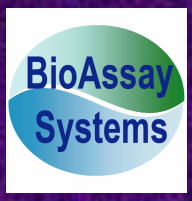

Solutions for Research & Drug Discovery

BioAssay Systems

2008 Catalog

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How To Order

BioAssay Systems develops, manu-factures and markets innovative and high-quality assay solutions to satisfy the increasing demands of the life sciences community.

BioAssay Systems offers assay kits that are simple and convenient to use, and are superior in performance. With our assay kits, researchers need little to no time for assay optimization. We specialize in biochemical and cell-based assays for both routine laboratory tests and for high-throughput drug discovery applications. We focus on safe non-radioactive assay formats such as absorbance, fluorescence, bio- and chemiluminescence detection techniques.

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Our ordering and remittance addresses are the same,
BioAssay Systems
3423 Investment Blvd., Suite 11
Hayward, CA 94545. USA

You may use any standard order form of your organization, or download BioAssay Systems' Order Form at http://www.bioassaysys.com/OrderForm.pdf, and send the completed form to us by fax or email. Please provide the following information when placing an order:

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- Complete shipping address: street name and number, city, state, zip code, country (No PO box number, please).
- Complete billing address, if different from delivery. Contact name, organization, telephone or fax number and email.
- Payment method: purchase order or credit card number. We accept Visa, Mastercard, American Express and Discover.

- Complete billing address, if different from delivery. Contact name, organization, telephone or fax number and email.
- Payment method: purchase order or credit card number. We accept Visa, Mastercard, American Express and Discover.

Terms and Conditions of Sale

By placing an order with us, the customer agrees to the following terms,

Order Cancellation. To cancel an order, the customer should notify BioAssay Systems before 2:00 pm pacific time on the same day as the order was placed. A 10% cancellation fee will be assessed. Later notices will be treated as Returns (see below Returns and Replacement) with all applicable fees. Orders which are refused at delivery will be assessed all of the applicable fees listed above - including restocking, cancellation and other applicable fees.

Shipping. Orders received before 3:00pm are usually shipped the same day. BioAssay Systems will notify customers if products they have ordered are not in stock and give an approximate date of delivery. Unless otherwise agreed, all US domestic shipments will be made through Fedex 2nd day service. Shipping/special handling costs and sales tax if applicable will be added to the invoice. BioAssay Systems may pack multiple kits in one box, unless the customer specifically requests separate packaging. The customer shall notify us of any shortages, defects or damages within 10 business days upon receiving the goods. If it is our error, we will replace the missing components or products as soon as possible. If the customer shall fail to notify us of any defects within 10 days after delivery of the goods, such goods shall conclusively be deemed to conform to the terms and conditions of sale and to have been irrevocably accepted by the buyer.

Payment. Our payment terms are 30 days from invoice date. All payments should be addressed to BioAssay Systems, and must be in US dollars and sufficient to cover any bank charges.

Returns and Replacement. A return authorization should be requested within 10 business days upon receiving the product. A 15% restocking and shipping fee will be charged on any authorized return. Request for replacement has to be approved by BioAssay Systems. The customer agrees to pay the shipping and handling fee. We do not accept return of certain sensitive products.

BioAssay Systems shall not be liable for any loss, damage or penalty as a result of any delay in or failure to manufacture, deliver due to any cause beyond its reasonable control, including, without limitation, embargo or other governmental act, regulation or request affecting the conduct of its business, fire, explosion, accident, theft, vandalism, riot, acts of war, strikes or other labor difficulties, lightning, flood, windstorm or other acts of God, delay in transportation, or inability to obtain necessary labor, fuel, materials, supplies or power at current prices.

HIGH-THROUGHPUT SCREEN (HTS) KITS AND REAGENTS

SuperLight™ Luciferase Reporter Gene Assay Kits

The SuperLight™ Luciferase Assay Kits provide an ultrasensitive single-step homogeneous assay for quantifying luciferase expression in cells transfected with the bioluminescent reporter gene.

Applications

Gene regulation: simply place the luciferase gene downstream of the promoter under study in a suitable expression vector and transfect cells. Gene regulation can be conveniently studied by measuring the changes in luciferase expression using the SuperLightTM Reagent.

High-throughput screening for modulators of gene expression: gene expression modulators can be screened in 96-well, 384-well and 1536-well microplates from compound libraries using recombinant cells.

Key features

High sensitivity and wide detection range: detection of as little of 50 fg luciferase. The emitted light is linear over seven orders of magnitude. Luciferase activity in as few as 4 cells can be detected.

Fast and convenient: homogeneous "mix-and-measure" assay allows detection of luciferase levels within 5 minutes. The optimally combined reagent system involves a single addition step with simultaneous cell lysis and detection.

Compatible with routine laboratory and HTS formats: assays can be performed in tubes, microplates, on LJL Analyst, luminometers, Top-Count, MicroBeta counters, chemiluminescent image plate readers (CLIPR/ LeadSeeker). Assay reagents compatible with all liquid handling systems.

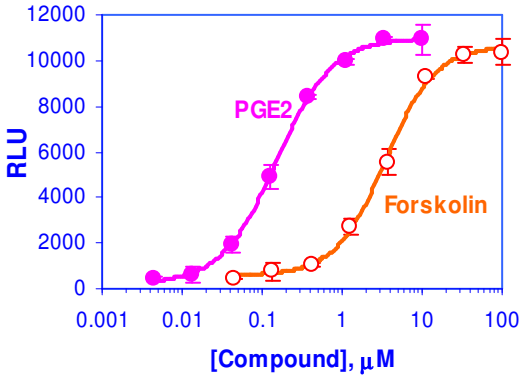
Robust and amenable to HTS: Z' factors of 0.6 to 0.8 are observed in 96-well and 384-well plates. Can be readily automated on HTS liquid handling systems.

Product information

SuperLight™ Luciferase Reporter Gene Assay Kit SLLU-200
Each kit is sufficient for 200 assays in 96-well plate (or 800 assays in 384-well plate). Kit includes:
- 1 x 20 mL SuperLightTM Assay Buffer
- 1 x SuperLightTM Luciferase Reagent

SuperLight™ Luciferase Reporter Gene Assay Kit SLLU-500
Each kit is sufficient for 500 assays in 96-well plate (or 2,000 assays in 384-well plate). Kit includes:
- 1 x 50 mL SuperLightTM Assay Buffer
- 1 x SuperLightTM Luciferase Reagent

SuperLight™ Luciferase Reporter Gene Assay Kit SLLU-01K
Each kit is sufficient for 1,000 assays in 96-well plate (or 4,000 assays in 384-well plate). Kit includes:
- 1 x 100 mL SuperLightTM Assay Buffer
- 1 x SuperLightTM Luciferase Reagent



Up-regulation of CRE-dependent luciferase expression by prostaglandin E2 (PGE2) and adenylyl cyclase activator forskolin in HEK293 cells. Assay was performed in a 384-well plate.

References

[1]. Zhao, L. and Haslam, D.B. (2005). A quantitative and highly sensitive luciferase-based assay for bacterial toxins that inhibit protein synthesis. J Med Microbiol 54:1023–1030.

[2]. Saenz JB, Doggett TA, and Haslam (2007). Identification and Characterization of Small Molecules That Inhibit Intracellular Toxin Transport. Infection and Immunity 75(9): 4552–4561.

[3]. Gentry, M. et al. (2007). Role of Primary Human Alveolar Epithelial Cells in Host Defense against Francisella tularensis Infection. Infection and Immunity 75(8): 3969-3978.

EnzyLight™ Cytotoxicity Assay Kit

Adenosine 5'-triphosphate (ATP) is the chemical energy for cellular metabolism and is often referred to as "energy currency" of the cell. ATP is produced only in living cells during photosynthesis and cellular respiration and consumed in cellular processes including biosynthetic reactions, motility and cell division. It is a key indicator of cellular activity and has been utilized as a measure of cell viability and cytotoxicity in research and drug discovery.

BioAssay Systems' EnzyLight™ Cytotoxicity Assay Kit provides a rapid method to measure intracellular ATP, cell viability and cytotoxicity. The single working reagent lyses cells to release ATP, which, in the presence of luciferase, immediately reacts with the Substrate D-luciferin to produce light. The light intensity is a direct measure of intracellular ATP concentration and hence number of living cells.

$$\text{ATP} + \text{D-luciferin} + O_2 \xrightarrow{\textit{Luciferase}} \text{oxyluciferin} + \text{AMP} + \text{PPi} + CO_2 + \text{light}$$

This non-radioactive, homogeneous cell-based assay can be conveniently performed in microplates. The reagent is compatible with all culture media and liquid handling systems for high-throughput screening applications in 96-well and 384-well plates.

KEY FEATURES

Safe. Non-radioactive assay (cf. ^{3}H-thymidine incorporation assay).

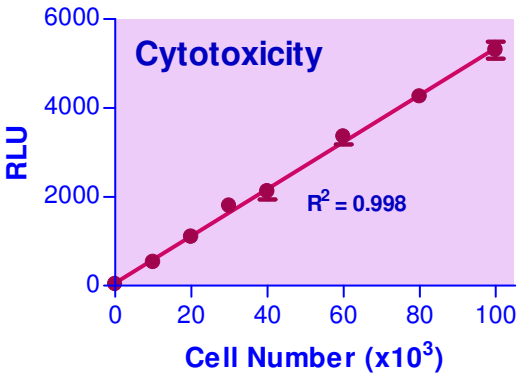
Sensitive and accurate. As low as 50 cells can be quantified. Homogeneous and convenient. "Mix-incubate-measure" type assay. No wash and reagent transfer steps are involved.

Robust and amenable to HTS: Z' factors of 0.6 to 0.7 are routinely observed in 96-well and 384-well plates. Can be readily automated on HTS liquid handling systems for processing thousands of samples per day.

APPLICATIONS

Cell proliferation: effects of cytokines, growth factor, nutrients.

Cytotoxicity and apoptosis: evaluation of toxic compounds, anti-cancer antibodies, toxins, environmental pollutants etc. Drug discovery: high-throughput screening for anticancer drugs.



Linearity of Luminescence to Cell Number in 96-well Plate Assay

Literature

[1]. Li W. et al (2006). Human primary renal cells as a model for toxicity assessment of chemo-therapeutic drugs. Toxicol In Vitro. 20(5):669-76.

[2]. Zhelev Z, et al (2004). Phenothiazines suppress proliferation and induce apoptosis in cultured leukemic cells without any influence on the viability of normal lymphocytes. Phenothiazines and leukemia. Cancer Chemother Pharmacol. 53(3):267-75.

[3]. Ingram PR, et al (2004). A comparison of the effects of ocular preservatives on mammalian and microbial ATP and glutathione levels. Free Radic Res. 38(7):739-50.

CellQuanti-Blue™ Cell Viability Assay Kits

This homogeneous fluorescent assay is based on the conversion of the redox dye resazurin to a highly fluorescent product resorufin by living cells. The assay involves addition of a single reagent to test cells and measures the fluorescence intensity (excitation at 530nm - 570nm, emission 590nm - 620nm) after an incubation step.

APPLICATIONS

Cell proliferation: convenient quantification of effects of growth factors, cytokines and nutrients on cell growth and proliferation.

Evaluation of cytotoxic agents: convenient evaluation of the effects of cell-mediated toxicity, antibiotics, cytotoxic chemicals and anti-cancer drugs (small molecules and antibodies).

High-throughput screening for antibiotics and anti-cancer compounds: screening of antibiotics and anti-cancer drugs from compound libraries can be performed in 96-well, 384-well and 1536-well microplates.

KEY FEATURES

Safe: non-radioactive assay (cf. ^{3}H-thymidine incorporation assay).

Sensitive and accurate: as low as 100 cells can be accurately quantified.

Saves time: high-throughput assay in 96-well and 384-well plates allows simultaneous processing of thousands of samples per day.

Homogeneous and convenient: a single reagent and "mix-incubate-measure" type assay. No wash and reagent transfer steps are involved.

Robust and amenable to HTS: Z' factors of 0.6 to 0.8 are routinely observed in 96-well and 384-well plates. Can be readily automated on HTS liquid handling systems.

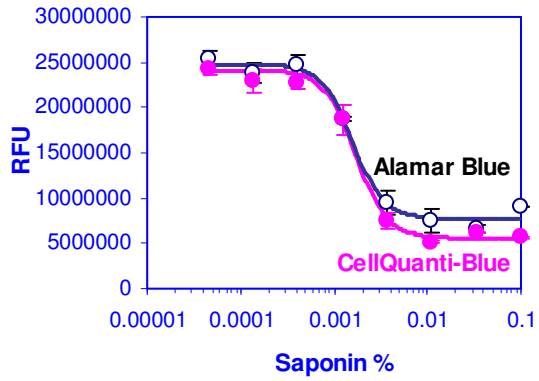
PRODUCT INFORMATION

CellQuanti-Blue™ Cell Viability Assay Kit CQBL-05K
Each kit is sufficient for 5,000 assays in 96-well plate (or 20,000 assays in 384-well plate). Kit includes:
- 1 x 50 mL CellQuanti-Blue™ Reagent

To be ordered separately:
- 1 vial 50 mg cytotoxicity control reagent (CTTX-050)

CellQuanti-Blue™ Cell Viability Assay Kit CQBL-10K
Each kit is sufficient for 10,000 assays in 96-well plate (or 40,000 assays in 384-well plate). Kit includes:
- 1 x 100 mL CellQuanti-Blue™ Reagent

To be ordered separately:
- 1 vial 50 mg cytotoxicity control reagent (CTTX-050)



Dose-dependent cytotoxicity of saponin in HEK293 cells. HEK293 cells were plated at 15,000 cells per well (40 µL). Cells were treated with varying concentrations of saponin. After culture overnight, 5µL CellQuanti-BlueTM Reagent (solid circles) was added. AlamarBlue (open circles) was also tested for comparison. Following a three-hour incubation, fluorescence intensity was measured on a Molecular Devices LJL Analyst. Data represent mean ± SD (n = 3). The IC50 values of saponin for CellQuanti-BlueTM (signal: Background = 4.8-fold) and Alamar Blue (signal: Background = 3.3-fold) were 0.0016 wt% and 0.0017 wt%, respectively.

REFERENCES

[1]. Nociari MM et al (1998) A novel one-step, highly sensitive fluorometric assay to evaluate cell-mediated cytotoxicity. J Immunol Methods. 213(2):157-167.

[2]. Mikus J and Steverding D (2000) A simple colorimetric method to screen drug cytotoxicity against Leishmania using the dye Alamar Blue. Parasitol Int. 48(3):265-269.

[3]. Lee JK, Kim DB, Kim JI, Kim PY (2000). In vitro cytotoxicity tests on cultured human skin fibroblasts to predict skin irritation potential of surfactants. Toxicol In Vitro. 14(4):345-9.

CellQuanti-MTT™ Cell Viability Assay Kits

The CellQuanti-MTT™ Assay Kits provide a reliable assay for determining the number of living cells in a given culture. This homogeneous colorimetric assay is based on the conversion of MTT to purple formazan dye by living cells. A solubilization buffer is added to dissolve the formazan product. The absorbance at 550 nm - 620 nm, measured on an absorbance reader, is directly proportional to the number of living cells.

Applications

Cell proliferation: effects of growth factors, cytokines and nutrients on cell growth and proliferation.

Evaluation of cytotoxic agents: effects of cell-mediated toxicity, antibiotics, cytotoxic chemicals and anti-cancer drugs (small molecules and antibodies).

High-throughput screen for antibiotics and anti-cancer compounds: screening of antibiotics and anti-cancer drugs from compound libraries can be performed in 96-well.

Key features

Safe: non-radioactive assay (cf. ^{3}H-thymidine incorpora-tion assay).

Sensitive and accurate: as low as 950 cells can be accurately quantified.
Saves time: high-throughput assay using 96-well plates allows simultaneous processing of a large of number of samples.

Homogeneous and convenient: "mix-incubate-measure" type assay. No wash and reagent transfer steps are involved.

Robust and amenable to HTS: Z' factors of 0.5 and above are observed. Can be readily automated on HTS liquid handling systems.

Product information

CellQuanti-MTT™ Cell Viability Assay Kit CQMT-500
Each kit is sufficient for 500 assays in 96-well plate. Kit includes:
- 1 x CellQuanti-MTT™ Reagent
- 1 x 10 mL Assay Buffer
- 1 x 50 mL Solubilization Buffer

To be ordered separately:
- 1 vial 50 mg cytotoxicity control reagent (CTTX-050).

CellQuanti-MTT™ Cell Viability Assay Kit CQMT-01K
Each kit is sufficient for 1,000 assays in 96-well plate. Kit includes:
- 1 x CellQuanti-MTT™ Reagent
- 1 x 20 mL Assay Buffer
- 1 x 100 mL Solubilization Buffer

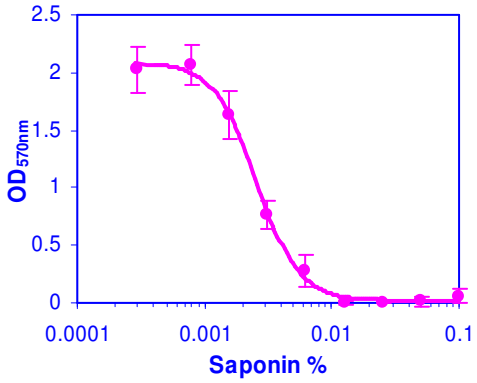
To be ordered separately:
- 1 vial 50 mg cytotoxicity control reagent (CTTX-050)

References

[1]. Bezivin C et al (2003) Cytotoxic activity of some lichen extracts on murine and human cancer cell lines. Phytomedicine 10:499-503.

[2]. Ren DC et al (2003) High throughput screening for intercellular adhesion molecule-1 inhibitor. Yao Xue Xue Bao. 38:405-408.

[3]. Luan X, Diekwisch TG (2002). CP27 affects viability, proliferation, attachment and gene expression in embryonic fibroblasts. Cell Prolif. 35: 207-19.



Dose-dependent cytotoxicity of saponin in HEK293 cells. Assay was performed in a 96-well plate.

PiBlue™ Phosphate Assay Kit

The PiBlue™ Phosphate Assay Kit is based on a proprietary formulation of the malachite green dye. The PiBlue™ reagent forms a blue colored complex with free orthophosphate. The color formation from the reaction can be conveniently measured on a spectrophotometer (600 - 660 nm) or on a plate reader. The non-radioactive colorimetric assay kits have been optimized to offer superior sensitivity and prolonged shelf life. The assay is simple and fast, involving a single addition step for phosphate determination. Assays can be performed in tubes, cuvettes or multi-well plates. The assays can be conveniently performed in 96-well plates for high-throughput screening of enzyme inhibitors.

Applications

Phosphatase assay for released phosphate from phosphopeptide, protein or small molecule substrate.
Phospholipase or lipase assay for released phosphate from phospholipids.

Nucleoside triphosphatase (ATPase, GTPase etc) assay for released phosphate from nucleoside triphosphates (ATP, GTP, TTP, CTP etc).

Phytase assay for released phosphate from phytic acid.
Quantitation of phosphate in phospholipids, proteins and DNAs.

High-throughput drug discovery (HTS).

Key features

Reagent very stable. Due to our innovative formulation, no precipitation of reagent occurs. Therefore no filtration of reagent is needed prior to assays.

