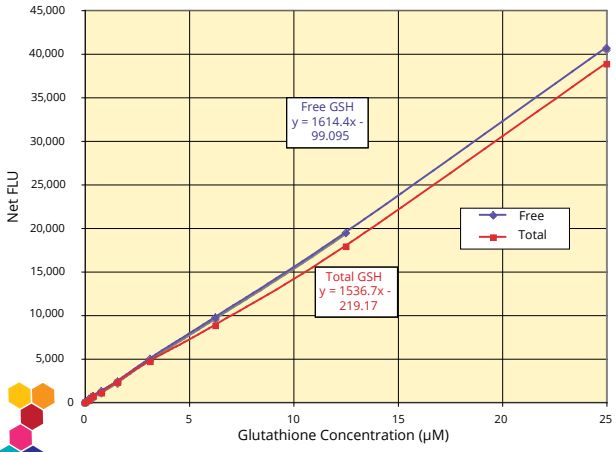
MOST SENSITIVE

▶ 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

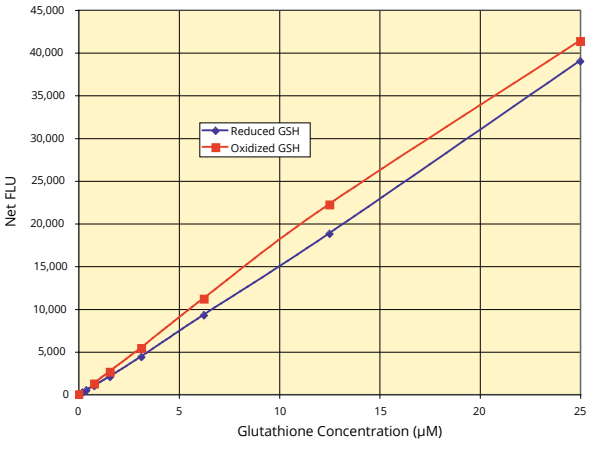
SCIENTIFIC RELEVANCE

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



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Glutathione Reductase Fluorescent Activity Kit

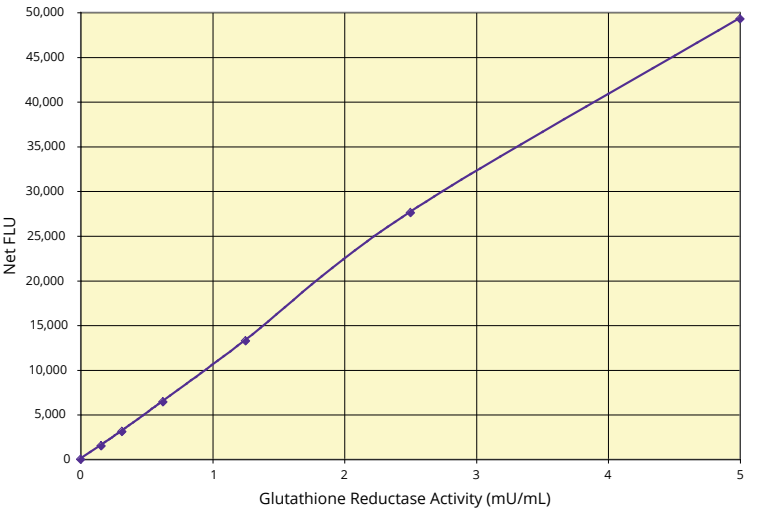
K009-F1 (1 Plate)

FEATURES

Use	Measure GR activity
Sample	RBCs, Serum, Plasma, Cells, Tissues
Convenient	20 minute End Point or Kinetic Assay
Sensitivity	9 µU/mL, World's Most Sensitive
Species	Species Independent
Samples/Kit	41 in Duplicate
Stability	Liquid 4°C Stable Reagents
Readout	Fluorescent, 510 nm em/370-410 nm ex

SCIENTIFIC RELEVANCE

Glutathione reductase (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). GSH, in conjunction with the enzyme glutathione peroxidase (GP), is the acting reductant responsible for minimizing harmful hydrogen peroxide. The regeneration of GSH is catalyzed by GR. GR is a ubiquitous 100-120 kDa dimeric flavoprotein that catalyzes the reduction of oxidized glutathione (GSSG) to reduced glutathione, using β-nicotinamide dinucleotide phosphate (NADPH) as the hydrogen donor. NADPH has been suggested to also act as an indirectly operating antioxidant, given its role in the recycling of GSSG to GSH and thus maintaining the antioxidative power of glutathione.