High sensitivity and wide detection range: detection of as little of 20 pmoles of phosphate and useful range between 0.4 µM (20 pmoles) and 40 µM (2,000 pmoles) phosphate in 96-well plate assay.

Fast and convenient: single reagent "mix-and-measure" assay allows quantitation of free phosphate within 30 minutes.

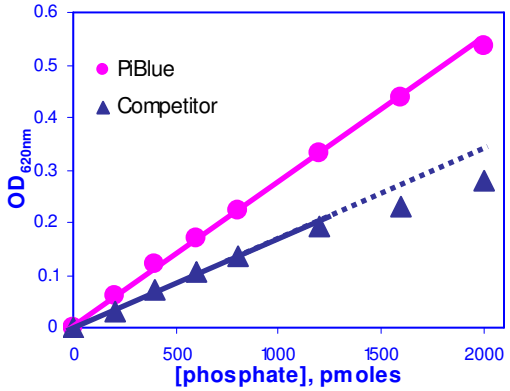
Compatible with routine laboratory and HTS formats: assays can be performed in tubes, cuvettes or microplates, on spectrophotometers and plate readers.

Robust and amenable to HTS: Z' factors of 0.7 to 0.9 are observed in 96-well plates. Can be readily automated on HTS liquid handling systems.

Product information

PiBlue™ Phosphate Assay Kit POPB-500
Each kit is sufficient for 500 assays in 96-well plate. Kit includes:

- 1 x 50 mL PiBlue™ Reagent
- 1 x 1 mL 1mM Phosphate standard



Standard Curve in 96-well plate in assay

References

[1]. Fisher DK and Higgins TJ (1994) A sensitive, high-volume, colorimetric assay for protein phosphatases. Pharm Res. 11:759-763.

[2]. Petitou M et al (1978) A simplified procedure for organic phosphorus determination from phospholipids. Anal Biochem. 91:350-353.

[3]. Rumsfeld J, Ziegelbauer K, Spaltmann F (2000). High-throughput assay for inorganic pyrophosphatases using the cytosolic enzymes of Saccharomyces cerevisiae and human as an example. Protein Expr Purif. 18(3):303-9.

Malachite Green Phosphate Assay Kits

The Malachite Green Phosphate Assay Kit is based on quantification of the green complex formed between Malachite Green, molybdate and free orthophosphate. The rapid color formation from the reaction can be conveniently measured on a spectrophotometer (600 - 660 nm) or on a plate reader. The non-radioactive colorimetric assay kits have been optimized to offer superior sensitivity and prolonged shelf life. The assay is simple and fast, involving a

single addition step for phosphate determination. Assays can be executed in tubes, cuvettes or multi-well plates. The assays can be conveniently performed in 96- and 384-well plates for high-throughput screening of enzyme inhibitors.

Applications

Phosphatase assay for released phosphate from phosphopeptide, protein or small molecule substrate.

Phospholipase or lipase assay for released phosphate from phospholipids.

Nucleoside triphosphatase (ATPase, GTPase etc) assay for released phosphate from nucleoside triphosphates (ATP, GTP, TTP, CTP etc).

Phytase assay for released phosphate from phytic acid.

Quantitation of phosphate in phospholipids, proteins and DNAs.

High-throughput drug discovery (HTS).

Key features

Reagent very stable. Due to our innovative formulation, no precipitation of reagent occurs. Therefore no filtration of reagent is needed prior to assays.

High sensitivity and wide detection range: detection of as little of 1.6 pmoles of phosphate and useful range between 0.02 µM and 20 µM phosphate.

Fast and convenient: single reagent "mix-and-measure" assay allows quantitation of free phosphate within 30 minutes.

Compatible with routine laboratory and HTS formats: assays can be performed in tubes, cuvettes or microplates, on spectrophotometers and plate readers.

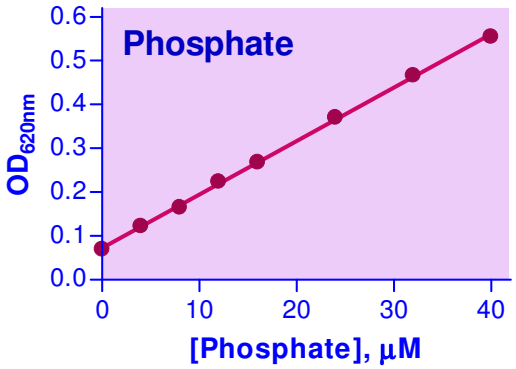
Robust and amenable to HTS: Z' factors of 0.7 to 0.9 are observed in 96-well plates. Can be readily automated on HTS liquid handling systems.

Product information

Malachite Greeen Phosphate Assay Kit POMG-25H

Each kit is sufficient for 2,500 assays in 96-well plate. Kit includes:

- 1 x 50 mL Reagent
- 1 x 1 mL 1mM Phosphate standard



Phosphate standard curve in 96-well plate

References

[1]. Guérette, D. et al (2007). Molecular evolution of type VI intermediate filament proteins. BMC Evolutionary Biology 2007, 7:164.

[2]. Green, M.L. et al (2005). Ethylene glycol induces hyperoxaluria without metabolic acidosis in rats. Am J Physiol Renal Physiol 289: F536–F543.

[3]. Saran, D. et al (2006). Multiple-turnover thio-ATP hydrolase and phospho-enzyme intermediate formation activities catalyzed by an RNA enzyme. Nucleic Acids Research, 34(11): 3201–3208.

ENZYME ASSAY KITS

QuantiChrom™ Acetylcholinesterase Assay Kit

ACETYLCHOLINESTERASE (EC 3.1.1.7, AChE), also known as RBC cholinesterase, is found primarily in the blood and neural synapses. Low serum cholinesterase activity may relate to exposure to insecticides or to one of a number of variant genotypes. AChE catalyzes the hydrolysis of the neurotransmitter acetylcholine into choline and acetic acid, a reaction necessary to allow a cholinergic neuron to return to its resting state after activation. Cholinesterase levels of cells and plasma are used as a guide in establishing safety precautions relative to exposure and contact, as well as a guide in determining the need for workers to be removed from areas of contact with the organic phosphate insecticides.

Simple, direct and automation-ready procedures for measuring AChE activity are very desirable. BioAssay Systems' QuantiChrom™ Acetylcholinesterase Assay is based on an improved Ellman method, in which thiocholine produced by the action of acetylcholinesterase forms a yellow color with 5,5'-dithiobis(2-nitrobenzoic acid). The intensity of the product color, measured at 412 nm, is proportionate to the enzyme activity in the sample.

Key features

Sensitive and accurate. Detection range 10 to 600 U/L AChE activity in 96-well plate assay.

Convenient. The procedure involves adding a single working reagent, and reading the optical density at 2 min and 10 min at room temperature.

High-throughput. Can be readily automated as a high-throughput 96-well plate assay for thousands of samples per day.

APPLICATIONS

Direct assays of acetylcholinesterase activity in blood, serum, plasma, and other biological samples. Evaluation of acetylcholinesterase inhibitors.

Product information

QuantiChrom™ Acetylcholinesterase Assay Kit DACE-100
Each kit is sufficient for 100 assays in 96-well plate. Kit includes:

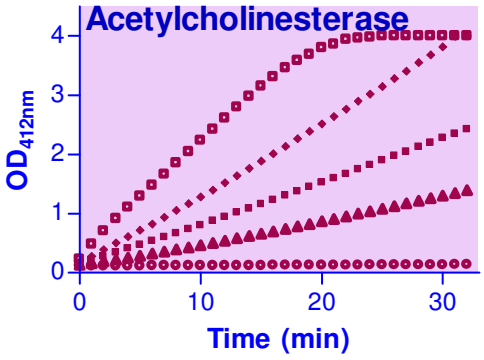
- 1 x 30 mL Assay Buffer
- 1 x Powder Reagent
- 1 x 4 mL Calibrator

LITERATURE

[1]. Magnottl, RA. et al. (1987). Measurement of Acetylcholinesterase in Erythrocytes in the Field. Clin. Chem. 33/10, 1731-1 735.

[2]. Kovarik, Z et al. (2003). Acetylcholinesterase active centre and gorge conformations analysed by combinatorial mutations and enantiomeric phosphonates. Biochem. J. (2003) 373, 33–40.

[3]. Ordentlich, A. et al. (1996). The Architecture of Human Acetylcholinesterase Active Center Probed by Interactions with Selected Organophosphate Inhibitors. J. Biol. Chem. 271 (20): 11953–11962.



Kinetics of Acetylcholinesterase Reaction in 96-well plate

QuantiChrom™ Alkaline Phosphatase Assay Kit

Alkaline phosphatase (ALP) catalyzes the hydrolysis of phosphate esters in an alkaline environment, resulting in the formation of an organic radical and inorganic phosphate. In mammals, this enzyme is found mainly in the liver and bones. Marked increase in serum ALP levels, a disease known as hyperalkalinephosphatasemia, has been associated with malignant biliary obstruction, primary biliary cirrhosis, primary sclerosing cholangitis, hepatic lymphoma and sarcoidosis.

Simple, direct and automation-ready procedures for measuring ALP activity in serum are becoming popular in Research and Drug Discovery. BioAssay Systems' QuantiChromTM Alkaline Phosphatase Assay Kit is designed to measure ALP activity directly in biological samples without pretreatment. The improved method utilizes p-nitrophenyl phosphate that is hydrolyzed by ALP into a yellow colored product (maximal absorbance at 405nm). The rate of the reaction is directly proportional to the enzyme activity.

p-Nitrophenyl phosphate $\xrightarrow{ALP}$ *p-nitrophenol* + Pi

Applications

Direct Assays: ALP activity in serum, plasma and other sources.

Characterization and Quality Control for ALP production.

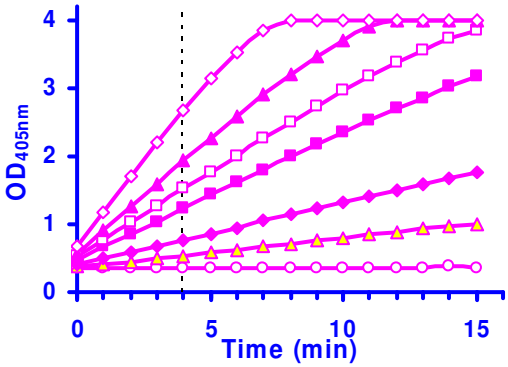
Drug Discovery: high-throughput screen for ALP inhibitors and evaluation of ALP inhibitors.

Key features
High sensitivity and wide linear range. Use 5 µL serum or plasma sample. The detection limit is 2 IU/L, linear up to 800 IU/L.

Homogeneous and simple procedure. Simple "mix-and-measure" procedure allows reliable quantitation of ALP activity within 5 minutes.

Robust and amenable to HTS. All reagents are compatible with high-throughput liquid handling instruments.

Product information
QuantiChrom™ Alkaline Phosphatase Assay Kit DALP-250
Each kit is sufficient for 250 assays in 96-well plate. Kit includes:
- 1 x 50 mL Assay Buffer, pH 10.5
- 1 x 1.5 mL 0.2M Mg Acetate
- 1 x 600 µL pNPP Liquid
- 1 x 10 mL Calibrator



Kinetics of ALP reaction in 96-well plate assay with increasing ALP concentration

References
[1]. Kim, H.J. et al (2006) Glucocorticoids suppress bone formation via the osteoclast. J. Clin. Invest. 116:2152–2160.

[2]. Bhattacharya, A. et al (2006). Effect of fish oil on bone mineral density in aging C57BL/6 female mice. J. Nutr. Biochem 18(6):372-379.

[3]. Wan, Y., Chong, L-W., & Evans, R.M. (2007). Nature Med. 13(12): 1496-1503.

QuantiChrom™ α-Amylase Assay Kit

Amylase belongs to the family of glycoside hydrolase enzymes that break down starch into glucose molecules by acting on α-1,4-glycosidic bonds. The α-amylases (EC 3.2.1.1) cleave at random locations on the starch chain, ultimately yielding maltotriose and maltose, glucose and "limit dextrin" from amylose and amylopectin. In mammals, α-amylase is a major digestive enzyme. Increased enzyme levels in humans are associated with salivary trauma, mumps due to inflammation of the salivary glands, pancreatitis and renal failure.

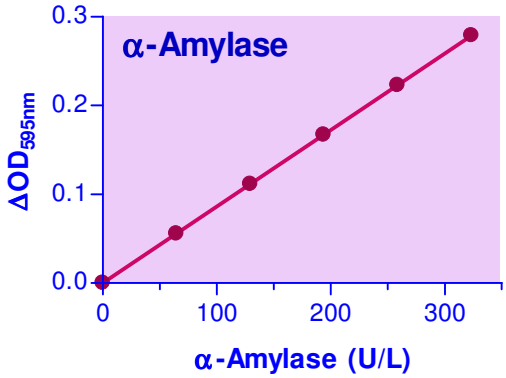
Simple, direct and automation-ready procedures for measuring α-amylase activity are very desirable. BioAssay Systems' QuantiChrom™ α-amylase Assay uses an insoluble dye-coupled substrate amylose azure, which is cleaved by α-amylase into soluble colored products. The color intensity, measured at 595 nm, is proportionate to the enzyme activity in the sample.

Key features
Sensitive and accurate. Linear detection range 2 to 300 U/L α-amylase in 96-well plate assay.

Convenient. The procedure involves adding a single working reagent, and reading the optical density at 5 min at room temperature or 37°C.

APPLICATIONS
Direct assays of α-amylase activity in serum, heparinized plasma, saliva, urine and other biological samples.

Product information
QuantiChrom™ α-Amylase Assay DAMY-100
Each kit is sufficient for 100 assays in 96-well plate. Kit includes:
- 1 x 20 mL Substrate
- 1 x 10 mL Stop Reagent
- 1 x 2 mL Calibrator



α-Amylase Reaction in 96-well plate

LITERATURE
[1]. Rinderknecht H, Wilding P, Haverback BJ. (1967) A new method for the determination of alpha-amylase. Experientia. 23(10):805

[2]. Klein B, Foreman JA. (1980) Amylolysis of a chromogenic substrate, Cibachron Blue F3GA-amylose: kinetics and mechanism. Clin Chem. 26(2):250-3.

[3]. Klein B, Foreman JA, Searcy RL. (1970) New chromogenic substrate for determination of serum amylase activity. Clin Chem. 16(1):32-8.

QuantiChrom™ Arginase Assay Kit

Arginase (L-arginine ureohydrolase EC 3.5.3.1) is present in mammals and plants. In humans, arginase is expressed predominantly in the liver, and to lesser degrees in breast, kidney, testes, salivary glands, epidermis and erythrocytes. Arginase catalyzes the conversion of arginine to ornithine and urea, completing the last step in the urea cycle. Arginase activity is a key diagnostic indicator. Increased levels of arginase activity in blood have been associated with liver damage. Hyperargininemia due to arginase deficiency is an inherited autosomal recessive disease.

Simple, direct and automation-ready procedures for measuring arginase activity in biological samples are highly desirable in Research and Drug Discovery. BioAssay Systems' arginase assay kit provides a sensitive and convenient method for arginase activity determination. The method utilizes a chromogen that forms a colored complex specifically with urea produced in the arginase reaction. The intensity of the color, measured at 520 nm, is directly proportional to the arginase activity in the sample.

Key features

Sensitive and accurate. Detection limit: 1 unit per liter arginase activity in 96-well assay format.

Simple and high-throughput. The procedure involves incubation of the provided substrate with the sample in a microplate, addition of the coloring reagent and incubation for 15 min. Can be readily automated as a high-throughput assay for thousands of samples per day.

Applications

Direct Assays: arginase activity in enzyme preparations, serum, plasma, tissue culture etc;

Drug Discovery/Pharmacology: effects of drugs on arginase activity.

Product information

QuantiChrom™ Arginase Assay Kit DARG-200

Each kit is sufficient for 200 assays in 96-well plate. Kit includes:

- 1 x 2 mL Arginase Buffer (pH 9.5)
- 1 x 1 mL Mn Solution
- 1 x 25 mL Reagent A
- 1 x 25 mL Reagent B
- 1 x 1 mL Urea Standard

References

[1]. Ugarte G, Pino M E, Peirano P, Marusic E. (1960) Serum arginase activity in subjects with hepatocellular damage. J Lab Clin Med. 55:522-9.

[2]. Crombez EA, Cederbaum SD (2005) Hyperargininemia due to liver arginase deficiency. Mol Genet Metab. 84(3): 243-51.

[3]. Mellerup B (1967) Colorimetric method for rapid determination of serum arginase. Clin Chem. 13(10): 900-8.

QuantiChrom™ ATPase/GTPase Assay Kit

ATPases and GTPases catalyze the decomposition of ATP or GTP into ADP or GDP and free phosphate ion. These enzymes play key roles in transport, signal transduction, protein biosynthesis and cell differentiation.

BioAssay Systems' QuantiChrom™ ATPase/GTPase Assay Kit offers a highly sensitive method for determining ATPase/GTPase activities in a microplate format. Its proprietary formulation features a single reagent for accurate determination of enzyme activity in 30 min at room temperature. The improved malachite green reagent forms a stable dark green color with liberated phosphate, which is measured on a plate reader (600 - 660 nm).

KEY FEATURES

High sensitivity: detection of as little of 2 pmoles of free phosphate.

Fast and convenient: single reagent, homogeneous "mix-and-measure" assay allows quantitation of enzyme activity within 30 minutes.

Robust and amenable to HTS: detection at 620nm greatly reduces potential interference by colored compounds. Z' factors of >0.7 are observed in 96-well and 384-well plates. Can be readily automated on HTS liquid handling systems.

APPLICATIONS

Determination of ATPase and GTPase activity.

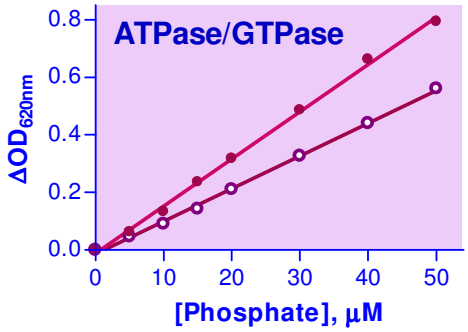
Drug Discovery: high-throughput screen for ATPase or GTPase inhibitors.

Product information

QuantiChrom™ ATPase/GTPase Assay Kit DATG-200

Each kit is sufficient for 200 assays in 96-well plate. Kit includes:

- 1 x 50 mL Reagent
- 1 x 10 mL 2-fold Assay Buffer
- 1 x Standard: 1mL 1 mM phosphate



Standard Curves in 96-well plate (open circle) and 384-well plate (solid circles).

EnzyChrom™ Creatine Kinase Assay Kit

CREATINE KINASE (CK), also known as creatine phosphokinase (CPK), is an enzyme (EC 2.7.3.2) expressed predominantly in skeletal muscle, smooth muscle and the brain. The CK enzyme consists of two subunits, which can be either B (brain type) or M (muscle type), and hence three different isoenzymes: CK-MM, CK-BB and CK-MB. CK catalyzes the conversion of creatine to phosphocreatine, consuming adenosine triphosphate (ATP) and generating adenosine diphosphate (ADP) and the reverse reaction. CK is often determined routinely in emergency patients with chest pain and acute renal failure. Elevation of CK is an indication of damage to muscle and has been associated with injury, rhabdomyolysis, myocardial infarction, myositis, myocarditis, malignant hyperthermia and neuroleptic malignant syndrome, etc. Lower levels can be an indication of alcoholic liver disease and rheumatoid arthritis.

Simple, direct and automation-ready procedures for measuring CK activity are very desirable. BioAssay Systems' QuantiChrom™ Creatine Kinase Assay Kit is based on enzyme coupled reactions in which creatine phosphate and ADP is converted to creatine and ATP by CK, the generated ATP is used to phosphorylate glucose by hexokinase to generate glucose-6-phosphate, which is then oxidized by NADP in the presence of glucose-6-phosphate dehydrogenase. The produced NADPH, measured at 340 nm, is proportionate to the CK activity in the sample.

Key features

Sensitive and accurate. Detection range: 5 to 300 U/L creatine kinase in 96-well plate assay.

Convenient. The procedure involves adding a single working reagent, and reading the optical density at 10 min and 40 min at room temperature or 37°C.

High-throughput. Can be readily automated as a high-throughput 96-well plate assay for thousands of samples per day.

Applications

Direct Assays: CK in serum, plasma and other biological samples.
Drug Discovery/Pharmacology: effects of drugs on CK activity.

Product information

EnzyChrom™ Creatine Kinase Assay Kit ECPK-100
Each kit is sufficient for 100 assays in 96-well plate. Kit includes:

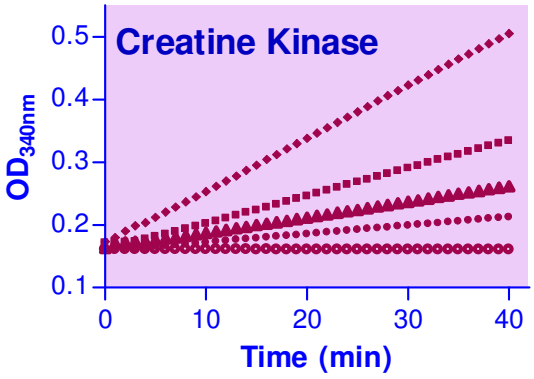
- 1 x 12 mL Assay Buffer
- 1 x 1 mL Substrate Solution
- 1 x 120 µL Enzyme Mix
- 1 x 150 µL Calibrator

LITERATURE

[1]. C. Bishop, T. M. Chu, and Z. K. Shihabi (1971). Single Stable Reagent for Creatine Kinase Assay. Clin. Chem. 17 (6): 548-550.

[2]. G Szasz, W Gerhardt, W Gruber, and E Bernt (1976). Creatine kinase in serum: 2. Interference of adenylate kinase with the assay. Clin. Chem. 22: 1806 - 1811.

[3]. G Szasz, W Gruber, and E Bernt (1976). Creatine kinase in serum: 1. Determination of optimum reaction conditions. Clin. Chem., 22: 650 - 656.



Kinetics of CK Reaction in 96-well plate

QuantiChrom™ Lactate Dehydrogenase Kit

LACTATE DEHYDROGENASE (LDH) is an oxidoreductase which catalyzes the interconversion of lactate and pyruvate. When disease or injury affects tissues containing LDH, the cells release LDH into the bloodstream, where it is identified in higher than normal levels. Therefore, LDH is most often measured to evaluate the presence of tissue or cell damage. The non-radioactive colorimetric LDH assay is based on the reduction of the tetrazolium salt MTT in a NADH-coupled enzymatic reaction to a reduced form of MTT which exhibits an absorption maximum at 565 nm. The intensity of the purple color formed is directly proportional to the enzyme activity.

Key features

High sensitivity and wide linear range. Use 3 µL serum or plasma sample. The detection limit is 2 IU/L, linear up to 200 IU/L.

Homogeneous and simple procedure. Simple "mix-and-measure" procedure allows reliable quantitation of LDH activity within 30 minutes.

Robust and amenable to HTS. All reagents are compatible with high-throughput liquid handling instruments.

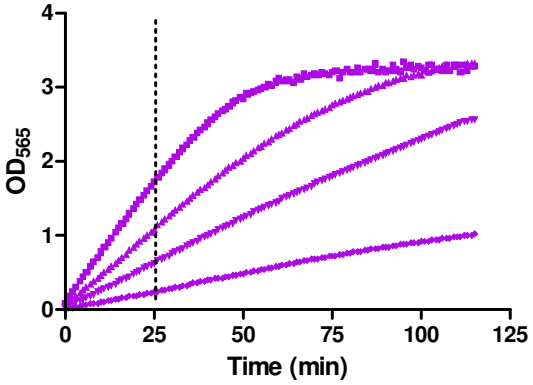
Applications

Direct Assays: LDH activity in serum, plasma and other sources.

Characterization and Quality Control for LDH production.

Drug Discovery: screen and evaluation of LDH modulators.

Product information
QuantiChrom™ Lactate Dehydrogenase Kit DLDH-100
Each kit is sufficient for 100 assays in 96-well plate. Kit includes:
- 1 x 20 mL Substrate Buffer
- 1 x 1 mL NAD Solution
- 1 x 1.5 mL PMS Solution
- 1 x 1.5 mL MTT Solution
- 1 x 10 mL Calibrator



Kinetics of LDH reaction in 96-well plate assay

References
[1]. Babson, AL and Babson, SR. (1973) Kinetic Colorimetric Measurement of Serum Lactate Dehydrogenase Activity. Clin Chem. 19(7):766-9.

[2]. Karlsen RL, Norgaard L, Guldbrandsen EB (1981). A rapid method for the determination of urea stable lactate dehydrogenase on the 'Cobas Bio' centrifugal analyser.Scand J Clin Lab Invest. 41(5):513-6.

[3]. Coley HM, Lewandowicz G, Sargent JM, Verrill MW (1997). Chemosensitivity testing of fresh and continuous tumor cell cultures using lactate dehydrogenase.Anticancer Res. 17(1A):231-6.

QuantiChrom™ Lipase Assay Kit

LIPASE catalyzes the hydrolysis of ester bonds on the glycerol backbone of a lipid substrate. In humans, pancreatic lipase is the key enzyme responsible for breaking down fats in the digestive system by converting triglycerides to monoglycerides and free fatty acids. Human pancreatic lipase and its related protein 2 are the main lipases secreted by the pancreas. In acute pancreatitis, lipase levels can rise 5 to 10-fold within 24 to 48 hours. Increased activities have also been associated with pancreatic duct obstruction, pancreatic cancer, kidney disease, salivary gland inflammation, bowel obstruction, and other pancreatic diseases. Decreased levels may indicate permanent damage to lipase-producing cells in the pancreas.

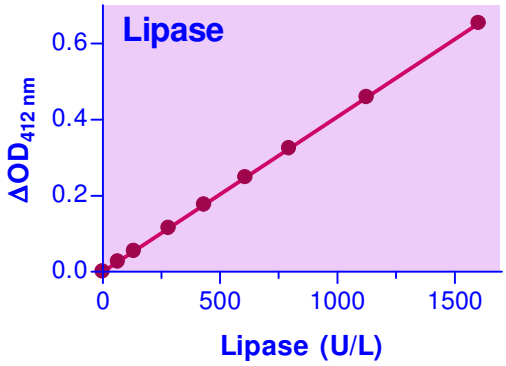
Simple, direct and automation-ready procedures for measuring lipase activity are very desirable. BioAssay Systems' QuantiChrom™ Lipase Assay is based on an improved dimercaptopropanol tributyrate (BALB) method, in which SH groups formed from lipase cleavage of BALB react with 5,5'-dithiobis(2-nitrobenzoic acid) (DTNB) to form a yellow colored product. The color intensity, measured at 412 nm, is proportionate to the enzyme activity in the sample.

Key features
Sensitive and accurate. Linear detection range 40 to 1600 U/L lipase activity in 96-well plate assay.

Convenient and high-throughput. The procedure involves adding a single working reagent, and reading the optical density at 10 min and 20 min at room temperature or 37°C. Can be automated to process thousands of samples per day.

APPLICATIONS
Direct assays of lipase activity in serum, plasma, saliva, urine and other biological samples.

Product information
QuantiChrom™ Liplase Assay DLPS-100
Each kit is sufficient for 100 assays in 96-well plate. Kit includes:
- 1 x 15 mL Assay Buffer
- 1 x 530 mg Color Reagent
- 1 x 1 mL BLAB Reagent
- 1 x 2 mL Calibrator (Equivalent to 735 U/L)



Lipase Reaction in 96-well plate

LITERATURE
[1]. Furukawa, I. et al (1982). Assays of serum lipase by the "BALB-DTNB method" mechanized for use with discrete and continuous-flow analyzers. Clin Chem. 28: 110-113.

[2]. Lombard, S. et al (2001). Lipolytic activity of ricin from Ricinus sanguineus and Ricinus communis on neutral lipids. Biochem J. 358: 773–781.

[3]. Kurooka S. and Kitamura T. (1978). Properties of serum lipase in patients with various pancreatic diseases. Analysis by a new serum lipase assay method (the BALB-DTNB

method) in combination with gel-filtration and iso-electrofocusing techniques. J Biochem (Tokyo). 84:1459-66.

pNPP Phosphatase Assay Kits

Para-nitrophenyl phosphate (pNPP) is a chromogenic substrate for most phosphatases such as alkaline phosphatases, acid phosphatases, protein tyrosine phosphatases and serine/threonine phosphatases. The reaction yields para-nitrophenol which becomes an intense yellow soluble product under alkaline conditions and can be conveniently measured at 405 nm on a spectrophotometer.

Applications

Enzyme activity assay and quality control for phosphatase production. Assay kits allow convenient quantitation of enzyme activity.

Characterization of kinetics of phosphatase reaction.

High-throughput screening for phosphatase inhibitors: screening of phosphatase inhibitors can be performed in 96-well and 384-well microplates.

Key features

High sensitivity and wide linear range: detection of as little as 3 ng phosphatase.

Homogeneous and simple procedure: no wash or reagent transfer steps are involved. The assay can be completed within 30 minutes.

Robust and amenable to HTS: all reagents are compatible with high-throughput liquid handling instruments.

Product information

pNPP Phosphatase Assay Kit POPN-500

Each kit is sufficient for 500 assays in 96-well plate (or 2,000 assays in 384-well plate). Kit includes:

- 1 x pNPP Substrate Reagent
- 1 x 25 mL pNPP Assay Buffer
- 1 x 25 mL Stop Solution

pNPP Phosphatase Assay Kit POPN-01K

Each kit is sufficient for 1,000 assays in 96-well plate (or 4,000 assays in 384-well plate). Kit includes:

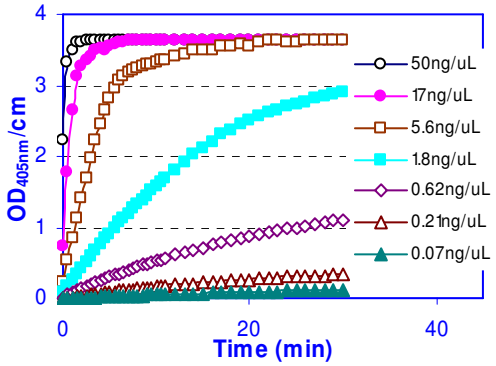
- 1 x pNPP Substrate Reagent
- 1 x 50 mL pNPP Assay Buffer
- 1 x 50 mL Stop Solution

References

[1]. Monick, M.M. et al (2006). Active ERK Contributes to Protein Translation by Preventing JNK-Dependent Inhibition of Protein Phosphatase. J. Immunol. 177: 1636–1645.

[2]. Nakano, Y. (2007). Novel function of DUSP14/MKP6 (dual specific phosphatase 14) as a nonspecific regulatory molecule for delayed-type hypersensitivity. British J. Dermatology 156 (5): 848–860.

[3]. Lee, S.W. et al (2008). The Xanthomonas oryzae pv. oryzae PhoPQ two-component system is required for AvrXA21 activity, hrpG expression, and virulence. J. Bacteriol.190(6):2183-97.



Kinetics of PTP1B catalyzed pNPP hydrolysis. Assay was performed in a 384-well plate.

BLOOD/URINE CHEMISTRY

QuantiChrom™ Albumin Assay Kits

Albumin is the most abundant plasma protein in mammals. It accounts for about 60% of the total serum protein. Albumin plays important physiological roles, including maintenance of colloid osmotic pressure, binding of key substances such as long-chain fatty acids, bile acids, bilirubin, haematin, calcium and magnesium. It has anti-oxidant and anticoagulant effects, and also acts as a carrier for nutritional factors and drugs, as well as an effective plasma pH buffer. Serum albumin is a reliable prognostic indicator for morbidity and mortality, liver disease, nephritic syndrome, malnutrition and protein-losing enteropathies. High levels are associated with dehydration.

Simple, direct and automation-ready procedures for measuring albumin concentration in biological samples are becoming popular in research and drug discovery. BioAssay Systems' albumin assay kit is designed to measure albumin directly in biological samples without any pretreatment. The improved method utilizes bromcersol green (BCG) and bromcresol purple (BCP) that forms a colored complex specifically with albumin. The intensity of the color is directly proportional to the albumin concentration in the sample. The optimized formulation substantially reduces interference by substances in the raw samples.

Applications

Direct Assays: albumin in serum, plasma, urine, biological preparations (e.g. fetal bovine serum).

Drug Discovery/Pharmacology: effects of drugs on albumin metabolism.

Key features

Sensitive and accurate. BCG Kit (DIAG-250): use as little as 5 µL samples. Detection range 0.01 g/dL (1.5µM) to 5 g/dL (750µM) albumin in 96-well plate assay. BCP Kit (DIAP-250): use 20 µL samples. Detection range 0.3 g/dL (45µM) to 5 g/dL (750µM) albumin in 96-well plate assay.

Simple and high-throughput. The procedure involves addition of a single working reagent and incubation for 5 min. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

Improved reagent stability and versatility. The optimized formulation has greatly enhanced the reagent and signal stability. Assays can be executed in cuvet or 96-well plate.

Low interference in biological samples. No pretreatments are needed. Assays can be directly performed on raw biological samples i.e., in the presence of lipid and protein.

Product information

QuantiChrom™ BCG Albumin Assay Kit DIAG-250

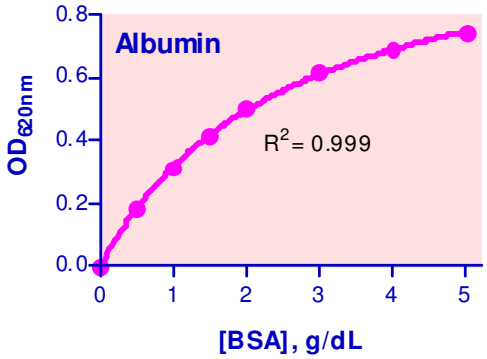
Each kit is sufficient for 250 assays in 96-well plate. Kit includes:

- 1 x 50 mL BCG Albumin Reagent
- 1 x 1 mL 5 g/dL Albumin Standard

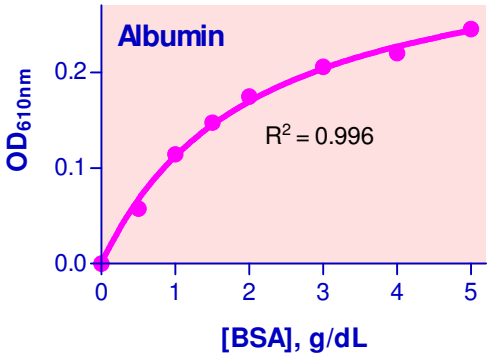
QuantiChrom™ BCP Albumin Assay Kit DIAP-250

Each kit is sufficient for 250 assays in 96-well plate. Kit includes:

- 1 x 50 mL BCP Albumin Reagent
- 1 x 2 mL 5 g/dL Albumin Standard



BCG Assay: Standard Curve in 96-well plate



BCP Assay: Standard Curve in 96-well plate

References

[1]. Lee, R.H. et al (2006) Multipotent stromal cells from human marrow home to and promote repair of pancreatic islets and renal glomeruli in diabetic NOD_scid mice. PNAS 103 (46): 17438–17443.

[2]. Rebecca R. (2006). Associations of histories of depression and PMDD diagnosis with allopregnanolone concentrations following the oral administration of micronized progesterone Psychoneuroendocrinology 31(10):1208-1219.

[3]. Cosgrove, D. et al (2008). Integrin alpha1β1 Regulates Matrix Metalloproteinases via P38 Mitogen-Activated Protein Kinase in Mesangial Cells. Implications for Alport Syndrome. Am. J. Pathology 172:761-773.

QuantiChrom™ Bilirubin Assay Kit

Bilirubin is one of the degradation products of hemoglobin formed when red blood cells die. Bilirubin exists in the insoluble unconjugated form (also indirect bilirubin), or soluble glucuronide conjugated form bilirubin (also direct bilirubin). Conjugated bilirubin moves into the bile canaliculi of the liver and then to the gall bladder. When stimulated by eating, bile (including the conjugated bilirubin) is excreted into the small intestine, where bilirubin is converted into urobilinogen. Bilirubin is a key diagnostic indicator. High levels of bilirubin result when too much hemoglobin is broken down or the removal of bilirubin does not function properly. The accumulation of bilirubin in the body causes jaundice.

Simple and automation-ready procedures for quantitative determination of bilirubin find wide applications in research and drug discovery. BioAssay Systems' bilirubin assay kit is designed to measure bilirubin in blood specimen in 96-well or cuvette formats. The improved Jendrassik-Grof method utilizes the reaction of bilirubin with diazotized sulfanilic acid, in which a red colored product is formed. The intensity of the color, measured at 510-550nm, is an accurate measure of the bilirubin level in the sample. Total bilirubin is assessed using caffeine benzoate to split bilirubin from the unconjugated bilirubin protein complex.

Key features

Sensitive and accurate. Detection limit 0.16 mg/dL bilirubin in 96-well plate assay.

Simple and high-throughput. The procedure involves addition of a single working reagent and incubation for 10 min. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day..

Applications

Direct Assays: total and direct bilirubin in serum or plasma.
Drug Discovery/Pharmacology: effects of drugs on bilirubin metabolism.

Product information

QuantiChrom™ Bilirubin Assay Kit DIBR-180
Each kit is sufficient for 180 assays in 96-well plate. Kit includes:

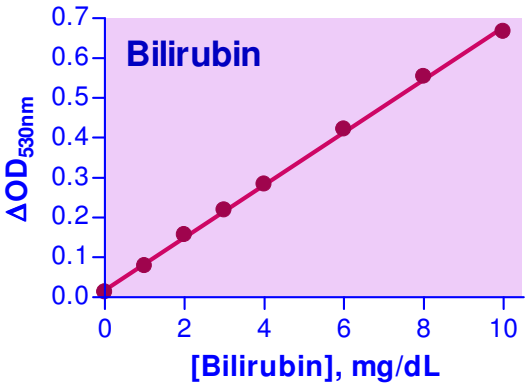
- 1 x 30 mL Reagent A
- 1 x 10 mL Reagent B
- 1 x 30 mL Reagent C
- 1 x 50 mL Saline
- 1 x 2 mL Calibrator

References

[1]. Mori L. 1978. Modified Jendrassik--Grof method for bilirubins adapted to the Abbott Bichromatic Analyzer. Clin Chem. 24: 1841-5.

[2]. Garber CC. 1981. Jendrassik--Grof analysis for total and direct bilirubin in serum with a centrifugal analyzer. Clin Chem. 27:1410-6.