Glutathione S-Transferase Fluorescent Activity Kit

K008-F1 (1 Plate)

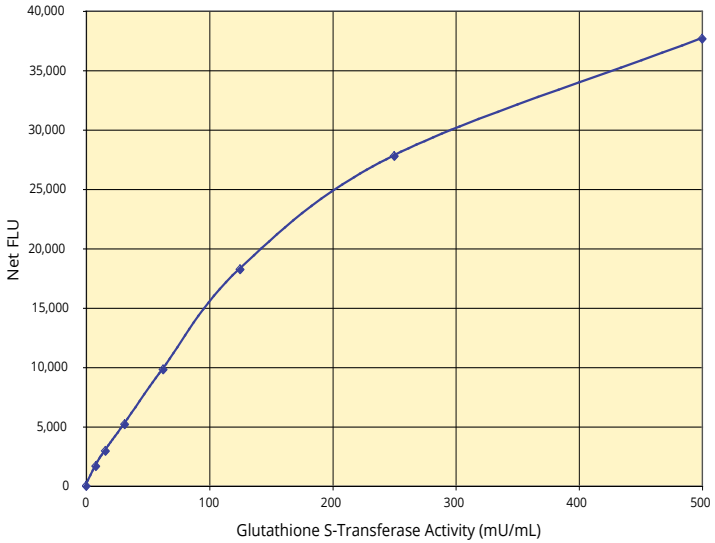
FEATURES

MOST SENSITIVE

Use	Measure GST Activity
Sample	Serum, Plasma, Urine, Cell Lysates
Samples/Kit	40 in Duplicate
Convenient	30 Minute End Point or Kinetic Assay
Sensitivity	< 100 µU of GST Activity
Stability	Liquid 4°C Stable Reagents
Readout	Fluorescent, 460 nm em/370-410 nm ex

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 five gene families, expressing in almost all tissues as four cytosolic and one microsomal forms. 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.



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Hydrogen Peroxide Colorimetric & Fluorescent Detection Kits

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

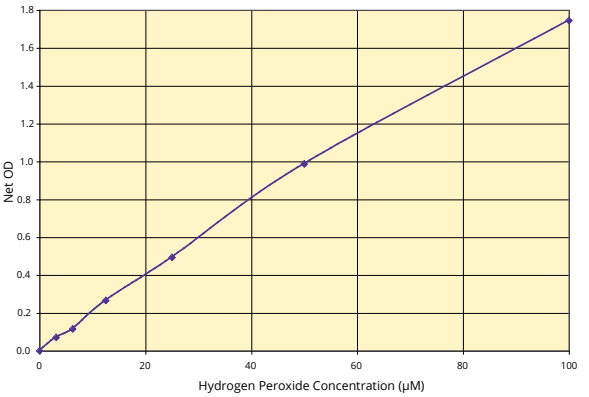
FEATURES

- Use — Measure H_2O_2 in Any Sample
- Sample — Urine, Buffer, TCM
- Rapid — 15 Minutes
- Sensitive — Colorimetric: 91.3 pmol (310 ng)
  Fluorescent: < 2 pmole (65 pg)
- Samples/Kit — Colorimetric: 89 in Duplicate
  Fluorescent: 88 in Duplicate
- Readout — Colorimetric: 560 nm
  Fluorescent: 590 nm em/520 nm ex

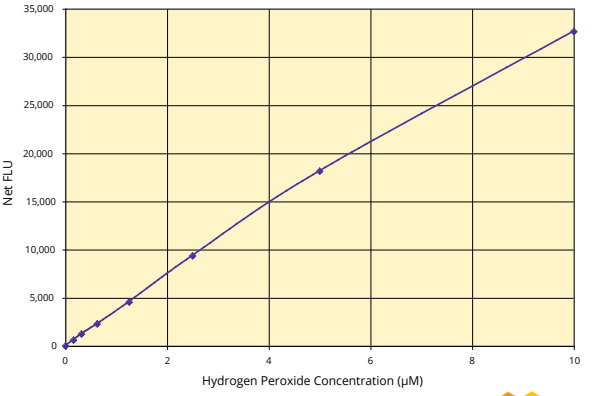
SCIENTIFIC RELEVANCE

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 in response to a variety of extracellular stimuli, such as cytokines (TGF-β1, TNF-α, and various interleukins), peptide growth factors (PDGF, EGF, VEGF, bFGF, and insulin), the agonists of heterotrimeric G protein–coupled receptors (GPCR) such as angiotensin II, thrombin, lysophosphatidic acid, sphingosine 1-phosphate, histamine, and bradykinin, and by shear stress. The addition of exogenous H2O2, or the intracellular production in response to receptor stimulation, affects the function of various proteins including protein kinases, protein phosphatases, transcription factors, phospholipases, ion channels, and G proteins. In 1894, Fenton described the oxidation of tartaric acid by Fe^{2+} and H_2O_2. 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, which under some circumstances might be important contributors to H_2O_2 toxicity.