[3]. Poon PK. 1981. A Jendrassik-Grof method modified to eliminate hemoglobin interference with assay of total serum bilirubin. Clin Chem. 27:636-7.



Standard Curve with Freshly Prepared Bilirubin in 96-well plate assay

EnzyChrom™ Cholesterol Assay Kit

CHOLESTEROL is a sterol and lipid present in the cell membranes, and is transported in the bloodstream of all animals. It is used to form cell membranes and hormones, and plays important roles in cell signaling processes. Elevated levels (hypercholesterolemia) have been associated with cardiovascular diseases such as atherosclerosis; whereas, low levels (hypocholesterolemia) may be linked to depression, cancer and cerebral hemorrhage.

Simple, direct and automation-ready procedures for measuring cholesterol are very desirable. BioAssay Systems' EnzyChrom™ Cholesterol Assay is based on cholesterol esterase hydrolysis of cholesterol esters to form free cholesterol and cholesterol dehydrogenase catalyzed conversion of cholesterol to cholest-4-ene-3-one, in which NAD is reduced to NADH. The optical density of the formed NADH at 340 nm is directly proportionate to the cholesterol concentration in the sample.

Key features

Sensitive and accurate. Detection limit of 5 mg/dL, linearity up to 300 mg/dL cholesterol in 96-well plate assay.

Convenient. Room temperature assay. No 37°C heater is needed.

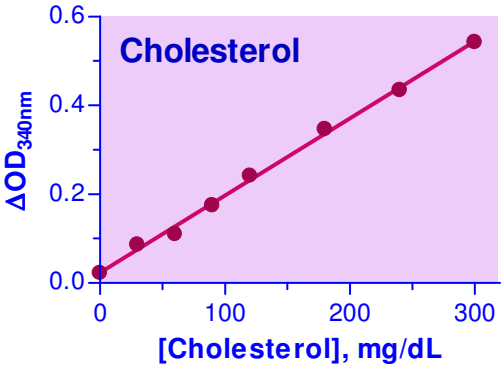
High-throughput. Can be readily automated as a high-throughput 96-well plate assay for thousands of samples per day.

Applications

Direct Assays: cholesterol in serum, plasma, and other biological samples.

Drug Discovery/Pharmacology: effects of drugs on cholesterol metabolism.

Product information
EnzyChrom™ Cholesterol Assay Kit ECCH-100
Each kit is sufficient for 100 assays in 96-well plate. Kit includes:
- 1 x 12 mL Assay Buffer
- 1 x 120 µL Enzyme
- 2 x 1 mL NAD Solution
- 1 x 1 mL Cholesterol Standard



Standard Curve in 96-well plate assay

References
[1]. Kayamori, Y. et al (1999) Endpoint Colorimetric Method for Assaying Total Cholesterol in Serum with Cholesterol Dehydrogenase. Clin. Chem. 45: 2158-2163.

[2]. Sundvall J, Leiviska J, Alfthan G, Vartiainen E. (2007). Serum cholesterol during 27 years: assessment of systematic error and affecting factors and their role in interpreting population trends. Clin Chim Acta. 378:93-98.

[3]. Demacker PN, Hijmans AG, van Sommeren-Zondag DF, Jansen AP. (1982). Stability of frozen liquid control sera for assay of cholesterol in high-density lipoprotein. Clin Chem. 28:155-157.

EnzyChrom™ HDL and LDL/VLDL Assay Kit

CHOLESTEROL concentrations in High-Density Lipoprotein (HDL) and Low-Density (LDL)/Very-Low-Density (VLDL) Lipoproteins are strong predictors for coronary heart disease. Functional HDL offers protection by removing cholesterol from cells and atheroma. Higher concentrations of LDL and lower concentrations of functional HDL are strongly associated with cardiovascular disease due to higher risk of atherosclerosis. The balances between high- and low-density lipoproteins are solely genetically determined, but can be changed by medications, food choices and other factors.

Simple, direct and automation-ready procedures for measuring HDL and LDL/VLDL concentrations are very desirable. BioAssay Systems' HDL and LDL/VLDL quantification kit is based on our improved PEG precipitation method in which HDL and LDL/VLDL are separated, and cholesterol concentrations are determined using cholesterol esterase/cholesterol dehydrogenase reagent. In this reaction, NAD is reduced to NADH. The optical density of the formed NADH at 340 nm is directly proportionate to the cholesterol concentration in the sample.

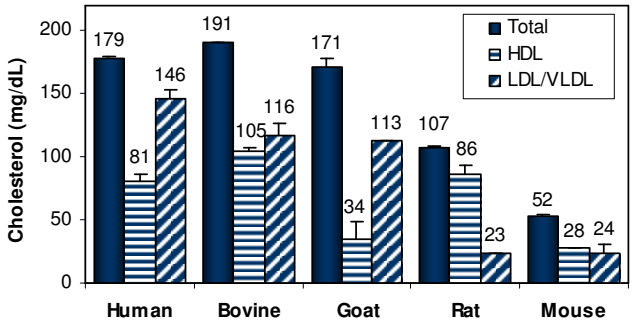
APPLICATIONS
Direct Assays: HDL and LDL/VLDL cholesterol in serum samples from any species.

Pharmacology: evaluation of drugs on cholesterol metabolism.

KEY FEATURES
Sensitive and accurate. Requires only 20 µL serum sample. Detection limit of 5 mg/dL, linearity up to 300 mg/dL cholesterol in 96-well plate assay.

Convenient. Room temperature assay. No 37°C heater is needed.

KIT CONTENTS (100 assays in 96-well plates)
- 1 x 1.5 mL PBS
- 1 x 1.5 mL Precipitation Reagent
- 1 x 12 mL Assay Buffer
- 1 x 120 uL Enzyme Mix
- 1 x 2 mL NAD Solution
- 1 x 1 mL 300mg/dL Cholesterol Standard



References
[1]. Viikari J. (1976). Precipitation of plasma lipoproteins by PEG 6000 and its evaluation with electrophoresis andultracentrifugation. Scand J Clin Lab Invest 36:265-268.

[2]. Demacker PMN, Humans AGM, Vos-Janssen HE, van't Laar A, Jansen AP.(1980). A study of the use of polyethylene glycol in estimating cholesterol in high density lipoprotein. Clin Chem 26:1775-1779.

[3]. Widhaim, K. and Pakosta, R. (1991). Precipitation with Polyethylene Glycol and Density-Gradient Ultracentrifugation Compared for Determining High-Density Lipoprotein Subclasses HDL2 and HDL3. Clin. Chem 37/2, 238-240.

QuantiChrom™ Creatinine Assay Kit

Creatinine is synthesized in the body at a fairly constant rate from creatine, which is produced during muscle contractions from creatine phosphate. In the blood, creatinine is removed by filtration through the glomeruli of the kidney and is secreted into urine. In healthy individuals, creatinine secretion is independent of diet and is fairly constant. The creatinine clearance test has become one of the most sensitive tests for measuring glomerular filtration rate. In kidney disease, creatinine levels in the blood are elevated, whereas the creatinine clearance rate and hence the urine levels are diminished. Creatinine test is most widely used to assess kidney function.

Simple, direct and automation-ready procedures for measuring creatinine concentration in biological samples are becoming popular in research and drug discovery. BioAssay Systems' creatinine assay kit is designed to measure creatinine directly in biological samples without any pretreatment. The improved Jaffe method utilizes picrate that forms a red colored complex with creatinine. The intensity of the color, measured at 510nm, is directly proportional to the creatinine concentration in the sample. The optimized formulation substantially reduces interference by substances in the raw samples.

Applications

Direct Assays: creatinine in serum, plasma, urine, biological preparations (e.g. fetal bovine serum).

Drug Discovery/Pharmacology: effects of drugs on creatinine metabolism.

Key features

Sensitive and accurate. Use 30 µL samples. Linear detection range 0.10 mg/dL (8µM) to 50 mg/dL (4.4mM) creatinine in 96-well plate assay.

Simple and high-throughput. The procedure involves addition of a single working reagent and read OD510nm at 1 min and 5 min. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

Improved reagent stability and versatility. The optimized formulation has greatly enhanced the reagent and signal stability. Assays in cuvet or 96-well plate.

Low interference in biological samples. No pretreatments are needed. Assays can be directly performed on raw biological samples i.e., in the presence of lipid and protein.

Versatility: assays can be executed in a cuvet or 96-well plate with a spectrophotometer or microplate reader.

Product information

QuantiChrom™ Creatinine Assay Kit DICT-500

Each kit is sufficient for 500 assays in 96-well plate. Kit includes:

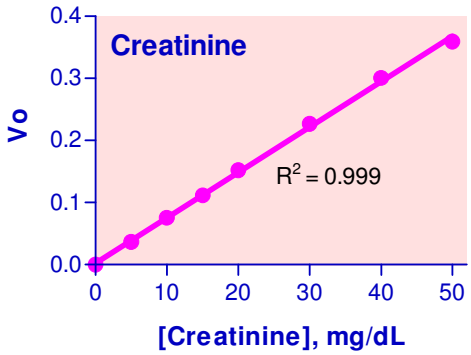
- 1 x 50 mL Reagent A
- 1 x 50 mL Reagent B
- 1 x 1 mL 50mg/dL Creatinine Standard

References

[1]. Wang, J.J. et al (2006). Salutary Effect of Pigment Epithelium–Derived Factor in Diabetic Nephropathy Evidence for Antifibrogenic Activities. Diabetes 55: 1678-1685.

[2]. Zhang, S.X. et al (2006). Therapeutic Potential of Angiostatin in Diabetic Nephropathy. J Am Soc Nephrol 17: 475–486.

[3]. Davalos-Misslitz, A.C.M. et al (2007). Generalized multi-organ autoimmunity in CCR7-deficient mice. Eur. J. Immunol. 37: 613–622.



Standard Curve in 96-well plate in assay

QuantiChrom™ Hemoglobin Assay Kit

Hemoglobin (Hb) is made of four globin chains each carrying a heme group. It is carried by red cells and transports oxygen from the lungs to the peripheral tissues to maintain the viability of cells. Quantitation of blood hemoglobin has been a key diagnostic parameter for various diseases such as anemia, polycythemia and dehydration.

Simple, direct and automation-ready procedures for measuring hemoglobin concentration are becoming popular in research and drug discovery. BioAssay Systems' QuantiChrom™ hemoglobin assay kit is based on an improved cyanohemiglobin method, in which the hemoglobin is converted into a uniform colored end product. The intensity of color, measured at 400 nm, is directly proportional to the hemoglobin concentration in the sample. The optimized formulation substantially reduces interference by substances in the raw samples and exhibits high sensitivity.

Applications

Direct Assays: total hemoglobin in blood, serum, plasma, urine, etc.

Pharmacology: effects of drugs on hemoglobin metabolism.

Drug Discovery: HTS for drugs that modulate hemoglobin levels.

Key features

Sensitive and accurate. Use 50 µL samples. Linear detection range 0.9 – 200 mg /mL hemoglobin in 96-well plate assay.

Simple and high-throughput. The "mix-and-read" procedure involves addition of a single working reagent and reading the optical density. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

Safety. Reagents are non-toxic.

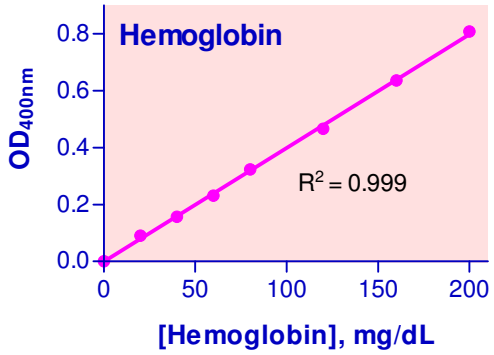
Versatility. Assays can be executed in 96-well plate or cuvet.

Product information

QuantiChrom™ Hemoglobin Assay Kit DIHB-250

Each kit is sufficient for 250 assays in 96-well plate. Kit includes:

- 1 x 50 mL Reagent
- 1 x 10 mL Calibrator



Standard Curve with Freshly Prepared Hemoglobin in 96-well plate assay

References

[1]. Qin, Z. et al (2007). Hyperbaric Oxygen-Induced Attenuation of Hemorrhagic Transformation After Experimental Focal Transient Cerebral Ischemia. Stroke 38:1362-1367.

[2]. Thaker, P.H. et al (2006). Chronic stress promotes tumor growth and angiogenesis in a mouse model of ovarian carcinoma. Nature Med. 12 (8): 939-944.

[3]. Burne-Taney, M.J. et al (2006). Decreased Capacity of Immune Cells to Cause Tissue Injury Mediates Kidney Ischemic Preconditioning. J. Immunology 176: 7015–7020.

QuantiChrom™ Heme Assay Kit

Heme is one important member of the porphyrin family. It is synthesized in both mitochondria and cytoplasm, and is a key prosthetic group for various essential proteins such as hemoglobin, cytochromes, catalases and peroxidases. Heme determination is widely used by researchers of various blood diseases.

Simple, direct and automation-ready procedures for measuring heme concentration are becoming popular in research and drug discovery. BioAssay Systems' QuantiChrom™ heme assay kit is based on an improved aqueous alkaline solution method, in which the heme is present in a uniform colored form. The intensity of color, measured at 400 nm, is directly proportional to the heme concentration in the sample. The optimized formulation substantially reduces interference by substances in the raw samples and exhibits high sensitivity.

Applications

Direct Assays: total heme in blood, serum, plasma, urine, heme-carrying enzymes.

Pharmacology: effects of drugs on heme metabolism.

Drug Discovery: HTS for drugs that modulate heme levels.

Key features

Sensitive and accurate. Use 50 µL samples. Linear detection range 0.6 – 125 µM heme in 96-well plate assay.

Simple and high-throughput. The "mix-and-read" procedure involves addition of a single working reagent and reading the optical density. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

Safety. Reagents are non-toxic.

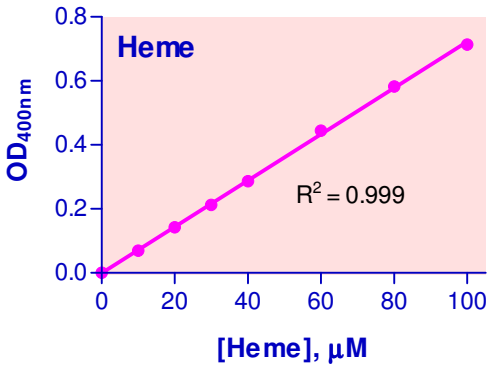
Versatility. Assays can be executed in 96-well plate or cuvet.

Product information

QuantiChrom™ Heme Assay Kit DIHM-250

Each kit is sufficient for 250 assays in 96-well plate. Kit includes:

- 1 x 50 mL Reagent
- 1 x 10 mL Calibrator



Standard Curve with Freshly Prepared Heme in 96-well plate assay

References
[1]. Mingone, C.J. et al (2005). Protoporphyrin IX generation from delta-aminolevulinic acid elicits pulmonary artery relaxation and soluble guanylate cyclase activation. Am J Physiol Lung Cell Mol Physiol 291: L337–L344.

[2]. Pamplona, A. et al (2007). Heme oxygenase-1 and carbon monoxide suppress the pathogenesis of experimental cerebral malaria. Nature Med. 13(6): 703-710.

[3]. Raghuram, S. et al (2007). Identification of heme as the ligand for the orphan nuclear receptors REV-ERBa and REV-ERBb. Nat Struct Mol Biol. 14(12):1207-13.

QuantiChrom™ Phosphate Assay Kit

Phosphate (Pi) is one of the most important ion species in nature. Phosphate is present in all biological systems. It is a major constitutent in minerals and fertilizers, and is a component of industrial wastewater. Thus accurate determination of phosphate concentration will find numerous applications in pharmacology, biomedical research, clinical chemistry, industrial process monitoring, environmental monitoring, etc.

Simple, direct and automation-ready procedures for measuring phosphate concentration in biological and environmental samples are becoming popular. BioAssay Systems' phosphate assay kit is designed to measure phosphate ion directly in samples without any pretreatment. The improved Malachite Green method utilizes the malachite green dye and molybdate, which forms a stable colored complex specifically with inorganic phosphate. The intensity of the color, measured at 620nm, is directly proportional to the phosphate concentration in the sample. The optimized formulation substantially reduces interference by substances in the raw samples.

Applications
Direct Assays: Pi in serum, urine, saliva, sweat, tissue culture and mineralized samples.

Drug Discovery/Pharmacology: effects of drugs on Pi metabolism.

Food and Beverages: Pi determination.

Environment: Pi determination in water, soil and fertilizer.

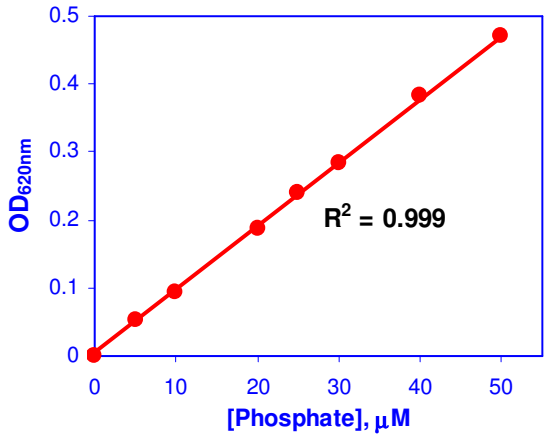
Key features
Sensitive and accurate. Linear detection range 0.30 µM (0.0028 mg/dL) to 50 µM (0.47 mg/dL) phosphate in 96-well plate assay.

Simple and high-throughput. The procedure involves addition of a single working reagent and incubation for 30 min. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

Improved reagent stability and versatility. The optimized formulation has greatly enhanced the reagent and signal stability. Assays can be executed in cuvet or 96-well plate.

Low interference in biological samples. No pretreatments are needed. Assays can be directly performed on raw biological samples i.e., in the presence of lipid, protein and minerals.

Product information
QuantiChrom™ Phosphate Assay Kit DIPI-500
Each kit is sufficient for 500 assays in 96-well plate. Kit includes:
- 1 x 50 mL Reagent
- 1 x 14 mL Phosphate Standard
- 1 x 14 mL Blank Control



Standard Curve in 96-well plate in assay

References
[1]. Cogan EB, Birrell GB, Griffith OH. A robotics-based automated assay for inorganic and organic phosphates. Anal Biochem. 1999; 271(1):29-35.

[2]. Ekman P, Jager O. Quantification of subnanomolar amounts of phosphate bound to seryl and threonyl residues in phosphoproteins using alkaline hydrolysis and malachite green. Anal Biochem. 1993; 214(1):138-141.

[3]. Fisher DK, Higgins TJ. A sensitive, high-volume, colorimetric assay for protein phosphatases. Pharm Res. 1994; 11(5):759-763.

QuantiChrom™ Urea Assay Kit

Urea is primarily produced in the liver and secreted by the kidneys. Urea is the major end product of protein catabolism in animals. It is the primary vehicle for removal of toxic ammonia from the body. Urea determination is very useful for the medical clinician to assess kidney function of patients. In general, increased urea levels are associated with nephritis, renal ischemia, urinary tract obstruction, and certain

extrarenal diseases, e.g., congestive heart failure, liver diseases and diabetes. Decreased levels indicate acute hepatic insufficiency or may results from over-vigorous parenteral fluid therapy.

Simple, direct and automation-ready procedures for measuring urea concentration in biological samples are becoming popular in research and drug discovery. BioAssay Systems' Urea Assay Kit is designed to measure urea directly in biological samples without any pretreatment. The improved Jung method utilizes a chromogenic reagent that forms a colored complex specifically with urea. The intensity of the color, measured at 520nm, is directly proportional to the urea concentration in the sample. The optimized formulation substantially reduces interference by substances in the raw samples.

Applications

Direct Assays: urea in serum, plasma, urine, milk, etc.

Drug Discovery/Pharmacology: effects of drugs on urea metabolism.

Environment: urea determination in soil and waste water.

Key features

Sensitive and accurate: use as little as 5 µL samples. Linear detection range 6 µg/dL (1µM) to 100 mg/dL (17mM) urea in 96-well plate assay.

Simple and high-throughput: the procedure involves addition of a single working reagent and incubation for 30 min. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

Improved stability: the optimized formulation has greatly enhanced the reagent and signal stability.

Low interference: no pretreatments are needed. Assays can be directly performed on raw biological samples i.e., in the presence of lipid and protein.

Versatility: assays can be executed in a cuvet or 96-well plate with a spectrophotometer or microplate reader.

Product information

QuantiChrom™ Urea Assay Kit DIUR-500

Each kit is sufficient for 500 assays in 96-well plate. Kit includes:

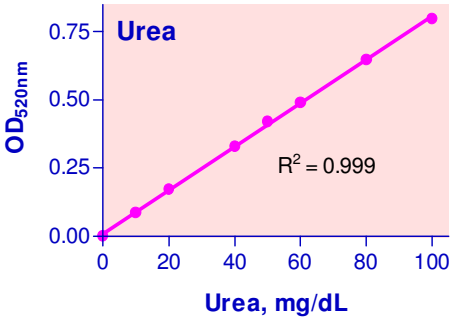
- 1 x 50 mL Urea Reagent A
- 1 x 50 mL Urea Reagent B
- 1 x 1 mL 50mg/dL Urea Standard

References

[1]. Ji, H., Bachmanov, A.A. (2007). Differences in postingestive metabolism of glutamate and glycine between C57BL/6ByJ and 129P3/J mice. Physiol Genomics 31(3):475-82.

[2]. Snykers, S. et al (2007) Chromatin remodeling agent trichostatin A: a key-factor in the hepatic differentiation of human mesenchymal stem cells derived of adult bone marrow. BMC Dev Biol. 7:24.

[3]. Zeng, L. et al (2006). Multipotent Adult Progenitor Cells from Swine Bone Marrow. Stem Cells 24:2355–2366.



Standard Curve in 96-well plate in assay

QuantiChrom™ Uric Acid Assay Kit

Uric acid is the waste product produced from the degradation of purines. In healthy human, uric acid is filtered and removed from the blood by the kidneys and excreted into urine. Because a number of kidney diseases are known to affect uric acid levels, uric acid determination is thus important and useful in diagnosing and evaluating kidney diseases. For example, when uric acid is present in the blood at abnormally high levels, it tends to crystallize in body joints, resulting in gout, a very painful inflammatory condition. Increased levels of uric acid are also known to be associated with uremia, leukemia, pneumonia.

Simple, direct and automation-ready procedures for measuring uric acid concentration in blood are becoming popular in research and drug discovery. BioAssay Systems' uric acid assay kit is designed to measure uric acid directly in serum without any pretreatment. The improved method utilizes 2,4,6-tripyridyl-s-triazine that forms a blue colored complex specifically with uric acid. The intensity of the color, measured at 590nm, is directly proportional to the uric acid concentration in the serum. The optimized formulation substantially reduces interference by substances in the raw samples.

Applications

Direct Assays: uric acid in serum, plasma, urine and biological samples.

Drug Discovery/Pharmacology: effects of drugs on uric acid metabolism.

Key features

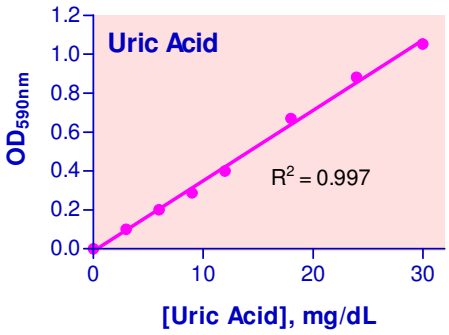
Sensitive and accurate. Use as little as 5 µL samples. Linear detection range 0.22 mg/dL (13µM) to 30 mg/dL (2380µM) uric acid in 96-well plate assay.

Simple and high-throughput. The procedure involves addition of a single working reagent and incubation for 30 min. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

Improved reagent stability and versatility. The optimized formulation has greatly enhanced the reagent and signal stability. Assays can be performed in cuvet or 96-well plate.

Low interference in biological samples. No pretreatments are needed. Assays can be directly performed on serum, plasma and urine.

Product information
QuantiChrom™ Uric Acid Assay Kit DIUA-250
Each kit is sufficient for 250 assays in 96-well plate. Kit includes:
- 1 x 50 mL Reagent A
- 1 x 6 mL Reagent B
- 1 x 6 mL Reagent C
- 1 x 1 mL 10 mg/dL uric acid standard
- 1 x 1 mL blank control



Standard Curve in 96-well plate in assay

References
[1]. Morin LG, Prox J (1973). Reduction of ferric phenanthroline-a procedure for determining serum uric acid. Am J Clin Pathol. 60(5):691-4.

[2]. Yazar E, Elmas M, Altunok V, Sivrikaya A, Oztekin E, Birdane YO (2003). Effects of aminoglycoside antibiotics on renal antioxidants, malondialdehyde levels, and some serum biochemical parameters. Can J Vet Res. 67(3):239-40.

[3]. Kang DH, Nakagawa T, Feng L, Watanabe S, Han L, Mazzali M, Truong L, Harris R, Johnson RJ (2002). A role for uric acid in the progression of renal disease. J Am Soc Nephrol. 13(12):2888-97.

QuantiChrom™ Calcium Assay Kit

Calcium is measured to monitor diseases of the bone or calcium regulation disorders. Increased calcium levels in serum are reported in hyperparathyroidism, metastatic bone lesions and hypervitaminosis, while decreased levels are observed in hypoparathyroidism, nephrosis, rickets, steatorrhea, nephritis and calcium-losing syndromes. Urinary calcium levels aid the clinician in understanding how the kidneys handle calcium in certain diseases of the parathyroid gland. Urinary calcium levels are also essential in the medical evaluation of kidney stones.

Simple, direct and automation-ready procedures for measuring calcium concentration in biological samples are becoming popular in research and drug discovery. BioAssay Systems' Calcium Assay Kit is designed to measure calcium directly in biological samples without any pretreatment. A phenolsulphonephthalein dye in the kit forms a very stable blue colored complex specifically with free calcium. The intensity of the color, measured at 612 nm, is directly proportional to the calcium concentration in the sample. The optimized formulation minimizes any interference by substances such as magnesium, lipid, protein and bilirubin.

Applications
Direct Assays: Ca^{2+} in serum, urine, saliva, milk etc.

Drug discovery/Pharmacology: effects of drugs on calcium metabolism.

Food and beverages: calcium determination.

Environment: calcium determination in water and soil.

Key features
Sensitive and accurate: use as little as 5 µL samples. Linear detection range 0.08 mg/dL (0.02mM) to 20 mg/dL (5mM) calcium in 96-well plate assay.

Simple and high-throughput: the procedure involves addition of a single working reagent and incubation for 3 min. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

Improved stability: the optimized formulation has greatly enhanced the reagent and signal stability.

Low interference: no pretreatments are needed. Assays can be directly performed on raw biological samples i.e., in the presence of lipid, protein and minerals such as magnesium, iron and zinc.

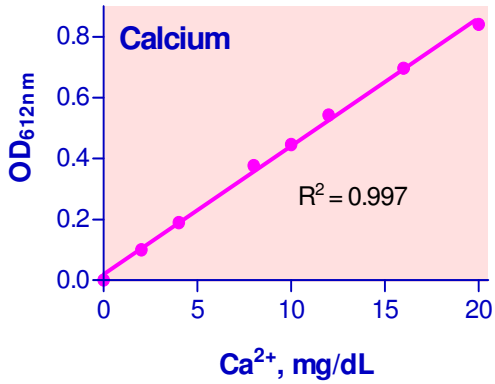
Versatility: assays can be executed in a cuvet or 96-well plate with a spectrophotometer or microplate reader.

Product information
QuantiChrom™ Calcium Assay Kit DICA-500
Each kit is sufficient for 500 assays in 96-well plate. Kit includes:
- 1 x 50 mL Calcium Reagent A
- 1 x 50 mL Calcium Reagent B
- 1 x 1 mL 20 mg/mL Calcium Standard

References
[1]. Carmela, T.M. et al. (2007). Bactericidal Action of Daptomycin against Stationary-Phase and Nondividing Staphylococcus aureus Cells. Antibacterial Agents and Chemotherapy 51 (12): 4255–4260.

[2]. Hernandez, L. (2007). The antiproliferative role of ERG K+ channels in rat osteoblastic cells. Cell Biochem Biophys 47:199–208.

[3]. Meggan, E. et al. (2007). Vitamin D Receptor-Dependent Inhibition of Mammary Tumor Growth by EB1089 and Ultraviolet Radiation in Vivo. Endocrinology 148(10):4887–4894.



Standard Curve in 96-well plate in assay

QuantiChrom™ Chloride Assay Kit

Chloride is the major extracellular anion in human body fluids. Chloride plays a key role in maintaining proper water distribution, osmotic pressure and electrolyte balance in the human body. Low chloride concentrations may be found with prolonged vomiting, extensive burns, metabolic acidosis, Addisonia crisis and renal diseases. Elevated chloride concentrations are associated with dehydration, congestive heart failure, hyperventilation and urinary obstructions. Determination of chloride in sweat is useful in diagnosing cystic fibrosis.

Simple, direct and automation-ready procedures for measuring chloride concentration in biological samples are becoming popular in research and drug discovery. BioAssay Systems' Chloride Assay Kit is designed to measure chloride directly in biological samples without any pretreatment. The improved Fried method utilizes mercuric 2,4,6-tripyridyl-s-triazine, which forms a colored complex specifically with chloride. The intensity of the color, measured at 610nm, is directly proportional to the chloride concentration in the sample. The optimized formulation substantially reduces interference by substances present in raw samples.

Applications
Direct Assays: Cl^- in serum, plasma, urine, saliva, sweat, milk etc.

Drug Discovery/Pharmacology: effects of drugs on chloride metabolism.

Food and Beverages: chloride determination.

Environment: chloride determination in water and soil.

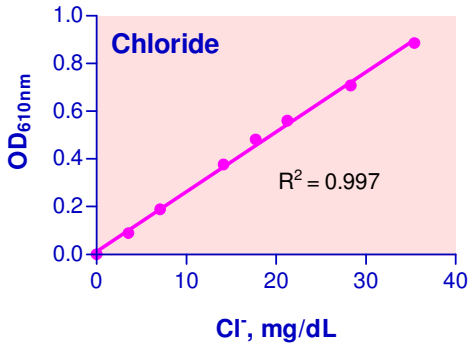
Key features
Sensitive and accurate: use as little as 5 µL samples. Linear detection range 0.7 mg/dL (0.2 mM) to 35 mg/dL (10 mM) chloride in 96-well plate assay.
Simple and high-throughput: the procedure involves addition of a single working reagent and incubation for 5 min. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

Improved stability: the optimized formulation has greatly enhanced the reagent and signal stability.

Low interference: no pretreatments are needed. Assays can be directly performed on raw biological samples i.e., in the presence of lipid, protein and minerals such as magnesium, iron and zinc.

Versatility: assays can be executed in a cuvet or 96-well plate with a spectrophotometer or microplate reader.

Product information
QuantiChrom™ Chloride Assay Kit DICL-250
Each kit is sufficient for 250 assays in 96-well plate. Kit includes:
- 1 x 50 mL Chloride Reagent
- 1 x 1 mL Chloride Standard



Standard Curve in 96-well plate in assay

References
[1]. De Jong EB, Goldschmidt HM, van Alphen AC, Loog JA (1980). An improved automated method for serum chloride. Clin Chem. 26(8):1233-1234.

[2]. Yokoi K (2002). Colorimetric determination of chloride in biological samples by using mercuric nitrate and diphenylcarbazone. Biol Trace Elem Res. 85(1):87-94.

[3]. Feldkamp et al (1974). J. Clin. Chem. Clin. Biochem. 12, 146-150.

QuantiChrom™ Copper Assay Kit

Copper is an essential trace element. Copper-containing enzymes play important roles in iron and catecholamine metabolism, free radical scavenging, and in the synthesis of hemoglobin, elastin and collagen. Copper is mainly present in caeruloplasmin in the liver. Low levels of copper have been associated with mental retardation, depigmentation, anaemia, hypotonia and scorbutic changes in bone. Levels of copper are key diagnostic indicator of diseases such as Wilson's disease, microcytic hypochromic anaemia and bone disease due to reduced collagen synthesis.

Simple, direct and automation-ready procedures for measuring copper concentrations find wide applications in research, drug discovery and environmental monitoring. BioAssay Systems' copper assay kit is designed to measure copper directly in serum or plasma without any pretreatment. The improved method utilizes a chromogen that forms a purple colored complex specifically with copper ions. The intensity of the color, measured at 350-360nm, is directly proportional to the copper concentration in the sample. The optimized formulation substantially reduces interference by substances in the raw samples.

Applications

Direct Assays: Cu in biological samples (e.g. serum and plasma).

Drug Discovery/Pharmacology: effects of drugs on Cu metabolism.

Environment and Food: Cu in soil, mineralized samples, beverages etc.

Key features

Sensitive and accurate. Linear detection range 8 µg/dL (1.2 µM) to 300 µg/dL (47 µM) copper in 96-well plate assay.

Simple and high-throughput. The procedure involves addition of a single working reagent and incubation for 5 min. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

Improved reagent stability and versatility. The optimized formulation has greatly enhanced the reagent and signal stability. Assays can be performed in cuvet or 96-well plate.

Low interference in biological samples. No pretreatments are needed. Assays can be directly performed on serum and plasma samples.

Product information

QuantiChrom™ Copper Assay Kit DICU-250

Each kit is sufficient for 250 assays in 96-well plate. Kit includes:

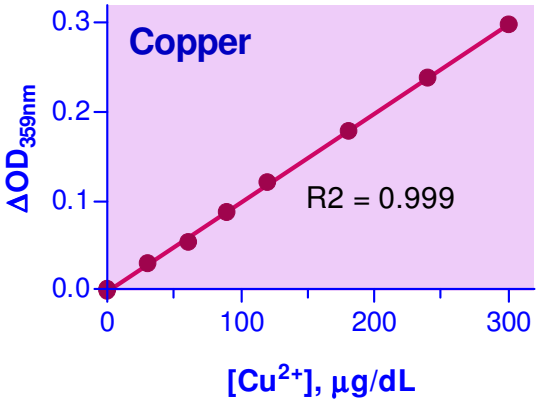
- 1 x 35 mL Reagent A
- 1 x 12 mL Reagent B
- 1 x 6 mL Reagent C
- 1 x 1 mL copper standard

References

[1]. Stuerenburg HJ, Eggers C (200). Early detection of non-compliance in Wilson's disease by consecutive copper determination in cerebrospinal fluid. J Neurol Neurosurg Psychiatry 69: 701-702.

[2]. Liska SK, Kerkay J, Pearson KH (1985). Determination of zinc and copper in urine using Zeeman effect flame atomic absorption spectroscopy. Clin Chim Acta. 151:231-236.

[3]. Tessman RK, Lakritz J, Tyler JW, Casteel SW, Williams JE, Dew RK. (2001). Sensitivity and specificity of serum copper determination for detection of copper deficiency in feeder calves. J Am Vet Med Assoc. 218:756-760.



Standard Curve in 96-well plate in assay

QuantiChrom™ Iron Assay Kit

Iron level in blood is a reliable diagnostic indicator of various disease states. Increased levels of iron concentration in blood are associated with blood loss, increased destruction of red blood cells (e.g. hemorrhage) or decreased blood cell survival, acute hepatitis, certain sideroachrestic anemias, ingestion of iron-rich diets, defects in iron storage (e.g. pernicious anemia). Decreased levels of blood iron may result from insufficient iron ingestion from diets, chronic blood loss pathologies, or increased demand on iron storage as during normal pregnancy.

Simple, direct and automation-ready procedures for measuring iron concentrations find wide applications in research, drug discovery and environmental monitoring.

BioAssay Systems' iron assay kit is designed to measure total iron directly in serum without any pretreatment. The improved method utilizes a chromogen that forms a blue colored complex specifically with Fe^{2+}. Fe^{3+} in the sample is reduced to Fe^{2+}, thus allowing the assay for total iron concentration. The intensity of the color, measured at 590nm, is directly proportional to the iron concentration in the serum. The optimized formulation substantially reduces interference by substances in the raw samples.

Applications
Direct Assays: iron in biological samples (e.g. serum, plasma).

Drug Discovery/Pharmacology: effects of drugs on iron metabolism.

Environment Monitoring: iron in soil extracts, mineralized samples.

Key features
Sensitive and accurate. Linear detection range 27 µg/dL (0.48 µM) to 1,000 µg/dL (18 µM) iron in 96-well plate assay.

Simple and high-throughput. The procedure involves addition of a single working reagent and incubation for 40 min. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

Improved reagent stability and versatility. The optimized formulation has greatly enhanced the reagent and signal stability. Assays can be executed in cuvet or 96-well plate.

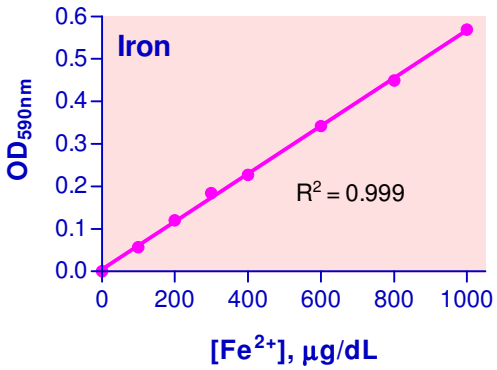
Low interference in biological samples. No pretreatments are needed. Assays can be directly performed on serum samples.

Product information
QuantiChrom™ Iron Assay Kit DIFE-250
Each kit is sufficient for 250 assays in 96-well plate. Kit includes:
- 1 x 50 mL Reagent A
- 1 x 4 mL Reagent B
- 1 x 4 mL Reagent C
- 1 x 1 mL 10 mg/dL iron standard

References
[1]. Velez LI, Gracia R, Mills LD, Shepherd G, Feng SY (2004). Iron bezoar retained in colon despite 3 days of whole bowel irrigation. J Toxicol Clin Toxicol. 42(5):653-6.

[2]. Harvey JW, Levin DE, Chen CL (1987). Potential effects of glucocorticoids on serum iron concentration in dogs. Vet Clin Pathol. 16(2):46-50.

[3]. Hoppe M, Hulthen L, Hallberg L (2003). Serum iron concentration as a tool to measure relative iron absorption from elemental iron powders in man. Scand J Clin Lab Invest. 63(7-8):489-96.