Colorimetric



Fluorescent



Superoxide Dismutase (SOD) Activity Kit

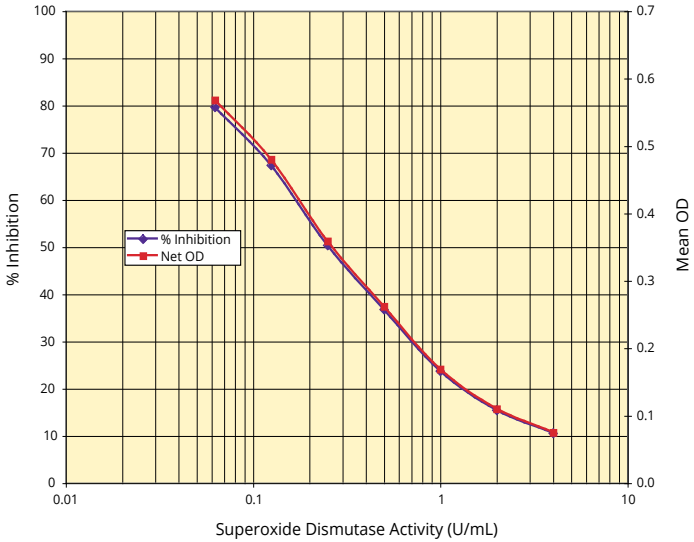
K028-H1 (2 Plate)

FEATURES

- Use — Oxidative Stress Determination
- Sample — Serum, Plasma, Cells, Tissue Buffers, Erythrocytes
- Species — Human and Other Mammalian Species
- Samples/Kit — 88 in Duplicate
- Time to Answer — 20 Minutes
- Readout — Colorimetric, 450 nm

SCIENTIFIC RELEVANCE

Short-lived and highly reactive oxygen species (ROS) such as $O_2^{-\cdot}$ (superoxide), $^{\cdot}OH$ (hydroxyl radical), and H_2O_2 (hydrogen peroxide) are continuously generated *in vivo*. 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), manganese superoxide dismutase (MnSOD), and extracellular superoxide dismutase (EC-SOD). All play a critical roles in scavenging $O_2^{-\cdot}$. Decreased SOD activity results in elevated level of superoxide which in turn leads to decreased NO and increased peroxynitrite concentrations. The major intracellular SOD is a 32-kDa copper and zinc containing homodimer (Cu/Zn SOD). The mitochondrial SOD (MnSOD) is a manganese-containing 93-kDa 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.



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Thiol Fluorescent Detection Kit

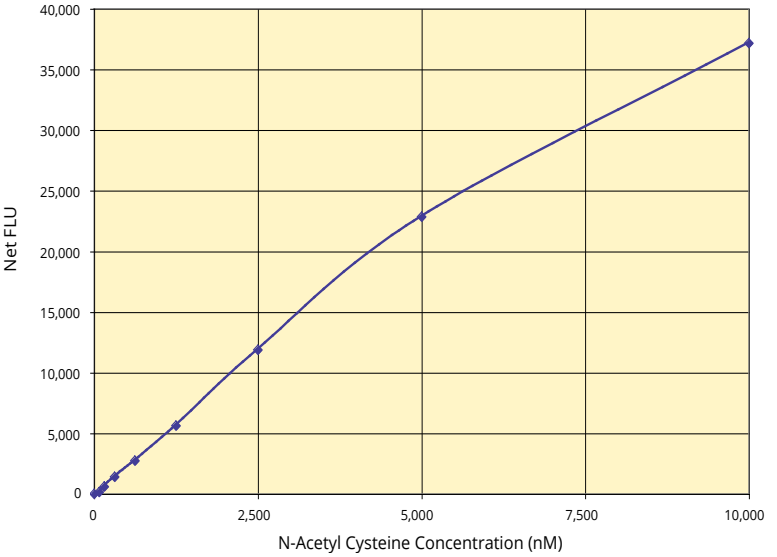
K005-F1 (1 Plate)

FEATURES

Use	Measure Thiol Content of Proteins and Peptides
Adaptable	Measure SH easily in 8M GuHCl Buffers
Sensitivity	4.62 nM
Time to Answer	30 Minutes
Species	Species Independent
Samples/Kit	39 in Duplicate
Stability	Liquid 4°C Stable Reagents
Readout	Fluorescent, 510 nm em/370-410 nm ex

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. As such, it is important to be able to accurately determine the extent of modification of specific amino acids, such as cysteine residues. This is especially difficult in a complex protein sample, especially in the presence of chaotropic agents such as guanidine hydrochloride. Typical methods using Ellman's reagent do not have sufficient sensitivity to allow economical detection of free SH groups.



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