Standard Curve in 96-well plate in assay

QuantiChrom™ Magnesium Assay Kit
Magnesium (Mg) is one of the most abundant and essential minerals in mammals. Magnesium is involved in more than 300 biochemical reactions in the body and plays important roles in muscle and nerve functions, heart rhythm, immune system and bone formation. Magnesium deficiency may lead to nausea, fatigue, muscle contractions, hypocalcemia and hypokalemia.

Simple, direct and automation-ready procedures for measuring magnesium concentration in biological samples are becoming popular in Research and Drug Discovery. BioAssay Systems' magnesium assay kit is designed to measure magnesium directly in biological samples without any pretreatment. A calmagite dye in the kit forms a colored complex specifically with magnesium. The intensity of the color, measured at 500 nm, is directly proportional to the magnesium concentration in the sample. The optimized formulation minimizes interference by potential substances.

Applications
Direct Assays: Mg^{2+} in serum, urine and deproteinated samples (e.g. milk) etc.

Drug Discovery/Pharmacology: effects of drugs on Mg^{2+} metabolism.

Food and Beverages: Mg^{2+} determination.

Environment: Mg^{2+} determination in water and soil.

Key features
Sensitive and accurate. Use as little as 5 µL sample. Linear detection range 0.1 mg/dL (41µM) to 3 mg/dL (1.2 mM) Mg^{2+} in 96-well plate assay.

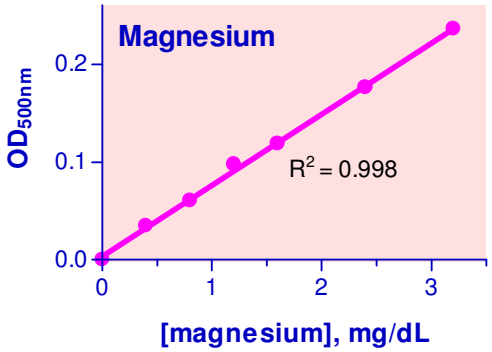
Simple and high-throughput. The procedure involves addition of two reagents and measuring OD500nm. Can be readily

automated as a high-throughput assay for thousands of samples per day.

Improved reagent stability and versatility. The optimized formulation has greatly enhanced reagent and signal stability. Cuvet or 96-well plate assay.

Low interference in biological samples. Assays can be directly performed in serum and urine samples.

Product information
QuantiChrom™ Magnesium Assay Kit DIMG-250
Each kit is sufficient for 250 assays in 96-well plate. Kit includes:
- 1 x 25 mL Reagent A
- 1 x 25 mL Reagent B
- 2 x 1.5 mL EDTA Solution
- 1 x 1 mL 10 mg/dL Mg^{2+} Standard



Standard Curve in 96-well plate assay

References
[1]. Whang R (1987). Routine serum magnesium determination--a continuing unrecognized need. Magnesium 6:1-4.

[2]. Liedtke RJ, Kroon G. (1984) Automated calmagite complexiметric measurement of magnesium in serum, with sequential addition of EDTA to eliminate endogenous interference. Clin Chem. 30:1801-4.

[3]. Savory J, Margrey KS, Shipe JR Jr, Savory MG, Margrey MH, Mifflin TE, Wills MR, Boyd JC (1985). Stabilization of the calmagite reagent for automated measurement of magnesium in serum and urine. Clin Chem. 31:487-488.

QuantiChrom™ Sulfate Assay Kit

INORGANIC SULFATE is one of the most abundant anions in mammalian plasma. Sulfate plays important physiological roles in activating and detoxifying xenobiotics, steroids, neurotransmitters, and bile acids. Sulfate is needed for the biosynthesis of glycosaminoglycans, cerebroside sulfate, and heparin sulfate. Undersulfation of cartilage proteoglycans has been associated with human inherited osteochondrodysplasia disorders. In mammals, sulfate homeostasis is regulated by the kidney. The majority of filtered sulfate is absorbed in the proximal tubules, and only 5–20% of the filtered load is excreted into the urine.

Simple, direct and automation-ready procedures for quantitative determination of inorganic sulfate find wide applications in research and drug discovery. BioAssay Systems' sulfate assay kit is designed to measure sulfate concentration in biological fluids such as serum and urine. The improved method utilizes the quantitative formation of insoluble barium sulfate in polyethylene glycol. The turbidity which is measured as optical density between 540 and 610nm (recommended 600nm), is an accurate measure of the sulfate level in the sample.

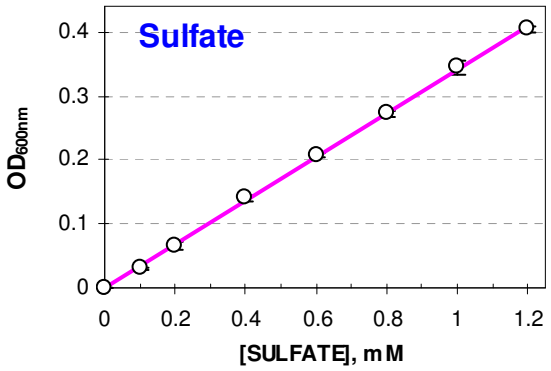
Applications
Direct Assays: inorganic sulfate in serum and urine.

Pharmacology: effects of drugs on sulfate metabolism. Ester sulfate can be determined using the same method following a digestion step. This will allow quantification of total sulfate (inorganic and ester sulfate) in biological samples.

Key features
Sensitive and accurate. Detection range 0.01 mM (0.096 mg/dL) to 1.2 mM (11.5 mg/dL) sulfate in 96-well plate assay.

Simple and high-throughput. The procedure involves addition of a single working reagent and incubation for 5 min. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

Product information
QuantiChrom™ Sulfate Assay Kit DSFT-200
Each kit is sufficient for 200 assays in 96-well plate. Kit includes:
- 1 x 25 mL Reagent A
- 1 x 25 mL Reagent B
- 1 x 2 mL Sulfate Standard



Standard Curve in 96-well plate assay

References
[1]. Bolt, M.J.G. et al. (2004). Critical role of vitamin D in sulfate homeostasis: regulation of the sodium-sulfate

cotransporter by 1,25-dihydroxyvitamin D3. Am J Physiol Endocrinol Metab 287: E744–E749.

[2]. Becker, E.L. et al. (1960) Renal mechanisms for the excretion of inorganic sulfate in man. J Clin Invest 39: 1909–1913.

[3]. Lundquis, P. et al. (1980). Turbidimetry of inorganic Sulfate, Ester Sulfate, and Total Sulfur in Urine. CLIN. CHEM. 26/8, 1178-1181.

QuantiChrom™ Phosphate Assay Kit

Phosphate (Pi) is one of the most important ion species in nature. Phosphate is present in all biological systems. It is a major constitutent in minerals and fertilizers, and is a component of industrial wastewater. Thus accurate determination of phosphate concentration will find numerous applications in pharmacology, biomedical research, clinical chemistry, industrial process monitoring, environmental monitoring, etc.

Simple, direct and automation-ready procedures for measuring phosphate concentration in biological and environmental samples are becoming popular. BioAssay Systems' phosphate assay kit is designed to measure phosphate ion directly in samples without any pretreatment. The improved Malachite Green method utilizes the malachite green dye and molybdate, which forms a stable colored complex specifically with inorganic phosphate. The intensity of the color, measured at 620nm, is directly proportional to the phosphate concentration in the sample. The optimized formulation substantially reduces interference by substances in the raw samples.

Applications

Direct Assays: Pi in serum, urine, saliva, sweat, tissue culture and mineralized samples.

Drug Discovery/Pharmacology: effects of drugs on Pi metabolism.

Food and Beverages: Pi determination.

Environment: Pi determination in water, soil and fertilizer.

Key features

Sensitive and accurate. Linear detection range 0.30 µM (0.0028 mg/dL) to 50 µM (0.47 mg/dL) phosphate in 96-well plate assay.

Simple and high-throughput. The procedure involves addition of a single working reagent and incubation for 30 min. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

Improved reagent stability and versatility. The optimized formulation has greatly enhanced the reagent and signal stability. Assays can be executed in cuvet or 96-well plate.

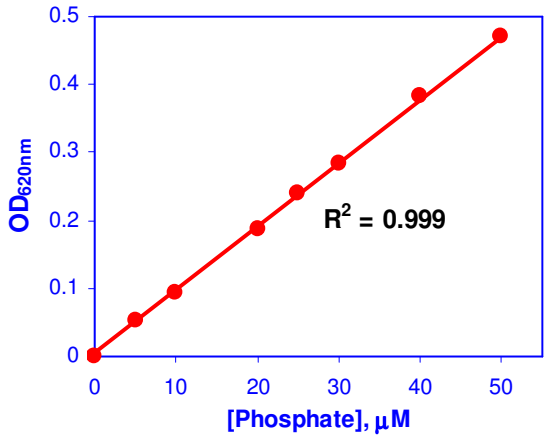
Low interference in biological samples. No pretreatments are needed. Assays can be directly performed on raw biological samples i.e., in the presence of lipid, protein and minerals.

Product information

QuantiChrom™ Phosphate Assay Kit DIPI-500

Each kit is sufficient for 500 assays in 96-well plate. Kit includes:

- 1 x 50 mL Reagent
- 1 x 14 mL Phosphate Standard
- 1 x 14 mL Blank Control



Standard Curve in 96-well plate in assay

References

[1]. Cogan EB, Birrell GB, Griffith OH. A robotics-based automated assay for inorganic and organic phosphates. Anal Biochem. 1999; 271(1):29-35.

[2]. Ekman P, Jager O. Quantification of subnanomolar amounts of phosphate bound to seryl and threonyl residues in phosphoproteins using alkaline hydrolysis and malachite green. Anal Biochem. 1993; 214(1):138-141.

[3]. Fisher DK, Higgins TJ. A sensitive, high-volume, colorimetric assay for protein phosphatases. Pharm Res. 1994; 11(5):759-763.

QuantiChrom™ Zinc Assay Kit

ZINC is an essential trace element and plays many key roles in metabolism. It is required for the activity of more than 300 enzymes, the structure of many proteins, and control of genetic expression. Zinc status affects basic processes of cell division, growth, differentiation, development, performance and aging through its requirement for synthesis and repair of DNA, RNA and protein. The common causes of zinc deficiency are low dietary intakes and low bioavailability. Clinical signs of zinc deficiency include acrodermatitis, low immunity, diarrhea, poor healing, stunting, hypogonadism, fetal growth failure, teratology and abortion. Zinc deficiency1

has now been recognized to be associated with many diseases such as malabsorption syndrome, chronic liver disease, chronic renal disease, sickle cell disease, diabetes, malignancy, and other chronic illnesses.

Simple, direct and automation-ready procedures for measuring zinc concentration in biological samples are highly desirable in Research and Drug Discovery. BioAssay Systems' zinc assay kit is designed to measure zinc directly in biological samples without any pretreatment. The present method utilizes a chromogen that forms a colored complex specifically with zinc. The intensity of the color, measured at 425 nm, is directly proportional to the zinc concentration in the sample.

Applications

Direct Assays: zinc in serum, plasma (no EDTA), urine, saliva etc.

Drug Discovery/Pharmacology: effects of drugs on zinc metabolism.

Environment: zinc determination in waste water, soil etc.

Key features

Sensitive and accurate. Uses 50 µL samples. Linear detection range 0.12 µM (0.78 µg/dL) to 10 µM (65 µg/dL) zinc in 96-well assay format.

Simple and high-throughput. The procedure involves addition of a single working reagent and incubation for 30 min. Can be readily automated as a high-throughput assay for thousands of samples per day.

Improved reagent stability and versatility. The optimized formulation has greatly enhanced reagent and signal stability. Cuvette or 96-well plate assay formats possible.

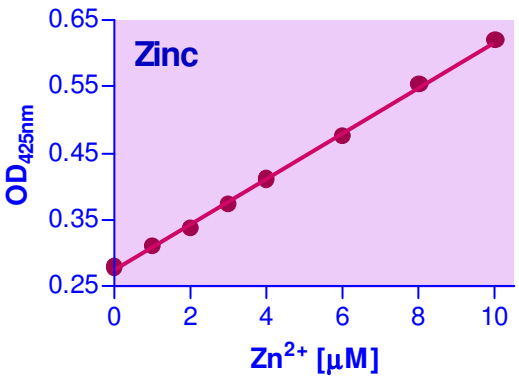
Low interference in biological samples. No pretreatments are needed. Assays can be directly performed on raw biological samples, i.e. in the presence of lipid and protein.

Product information

QuantiChrom™ Zinc Assay Kit DIZN-250

Each kit is sufficient for 250 assays in 96-well plate. Kit includes:

- 1 x 50 mL Reagent A
- 1 x 1 mL Reagent B
- 1 x 1 mL Reagent C
- 1 x 1 mL EDTA Solution
- 1 x 1 mL Zinc Standard



Standard Curve in 96-well plate assay

References

[1]. Prasad. AS (2003) Zinc deficiency. BMJ 326:409-410.

[2]. Neal DE Jr, Kaack MB, Fussell EN, Roberts JA. (1993) Changes in seminal fluid zinc during experimental prostatitis. Urol Res. 21(1): 71-74.

[3]. Fuentes J, Miro J, Riera J. (1982) Simple colorimetric method for seminal plasma zinc assay. Andrologia. 14(4): 322-327.

OXIDATIVE STRESS

QuantiChrom™ Glutathione Assay Kit

Glutathione is a tripeptide of glycine, glutamic acid and cysteine. In the red blood cell, the reduced form of glutathione is vital in maintaining hemoglobin in a reduced state and hence protecting the cells from oxidative damage. Glutathione is involved in detoxification of hydrogen peroxide through glutathione oxidase. Low levels of glutathione are found in deficiencies of key enzymes involved in glutathione metabolism, such as glucose-6-phosphate dehydrogenase, glutathione synthase and glutathione reductase.

Simple, direct and automation-ready procedures for measuring reduced glutathione are becoming popular in research and drug discovery. BioAssay Systems' QuantiChrom™ Glutathione Assay Kit is designed to accurately measure reduced glutathione in biological samples. The improved 5,5'-dithiobis(2-nitrobenzoic acid (DTNB) method combines deproteination and detection into one reagent. DTNB reacts with reduced glutathione to form a yellow product. The optical density, measured at 412 nm, is directly proportional to the glutathione concentration in the sample. The optimized formulation has a long shelf life and completely free of interference due to sample turbidity.

Applications

Direct Assays: reduced glutathione in whole blood, plasma, serum, urine, tissue and cell extracts.

Drug Discovery/Pharmacology: effects of drugs on glutathione metabolism.

Key features

Sensitive and accurate. Linear detection range 0.4 - 100 µM in 96-well plate.

Simple and convenient. The procedure involves mixing the DTNB Reagent with sample, removing protein precipitates for proteinaceous samples, adding a second Reagent and reading the optical density.

Low interference. Amino acids and common buffers do not interfere.

Product information

QuantiChrom™ Glutathione Assay Kit DIGT-250

Each kit is sufficient for 250 assays in 96-well plate. Kit includes:

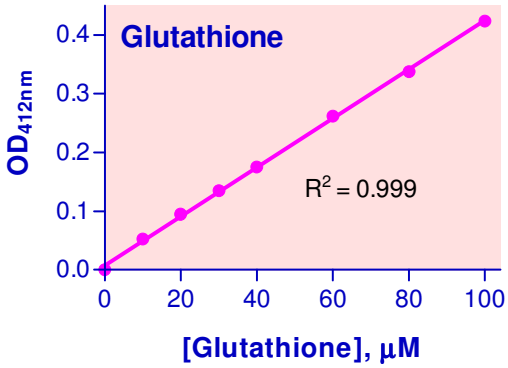
- 1 x 30 mL Reagent A
- 1 x 30 mL Reagent B
- 1 x 10 mL Calibrator

References

[1]. Lindenmaier, H. et al (2005). Interaction of progestins with the human multidrug resistance-associated protein 2 (MRP2). Drug Metab Dispos. 33(11):1576-9.

[2]. Blenn, C. et al (2006). Poly(ADP-ribose) glycohydrolase silencing protects against H_2O_2-induced cell death. Biochem J. 396(3):419-29.

[3]. Wang, X.-J. et al (2007). Nrf2 protects human bladder urothelial cells from arsenite and monomethylarsonous acid toxicity. Toxicol.Applied Pharmacol. 225: 206–213.



Standard Curve with Freshly Prepared Glutathione in 96-well plate assay

QuantiChrom™ Nitric Oxide Assay Kit

Nitric oxide (NO) is a reactive radical that plays an important role in many key physiological functions. NO, an oxidation product of arginine by nitric oxide synthase, is involved in host defense and development, activation of regulatory proteins and direct covalent interaction with functional biomolecules.

Simple, direct and automation-ready procedures for measuring NO are becoming popular in research and drug discovery. Since NO is oxidized to nitrite and nitrate, it is common practice to quantitate NO^{2-}/NO^{3-} as a measure for NO level. BioAssay Systems' QuantiChrom™ Nitric Oxide Assay Kit is designed to accurately measure NO production following reduction of nitrate to nitrite using improved Griess method. The procedure is simple and the time required for sample pretreatment and assay is reduced to 40 min.

Applications

Direct Assays: NO in plasma, serum, urine, tissue/cells and foods.

Drug Discovery/Pharmacology: effects of drugs on NO metabolism.

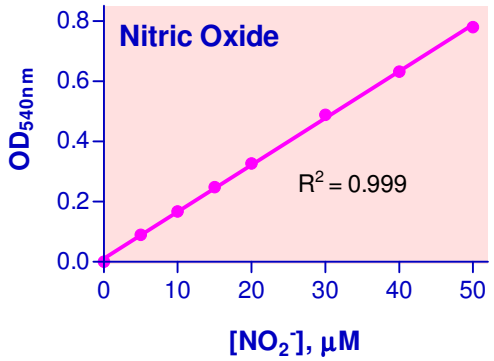
Key features

Sensitive and accurate. Linear detection range 0.1 - 50 µM in 96-well plate.

Rapid and reliable. Using optimized Cd/Cu reagent, the time required for reduction of NO^{3-} to NO^{2-} is 15 min at >98.5% conversion rate.

Simple and high-throughput. The procedure involves mixing sample with two reagents, incubation for 5 min and reading the optical density. Can be readily automated to measure hundreds of samples per day.

Product information
QuantiChrom™ Nitric Oxide Assay Kit DINO-250
Each kit is sufficient for 250 assays in 96-well plate. Kit includes:
- 1 x 14 mL Reagent A
- 1 x 14 mL Reagent B
- 1 x 1 mL 1.5M ZnSO4 solution (20x concentrate)
- 1 x 1 mL 1.65 M NaOH solution (30x concentrate)
- 1 x 30 mL Glycine Buffer
- 1 x 50 mL Activation Buffer (3x concentrate)
- 1 x 15 gram Cadmium granules
- 1 x 1 mL 1 mM nitrite standard



Standard Curve in 96-well plate assay

References
[1]. Bolander Jr, F.F. (2005). The compartmentalization of prolactin signaling in the mouse mammary gland. Mol. Cell. Endocrinol 245:105–110.

[2]. Bulau, P. et al (2007). Analysis of methylarginine metabolism in the cardiovascular system identifies the lung as a major source of ADMA. Am J Physiol Lung Cell Mol Physiol 292: L18-L24.

[3]. Hasegawa, K. et al (2007). Role of asymmetric dimethylarginine in vascular injury in transgenic mice overexpressing dimethylarginie dimethylaminohydrolase. Circ Res. 101(2):e2-10.

QuantiChrom™ Peroxide Assay Kit

Peroxide (e.g. hydrogen peroxide H_2O_2) is one of the key reactive oxygen species formed under oxidative stress conditions. High levels of peroxide formation have been linked to pathological conditions such as ageing, asthma, diabetes, atherosclerosis, cataract, inflammatory arthritis and neurodegenerative diseases.
Simple, direct and automation-ready procedures for quantitative determination of peroxide find wide applications in research and drug discovery. BioAssay Systems' peroxide assay kit is designed to measure peroxide concentration in biological samples without any pretreatment. The improved method utilizes the chromogenic Fe^{3+}-xylenol orange reaction, in which a purple complex is formed when Fe^{2+} provided in the reagent is oxidized to Fe^{3+} by peroxides present in the sample. The intensity of the color, measured at 540-610nm, is an accurate measure of the peroxide level in the sample. The optimized formulation substantially reduces interference by substances in the raw samples.

Applications
Direct Assays: H_2O_2 in biological samples (e.g. serum, citrate-plasma, urine, cell lysate, culture medium).

Drug Discovery/Pharmacology: effects of drugs on peroxide metabolism.

Key features
Sensitive and accurate. Enhanced color intensity using sorbitol. Detection range 0.4 µM (14 ng/mL) to 100 µM (3,400 ng/mL) H_2O_2 in 96-well plate assay.

Simple and high-throughput. The procedure involves addition of a single working reagent and incubation for 30 min. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

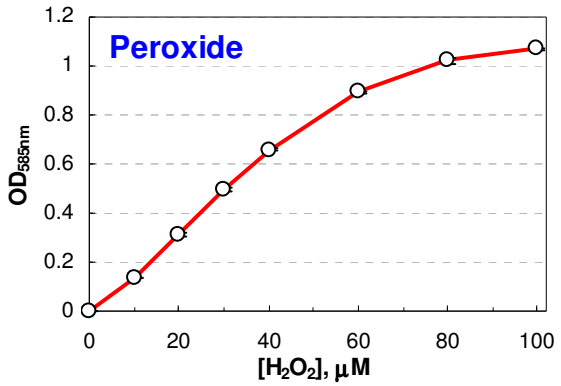
Potential interference reduced. For each sample, a background control is run under identical conditions with the omission of the Fe^{2+}. This procedure corrects for any interference from endogenous iron present in biological samples.

Product information
QuantiChrom™ Peroxide Assay Kit DIOX-250
Each kit is sufficient for 250 assays in 96-well plate. Kit includes:
- 1 x 1 mL Reagent A
- 1 x 1 mL Reagent B
- 1 x 50 mL Reagent C
- 1 x 1 mL H_2O_2 Standard

References
[1]. Karageuzyan KG (2005). Oxidative stress in the molecular mechanism of pathogenesis at different diseased states of organism in clinics and experiment. Curr Drug Targets Inflamm Allergy. 4(1):85-98.

[2]. Arab K, Steghens JP. (2004). Plasma lipid hydroperoxides measurement by an automated xylenol orange method. Anal Biochem. 325(1):158-63.

[3]. Banerjee D, Madhusoodanan UK, Nayak S, Jacob J. (2003). Urinary hydrogen peroxide: a probable marker of oxidative stress in malignancy. Clin Chim Acta. 334: 205-9.



Standard Curve in 96-well plate assay

METABOLISM

EnzyLight™ ADP/ATP Ratio Assay Kit

Changes in the ADP/ATP ratio have been used to differentiate modes of cell death and viability. Increased levels of ATP and decreased levels of ADP signify proliferating cells. Conversely, decreased levels of ATP and increased levels of ADP represent apoptotic or necrotic cells where the decrease in ATP and increase in ADP is much more pronounced in necrosis versus apoptosis.

BioAssay Systems' EnzyLight™ ADP/ATP Ratio Assay Kit provides a rapid method to measure ADP and ATP levels for the screening of apoptosis, necrosis and cell proliferation in mammalian cells. The assay involves two steps. In the first step, the working reagent lyses cells to release ATP and ADP. In the presence of luciferase, ATP immediately reacts with the Substrate D-luciferin to produce light. The light intensity is a direct measure of intracellular ATP concentration.

$$\text{ATP + D-luciferin + } O_2 \xrightarrow{\textit{Luciferase}} \text{oxyluciferin + AMP + PPi + } CO_2 \text{ + light}$$

In the second step, the ADP is converted to ATP through an enzyme reaction. This newly formed ATP then reacts with the D-luciferin as in the first step. Due to a special formulation of the reagent system which greatly stabilizes the light signal generated by the luciferase reaction, the luminescence from the initial ATP measurement remains stable throughout this assay. Therefore, the second light intensity measured represents the total ADP and ATP concentration in the sample.

This non-radioactive, homogeneous cell-based assay is performed in microplates. The reagent is compatible with all culture media and with all liquid handling systems for high-throughput screening applications in 96-well and 384-well plates.

KEY FEATURES

Safe. Non-radioactive assay.

Homogeneous and convenient. "Mix-incubate-measure" type assay. No wash and reagent transfer steps are involved.

Robust and amenable to HTS: Z' factors of 0.5 and above are routinely observed in 96-well and 384-well plates. Can be readily automated on HTS liquid handling systems for processing thousands of samples per day.

APPLICATIONS

Apoptosis and Necrosis determination in cells.

Cell proliferation: effects of cytokines, growth factor, nutrients.

Drug discovery: high-throughput screening for anticancer drugs.

Product information

EnzyLight™ ADP/ATP Ratio Assay Kit ELDT-100
Each kit is sufficient for 100 assays in 96-well plate. Kit includes:

- 1 x 10 mL Assay Buffer
- 1 x 220 µL Substrate Mix
- 1 x 120 µL ATP Enzyme
- 1 x 120 µL ADP Enzyme

References

[1]. Bradbury DA, et al (2000). Measurement of the ADP:ATP ratio in human leukaemic cell lines can be used as an indicator of cell viability, necrosis and apoptosis. J Immunol Methods. 240:79-92.

[2]. Chen-Scarabelli C, et al (2004). Turning necrosis into apoptosis: the exacting task that can enhance survival. Am Heart J. 148(2):196-9.

[3]. Crouch S, et al (1993). The use of ATP Bioluminescence as a measure of cell proliferation and cytotoxicity. J Immunol Methods, 160(1): 81-8.

EnzyLight™ ATP Assay Kit

Adenosine 5'-triphosphate (ATP) is the chemical energy for cellular metabolism and is often referred to as "energy currency" of the cell. ATP is produced only in living cells during photosynthesis and cellular respiration and consumed in cellular processes including biosynthetic reactions, motility and cell division. It is a key indicator of cellular activity and has been utilized as a measure of cell viability and cytotoxicity in research and drug discovery.

BioAssay Systems' EnzyLight™ ATP Assay Kit provides a rapid method to measure intracellular ATP. The single working reagent lyses cells to release ATP, which, in the presence of luciferase, immediately reacts with the Substrate D-luciferin to produce light. The light intensity is a direct measure of intracellular ATP concentration.

$$\text{ATP + D-luciferin + } O_2 \xrightarrow{\textit{Luciferase}} \text{oxyluciferin + AMP + PPi + } CO_2 \text{ + light}$$

This non-radioactive, homogeneous cell-based assay is performed in microplates. The reagent is compatible with all culture media and with all liquid handling systems for high-throughput screening applications in 96-well and 384-well plates.

KEY FEATURES

Safe. Non-radioactive assay.

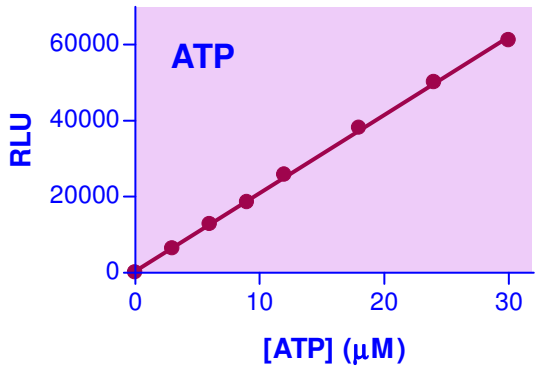
Sensitive and accurate. As low as 0.1 µM ATP or 40 cells can be quantified.

Homogeneous and convenient. "Mix-incubate-measure" type assay. No wash and reagent transfer steps are involved.

Robust and amenable to HTS: Z' factors of > 0.5 are routinely observed in 96-well and 384-well plates. Can be readily automated on HTS liquid handling systems for processing thousands of samples per day.

APPLICATIONS
ATP determination in cells and other biological samples.

Product information
EnzyLight™ ATP Assay Kit EATP-100
Each kit is sufficient for 100 assays in 96-well plate. Kit includes:
- 1 x 10 mL Assay Buffer
- 1 x 120 µL Substrate
- 1 x 120 µL ATP Enzyme
- 1 x 100 µL 3 mM ATP Standard



ATP Standard Curve in Water

LITERATURE
[1]. Kangas L, et al. (1984). Bioluminescence of cellular ATP: a new method for evaluating agents in vitro. Medical Biology, 62: 338 - 343.

[2]. Zhelev Z, et al (2004). Phenothiazines suppress proliferation and induce apoptosis in cultured leukemic cells without any influence on the viability of normal lymphocytes. Phenothiazines and leukemia. Cancer Chemother Pharmacol. 53(3):267-75.

[3]. Ingram PR, et al (2004). A comparison of the effects of ocular preservatives on mammalian and microbial ATP and glutathione levels. Free Radic Res. 38(7):739-50.

QuantiFluo™ DNA Assay Kit

DNA quantification is a common practice in molecular biology. Accurate determination of DNA concentration is crucial for reproducible results in sequencing, cloning, transfection and DNA labeling. Very often DNA is available in minute quantities and the traditional UV 260 nm absorbance method requires microgram quantities for reliable results.

Simple, direct and automation-ready procedures for measuring DNA concentration are very desirable. BioAssay Systems' QuantiFluo™ DNA assay kit is designed to accurately measure nanogram quantities of plasmid DNA, cDNA, DNA following polymerase chain reaction and DNA eluted from gels. The improved method utilizes Hoechst dye that bind specifically with double-stranded DNA. The fluorescence intensity, measured at 450nm (λexc = 350nm), is directly proportional to the DNA concentration in the sample. The optimized formulation substantially reduces interference by substances in the raw samples.

Applications
Direct Assays: plasmid DNA, genomic DNA, cDNA, DNA following polymerase chain reaction, and DNA extracted from gel and other matrices.

Key features
Sensitive and accurate. Use 20 µL samples. Linear detection range 2 ng to 40 ng (100 – 2,000 ng/mL) calf thymus DNA in 96-well plate assay.

Simple and high-throughput. The "mix-and-read" procedure involves addition of a single working reagent and reading the fluorescence intensity. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

Low interference. RNA, salt (up to 3M NaCl), detergent (< 0.01% SDS), common DNA extraction buffer do not interfere in the assay.

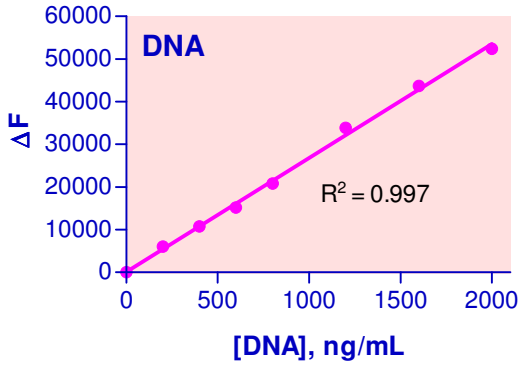
Versatility: assays can be executed in 96-well plate or in cuvette.

Product information
QuantiFluo™ DNA Assay Kit QFDN-250
Each kit is sufficient for 250 assays in 96-well plate. Kit includes:
- 1 x 50 mL Reagent
- 1 x 1 mL 10 µg/mL calf thymus DNA

References
[1]. Bachoon DS, Otero E, Hodson RE (2001). Effects of humic substances on fluorometric DNA quantification and DNA hybridization. J Microbiol Methods 47:73-82.

[2]. Teare JM et al. (1997). Measurement of nucleic acid concentrations using the DyNA Quant and the GeneQuant. Biotechniques 22:1170-4.

[3]. Bester MJ, Potgieter HC, Vermaak WJ (1994). Cholate and pH reduce interference by sodium dodecyl sulfate in the determination of DNA with Hoechst. Anal Biochem. 223:299-305.



Standard Curve in 96-well plate in assay

QuantiChrom™ Ethanol Assay Kit

Alcoholic drinks are among the daily consumed beverages. Studies have shown heavy alcohol consumption may lead to various forms of liver diseases and to increased mortality rates. Quantitative determination of alcohol or ethanol (C2H5OH) finds applications in basic research, clinic studies and winery.

Simple, direct and automation-ready procedures for measuring alcohol concentration are very desirable. BioAssay Systems' QuantiChrom™ alcohol assay kit is based on an improved dichromate method, in which ethanol reduces dichromate to a bluish chromic product. The intensity of color, measured at 580 nm, is directly proportional to the alcohol concentration in the sample. The optimized formulation substantially reduces interference by substances in the raw samples and exhibits high sensitivity.

Applications

Direct Assays: ethanol in saliva, urine, alcoholic beverages, deproteinated culture media, plasma and serum samples.

Pharmacology: effects of drugs on alcohol metabolism.

Fermentation: monitoring alcohol production and process development.

Key features

Sensitive and accurate. Use 100 µL samples. Detection range 0.04 – 4% alcohol in 96-well plate assay.

Convenient and high-throughput. The procedure involves addition of a single working reagent, incubation for 8 to 30 min, adding a termination buffer, and reading the optical density. Can be readily automated as a high-throughput 96-well plate assay for thousands of samples per day.

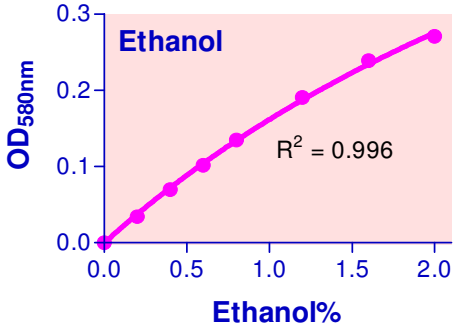
Versatility. Assays can be executed in 96-well plate or cuvet.

Product information

QuantiChrom™ Ethanol Assay Kit DIET-500

Each kit is sufficient for 500 assays in 96-well plate. Kit includes:

- 1 x 50 mL Reagent A
- 1 x 50 mL Reagent B
- 1 x 50 mL TCA (10%)
- 1 x 1.5 mL 10% Ethanol standard



Standard Curve in 96-well plate assay

References

[1]. Jetter WW (1950). Modified dichromate method for determination of ethyl alcohol in biologic tissue. Am J Clin Pathol. 20:473-475.

[2]. Pilone GJ (1985). Determination of ethanol in wine by titrimetric and spectrophotometric dichromate methods: collaborative study. J Assoc Off Anal Chem. 68:188-190.

[3]. Dubowski KM (1980). Alcohol determination in the clinical laboratory. Am J Clin Pathol. 74:747-750.

EnzyChrom™ Ethanol Assay Kit

Alcoholic drinks are among the daily consumed beverages. Studies have shown heavy alcohol consumption may lead to various forms of liver diseases and to increased mortality rates. Quantitative determination of alcohol (ethanol, C2H5OH) has applications in basic research, drug discovery, clinic studies and in the alcoholic industry.

Simple, direct and automation-ready procedures for measuring ethanol concentration are very desirable. BioAssay Systems' EnzyChrom™ ethanol assay kit is based on alcohol dehydrogenase catalyzed oxidation of ethanol, in which the formed NADH is coupled to the formazan (MTT)/phenazine methosulfate (PMS) Reagent. The intensity of the product color, measured at 565 nm, is proportionate to the ethanol concentration in the sample.

Key features

Sensitive and accurate. Detection limit 0.0003 vol % (50 µM or 3 ppm), linearity up to 0.1% ethanol in 96-well plate assay.

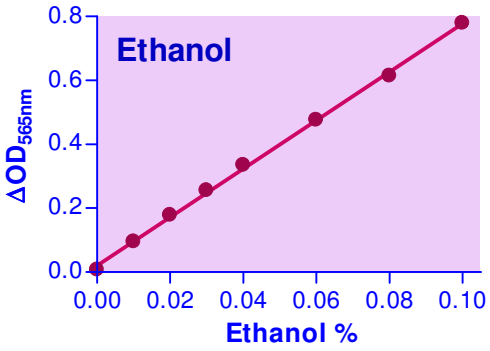
Convenient. The procedure involves adding a single working reagent, and reading the optical density at time zero and at 5 min at room temperature. No 37℃ heater is needed.

High-throughput. Can be readily automated as a high-throughput 96-well plate assay for thousands of samples per day.

Applications
Direct Assays: ethanol in serum, plasma, urine and saliva samples.

Drug Discovery/Pharmacology: effects of drugs on alcohol metabolism.

Product information
EnzyChrom™ Ethanol Assay Kit ECET-100
Each kit is sufficient for 100 assays in 96-well plate. Kit includes:
- 1 x 10 mL Assay Buffer
- 1 x 1 mL NAD Solution
- 1 x 1.5 mL PMS Solution
- 1 x 1.5 mL MTT Solution
- 1 x 120 µL Enzyme
- 1 x 1.5 mL Ethanol Standard



Standard Curve in 96-well plate assay

References
[1]. Dey A, Cederbaum AI (2006). Alcohol and oxidative liver injury. Hepatology. 43: S63-74.

[2]. Dubowski KM (1980). Alcohol determination in the clinical laboratory. Am J Clin Pathol. 74: 747-750.

[3]. Lim HH, Buttery JE. (1977). Determination of ethanol in serum by an enzymatic PMS-INT colorimetric method. Clin Chim Acta. 75(1): 9-12.

EnzyChrom™ Glucose Assay Kit

Glucose ($C_6H_{12}O_6$) is a ubiquitous fuel molecule in biology. It is oxidized through a series of enzyme-catalyzed reactions to form carbon dioxide and water, yielding the universal energy molecule ATP. Due to its importance in metabolism, glucose level is a key diagnostic parameter for many metabolic disorders. Increased glucose levels have been associated with diabetes mellitus, hyperactivity of thyroid, pituitary and adrenal glands. Decreased levels are found in insulin secreting tumors, myxedema, hypopituitarism and hypoadrenalism.

Simple, direct and automation-ready procedures for measuring glucose concentrations find wide applications in research and drug discovery. BioAssay Systems' glucose assay kit is designed to measure glucose directly without any pretreatment. The improved enzymatic method utilizes the glucose oxidase reaction followed by H_2O_2 detection using our robust, sensitive reagent. The absorbance at 585nm is directly proportional to glucose concentration in the sample.

KEY FEATURES
Sensitive and accurate. Use as little as 10 µL samples. Linear detection range from 1.4 µM (0.025 mg/dL) to 200 µM (3.6 mg/dL) glucose in 96-well plate.

Simple and convenient. The procedure involves addition of two reagents and whole procedure takes about 50 min.

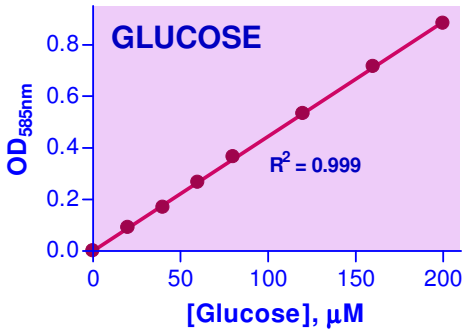
Improved reagent stability. The optimized formulation has greatly enhanced the reagent and signal stability.

Low interference in biological samples. No pretreatments are needed. Assays can be directly performed on serum and plasma samples.

APPLICATIONS
Direct Assays: glucose in serum, plasma, urine, saliva, milk, culture medium and other biological samples.

Drug Discovery/Pharmacology: effects of drugs on glucose metabolism.

Food and Beverages: glucose in food, beverages etc.



Standard Curve in 96-well plate assay

Product information
EnzyChrom™ Glucose Assay Kit ECGL-100
Each kit is sufficient for 100 assays in 96-well plate. Kit includes:

- 1 x 5 mL Assay Buffer
- 1 x 120 µL Glucose Enzyme
- 1 x 20 mL Detection Reagent
- 1 x 1 mL 300 mg/dL glucose Standard

LITERATURE

[1]. Okuda J, Okuda G. (1969). A rapid polarographic microdeter-mination of glucose with glucose oxidase. Clin Chim Acta. 23(2):365-7.

[2]. Saifer A, Gerstenfeld S. (1958). The photometric microdeter-mination of blood glucose with glucose oxidase. J Lab Clin Med. 51(3):448-60.

[3]. Middleton JE, Griffiths WJ. (1957). Rapid colorimetric micro-method for estimating glucose in blood and C. S. F. using glucose oxidase. Br Med J. 2(5060):1525-7.

QuantiChrom™ Glucose Assay Kit

Glucose ($C_6H_{12}O_6$) is a ubiquitous fuel molecule in biology. It is oxidized through a series of enzyme-catalyzed reactions to form carbon dioxide and water, yielding the universal energy molecule ATP. Due to its importance in metabolism, glucose level is a key diagnostic parameter for many metabolic disorders. Increased glucose levels have been associated with diabetes mellitus, hyperactivity of thyroid, pituitary and adrenal glands. Decreased levels are found in insulin secreting tumors, myxedema, hypopituitarism and hypoadrenalism.

Simple, direct and automation-ready procedures for measuring glucose concentrations find wide applications in research and drug discovery. BioAssay Systems' glucose assay kit is designed to measure glucose directly in serum or plasma without any pretreatment. The improved o-toluidine method utilizes a specific color reaction with glucose. The absorbance at 630nm is directly proportional to the glucose concentration in the sample.

Applications

Direct Assays: glucose in biological samples (e.g. serum and plasma).

Drug Discovery/Pharmacology: effects of drugs on glucose metabolism.

Food and Beverages: glucose in food, beverages etc.

Key features

Sensitive and accurate. Use as little as 5 µL samples. Linear detection range 0.7 mg/dL (39 µM) to 300 mg/dL (16.6 mM) glucose in 96-well plate.

Simple and convenient. The procedure involves addition of a single working reagent and incubation for 8 min in a boiling water bath and reading optical density.

Improved reagent stability. The optimized formulation has greatly enhanced the reagent and signal stability.

Low interference in biological samples. No pretreatments are needed. Assays can be directly performed on serum and plasma samples.

Product information

QuantiChrom™ Glucose Assay Kit DIGL-200

Each kit is sufficient for 200 assays in 96-well plate. Kit includes:

- 1 x 100mL Reagent
- 1 mL 300 mg/dL glucose standard

QuantiChrom™ Glucose Assay Kit DIGL-100

Each kit is sufficient for 100 assays in 96-well plate. Kit includes:

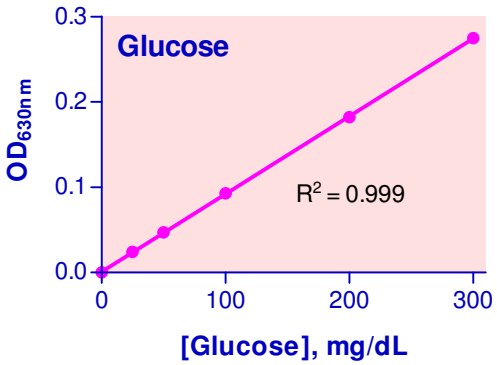
- 1 x 50 mL Reagent
- 1 x 1 mL 300 mg/dL glucose standard

References

[1]. Yoon, S.S. and Mekalanos, J.J. (2006) 2,3-Butanediol Synthesis and the Emergence of the Vibrio cholerae El Tor Biotype. Infection and Immunity 74 (12): 6547–6556.

[2]. Schmidt, C. et al (2007). Regulation of renal glucose transporters during severe inflammation. Am J Physiol Renal Physiol 292: F804-F811.

[3]. Jatana, M. (2006) Inhibition of NF-κB activation by 5-lipoxygenase inhibitors protects brain against injury in a rat model of focal cerebral ischemia. J. Neuroinflammation 3:12.



Standard Curve in 96-well plate in assay

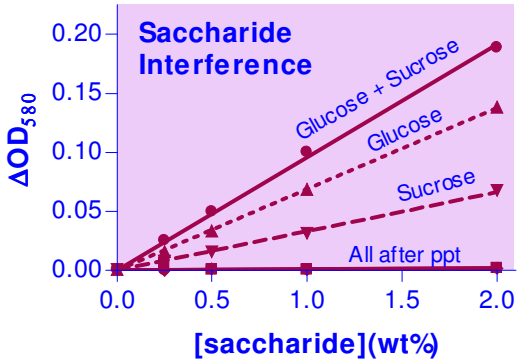
Saccharide Removal Kit

Saccharides such as glucose and sucrose are known to interfere with the QuantiChrom™ Ethanol Assay (catalog# DIET-500). BioAssay Systems has developed a rapid procedure for complete removal of saccharides by co-precipitation with alkaline cupric and calcium ions.

APPLICATIONS
Removal of interfering saccharides (e.g. glucose, sucrose) from samples such as culture media.

KEY FEATURES
Convenient and high-throughput. The procedure involves addition of three reagents sequentially, incubation for 15 min, centrifugation for 5 min and transfer of the supernatant.

KIT CONTENTS (500 treatments)
- 1 x 20 mL Reagent A
- 1 x 100 mL Reagent B
- 1 x 20 mL Reagent C



Saccharide Interference in 96-well plate DIET-500 assay. Interference is eliminated upon precipitation of the saccharides using the DIET-SRK kit.

References
[1]. Plimmer, RHA and Skelton, RF (1914). The Estimation of Allantoin in Urine in the Presence of Glucose. Biochem J. 8:641-8.

[2]. Pilone GJ (1985). Determination of ethanol in wine by titrimetric and spectrophotometric dichromate methods: collaborative study. J Assoc Off Anal Chem. 68:188-190.

[3]. Dubowski KM (1980). Alcohol determination in the clinical laboratory. Am J Clin Pathol. 74:747-750.

EnzyChrom™ Lactate Assay Kit

Lactate is generated by lactate dehydrogenase (LDH) under hypoxic or anaerobic conditions. Monitoring lactate levels is, therefore, a good indicator of the balance between tissue oxygen demand and utilization and is useful when studying cellular and animal physiology.

Simple, direct and automation-ready procedures for measuring lactate concentration are very desirable. BioAssay Systems' EnzyChrom™ lactate assay kit is based on lactate dehydrogenase catalyzed oxidation of lactate, in which the formed NADH is coupled to the formazan (MTT)/phenazine methosulfate (PMS) Reagent. The intensity of the product color, measured at 565 nm, is proportionate to the lactate concentration in the sample.

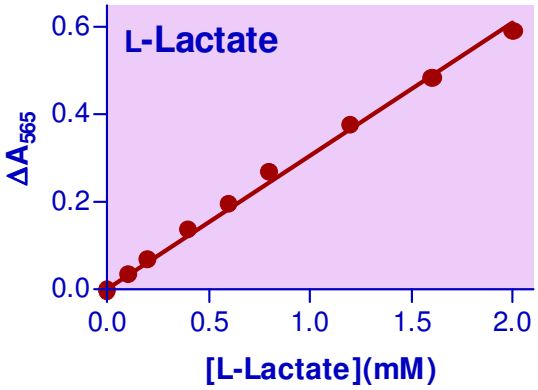
Key features
Sensitive and accurate. Detection limit of 0.05 mM and linearity up to 2 mM Lactate in 96-well plate assay.

Convenient. The procedure involves adding a single working reagent, and reading the optical density at time zero and at 20 min. Room temperature assay. No 37°C heater is needed.

High-throughput. Can be readily automated as a high-throughput 96-well plate assay for thousands of samples per day.

Applications
Direct Assays: lactate in serum, plasma, and cell media samples.

Product information
EnzyChrom™ Lactate Assay Kit ECLC-100
Each kit is sufficient for 100 assays in 96-well plate. Kit includes:
- 1 x 6 mL Assay Buffer
- 1 x 1 mL NAD Solution
- 1 x 1.5 mL PMS Solution
- 1 x 1.5 mL MTT Solution
- 1 x 120 µL Enzyme (LDH)
- 1 x 1 mL Lactate Standard



Standard Curves in 96-well plate assay

References
[1]. Babson, AL and Babson, SR. (1973) Kinetic Colorimetric Measurement of Serum Lactate Dehydrogenase Activity. Clin Chem. 19(7):766-9.

[2]. Karlsen RL, Norgaard L, Guldbrandsen EB (1981). A rapid method for the determination of urea stable lactate dehydrogenase on the 'Cobas Bio' centrifugal analyser.Scand J Clin Lab Invest. 41(5):513-6.

[3]. Coley HM, Lewandowicz G, Sargent JM, Verrill MW (1997). Chemosensitivity testing of fresh and continuous tumor cell cultures using lactate dehydrogenase.Anticancer Res. 17(1A):231-6.

EnzyChrom™ NAD/NADH Assay Kit

Pyridine nucleotides play an important role in metabolism and, thus, there is continual interest in monitoring their concentration levels. Quantitative determination of NAD^+/NADH has applications in research pertaining to energy transformation and redox state of cells or tissue.

Simple, direct and automation-ready procedures for measuring NAD^+/NADH concentration are very desirable. BioAssay Systems' EnzyChrom™ NAD^+/NADH assay kit is based on an alcohol dehydrogenase cycling reaction, in which a tetrazolium dye (MTT) is reduced by NADH in the presence of phenazine methosulfate (PMS). The intensity of the reduced product color, measured at 565 nm, is proportionate to the NAD^+/NADH concentration in the sample. Our assay is a convenient method to measure NAD, NADH and their ratio.

Key features

Sensitive and accurate. Detection limit 0.2 µM, linearity up to 10 µM NAD^+/NADH in 96-well plate assay.

Convenient. The procedure involves adding a single working reagent, and reading the optical density at time zero and 15 min at room temperature. No 37℃ heater is required.

High-throughput. Can be readily automated as a high-throughput 96-well plate assay for thousands of samples per day.

Applications

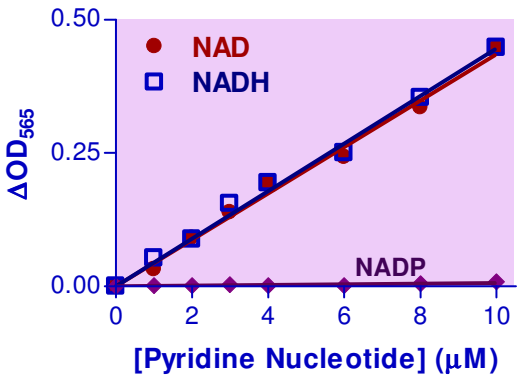
Direct Assays: NAD^+/NADH concentrations and ratios in cell or tissue extracts.

Product information

EnzyChrom™ NAD/NADH Assay Kit ECND-100

Each kit is sufficient for 100 assays in 96-well plate. Kit includes:

- 1 x 10 mL Assay Buffer
- 1 x 1.5 mL Ethanol
- 1 x 1.5 mL PMS Solution
- 1 x 1.5 mL MTT Solution
- 1 x 120 µL Enzyme
- 1 x 0.5 mL NAD Standard
- 1 x 12 mL NAD Extraction Buffer
- 1 x 12 mL NADH Extraction Buffer



Standard Curves in 96-well plate assay

References

[1]. Zhao, Z, Hu, X and Ross CW (1987). Comparison of Tissue Preparation Methods for Assay of Nicotinamide Coenzymes. Plant Physiol. 84: 987-988.

[2]. Matsumura, H. and Miyachi S (1980). Cycling assay for nicotinamide adenine dinucleotides. Methods Enzymol. 69: 465-470.

[3]. Vilcheze, C et al. (2005). Altered NADH/NAD^+ Ratio Mediates Coresistance to Isoniazid and Ethionamide in Mycobacteria. Antimicrobial Agents and Chemotherapy. 49(2): 708-720.

EnzyChrom™ NADP/NADPH Assay Kit

Pyridine nucleotides play an important role in metabolism and, thus, there is continual interest in monitoring their concentration levels. Quantitative determination of $NADP^+$/NADPH has applications in research pertaining to energy transformation and redox state of cells or tissue.

Simple, direct and automation-ready procedures for measuring $NADP^+$/NADPH concentration are very desirable. BioAssay Systems' EnzyChrom™ $NADP^+$/NADPH assay kit is based on a glucose dehydrogenase cycling reaction, in which a tetrazolium dye (MTT) is reduced by NADPH in the presence of phenazine methosulfate (PMS). The intensity of the reduced product color, measured at 565 nm, is proportionate to the $NADP^+$/NADPH concentration in the sample. Our assay is a convenient method to measure NADP, NADPH and their ratio.

Key features

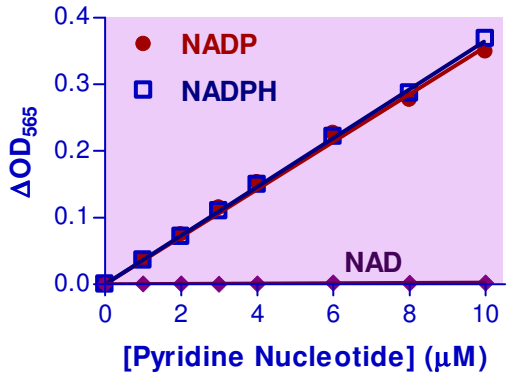
Sensitive and accurate. Detection limit 0.1 µM, linearity up to 10 µM NADP+/NADPH in 96-well plate assay.

Convenient. The procedure involves adding a single working reagent, and reading the optical density at time zero and 30 min at room temperature. No 37℃ heater is required.

High-throughput. Can be readily automated as a high-throughput 96-well plate assay for thousands of samples per day.

Applications
Direct Assays: $NADP^+$/NADPH concentrations and ratios in cell or tissue extracts.

Product information
EnzyChrom™ NADP/NADPH Assay Kit ECNP-100
Each kit is sufficient for 100 assays in 96-well plate. Kit includes:
- 1 x 10 mL Assay Buffer
- 1 x 1.5 mL Glucose
- 1 x 1.5 mL PMS Solution
- 1 x 1.5 mL MTT Solution
- 1 x 120 µL Enzyme (GDH)
- 1 x 0.5 mL NADP Standard
- 1 x 12 mL NADP Extraction Buffer
- 1 x 12 mL NADPH Extraction Buffer



Standard Curves in 96-well plate assay

References
[1]. Zhao, Z, Hu, X and Ross CW (1987). Comparison of Tissue Preparation Methods for Assay of Nicotinamide Coenzymes. Plant Physiol. 84: 987-988.

[2]. Matsumura, H. and Miyachi S (1980). Cycling assay for nicotinamide adenine dinucleotides. Methods Enzymol. 69: 465-470.

[3]. Vilcheze, C et al. (2005). Altered NADH/NAD^+ Ratio Mediates Coresistance to Isoniazid and Ethionamide in Mycobacteria. Antimicrobial Agents and Chemotherapy. 49(2): 708-720.

QuantiChrom™ Protein Assay Kit

Proteins are polypeptides made up of amino acids and play various key roles in all aspects of biology. Protein quantitation is a very common practice for life scientists.

Simple, direct and automation-ready procedures for measuring protein concentration are becoming popular in research and drug discovery. BioAssay Systems' QuantiChrom™ protein assay kit is based on an improved Coomassie Blue G method. The dye forms a blue complex specifically with protein, and the intensity of color, measured at 595nm, is directly proportional to the protein concentration in the sample. The optimized formulation substantially reduces interference by substances in the raw samples and exhibits increased sensitivity towards peptides.

Applications
Direct Assays: total protein concentration.

Key features
Sensitive and accurate. Use 10 µL samples. Detection range 0.06 – 1.0 mg /mL protein in 96-well plate assay.
Simple and high-throughput. The "mix-and-read" procedure involves addition of a single working reagent and reading the optical density. Can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

Low interference. Glucose, tris, vitamins, and amino acids, DNA, RNA, salts, EDTA (< 12 mM), phenol (< 50 mM), urea (< 0.6 M), Triton (< 0.1%) and SDS (< 0.01% SDS) do not interfere in the assay.

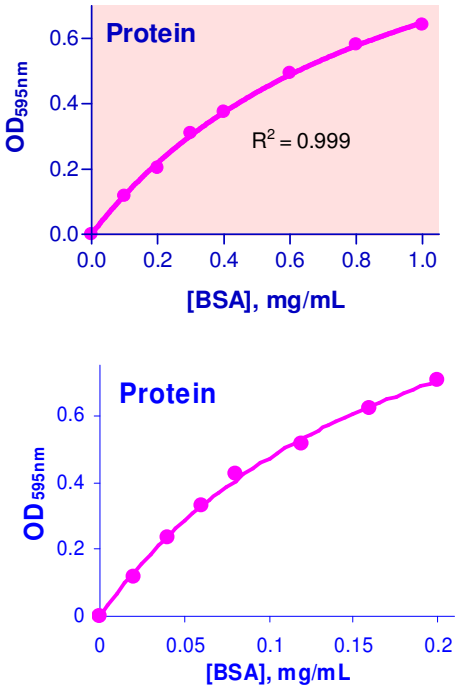
Versatility: assays can be executed in 96-well plate or cuvet.

Product information
QuantiChrom™ Protein Assay Kit QCPR-500
Each kit is sufficient for 500 assays in 96-well plate. Kit includes:
- 1 x 20 mL Reagent (5 x concentrate)
- 1 x 1 mL 1.0 mg/mL BSA standard.

References
[1]. Bradford, M. (1976). A rapid and sensitive method for the quantitation of microgram quantities of protein utilizing the principle of protein-dye binding. Anal. Biochem. 72: 248-354.

[2]. Friedenauer, S. and Berlet, H.H. (1989). Sensitivity and variability of the Bradford protein assay in the presence of detergents. Anal. Biochem. 178: 263-268.

[3]. Stoscheck, C. M. (1990). Increased uniformity in the response of the Coomassie Blue G protein assay to different proteins. Anal. Biochem. 184: 111-116.



Standard Curve in 96-well plate. Upper: standard protocol
Lower: 50 µL sample plus 200 µL Reagent.

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