

OxiSelect Total Glutathione (GSSG/GSH) Assay Kit

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CATALOG #
AAA11416

PRODUCT SYNONYMS

OxiSelect Total Glutathione (GSSG/GSH); OxiSelect Total Glutathione (GSSG/GSH) Assay Kit; OxiSelect Total Glutathione (GSSG/GSH) assay kit

PRODUCT SPECIFICATIONS

Preparation and Storage

Upon receipt, store the NADPH at -80 degree C. Prepare single use aliquots and avoid multiple freeze/thaw cycles. Store the remaining kit components at 4 degree C.

IMAGES

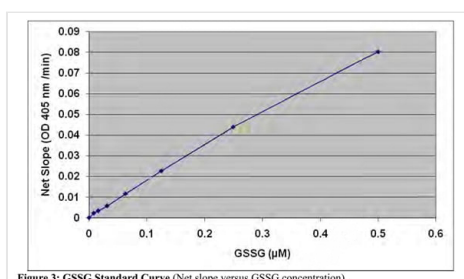


Figure 3: GSSG Standard Curve (Net slope versus GSSG concentration).

Standard Curve (Sample)

Related Product Information for OxiSelect Total Glutathione (GSSG/GSH) assay kit	Background: Oxidative stress occurs when there is an excess of free radicals, or reactive oxygen species (ROS), in the body. Research has shown that excessive ROS accumulation will lead to cellular injury, such as damage to DNA, proteins, and lipid membranes. ROS damage has been implicated in the development of many physiological problems, such as ageing, asthma, arthritis, diabetes, cancer, inflammation, cardiovascular disease, atherosclerosis, Down's Syndrome, and neurodegenerative diseases. Glutathione is a key intracellular tripeptide thiol composed of glutamic acid, cysteine, and glycine. Glutathione helps protect cells from free radical damage by acting as an antioxidant. Within cells, glutathione exists in reduced (GSH) and oxidized (GSSG) states. In healthy cells and tissue, more than 90% of the total glutathione pool is in the reduced form (GSH) while less than 10% exists in the disulfide form (GSSG). The high GSH concentration is because the enzyme that transitions it from its oxidized state (GSSG), glutathione reductase, is constitutively active and inducible upon oxidative stress. An increased GSSG-to-GSH ratio is considered indicative of oxidative stress. Reduced glutathione's thiol group provides reducing equivalents to other unstable ROS, which in turn becomes unstable itself. This unstable GSH readily reacts with another unstable GSH to form a stable GSSG molecule. This reaction is prevalent since glutathione is present in high concentrations. GSSG is subsequently converted to GSH again by the enzyme glutathione reductase. In addition to its role in oxidative stress, glutathione also helps maintain exogenous antioxidants such as vitamins C and E. Glutathione is involved with the breakdown of peroxides. It has a role in regulating the nitric acid cycle. Glutathione can directly bind many inorganic and organic xenobiotic (foreign chemicals) and carcinogenic compounds, such as the heavy metals mercury and arsenic. It is important to the proper function and maximum effect of the immune system. In addition, glutathione is fundamentally involved with many metabolic and biochemical mechanisms such as protein and prostaglandin synthesis, DNA synthesis and repair, maintenance of disulfide bonds in proteins, enzyme activation and amino acid transport across cell membranes. OxiSelect™ Total Glutathione Assay Kit is a quantitative assay for measuring the total concentration of glutathione, which encompasses both reduced and oxidized glutathione (GSH and GSSG) from plasma, blood, saliva, urine, tissue extracts, and plant or mammalian cell lysates. The kit employs a simple enzymatic recycling reaction for total glutathione quantification. The kit has a detection sensitivity limit of 8 nM. Each kit provides sufficient reagents to perform up to 100 assays, including standard curve and unknown samples. Principle of the Assay: The OxiSelect™ Total Glutathione Assay Kit is a quantitative assay for measuring the total glutathione content within a sample (GSH/GSSG). Glutathione Reductase reduces oxidized glutathione (GSSG) to reduced glutathione (GSH) in the presence of NADPH. Subsequently, the chromogen reacts with the thiol group of GSH to produce a colored compound that absorbs at 405 nm (Figure 1). The total glutathione content in unknown samples is determined by comparison with the predetermined glutathione standard curve. The rate of chromophore production is proportional to the concentration of glutathione within the sample. The rate can be determined from the absorbance change over time. Metaphosphoric acid is provided to remove interfering proteins or enzymes from samples.
Product Categories/Family for OxiSelect Total Glutathione (GSSG/GSH) assay kit	Oxidative Stress/Damage; Antioxidant Assays; Glutathione Assay; Glutathione Assay
References	1. Anderson, M. Glutathione in Free radicals, A Practical Approach. Oxford University Press, New York; 1996. 2. Halliwell, B, Gutteridge, J.M.C. Free Radicals in Biology and Medicine. Oxford University Press, New York; 1999. 3. Julius, M., et al. J. Clin. Epidemiol. (1994) 47: 1021-1026. 4. Mytilineou, C., et al. Parkinsonism Relat. Disord. (2002) 8: 385-387. 1. Mateo, D. et al. (2015). Comparative cytotoxicity evaluation of different size gold nanoparticles in human dermal fibroblasts. J Exp Nanosci. doi:10.1080/17458080.2015.1014934. 2. Simon, B. R. et al. (2015). Cadmium alters the formation of Benzo[a]Pyrene DNA adducts in the RPTEC/TERT1 human renal proximal tubule epithelial cell line. Toxicol Rep. 14:391-400. 3. Shen, Y. B. et al. (2014). Effect of feed grade L-methionine on growth performance and gut health in nursery pigs compared with conventional DL-methionine. J Anim Sci. 92:5530-5539. 4. Hall, J. A. et al. (2014). Effect of transport on blood selenium and glutathione status in feeder lambs. J Anim Sci. 92:4115-4122. 5. Lim, J.H. et al. (2014). Targeting mitochondrial oxidative metabolism in melanoma causes metabolic compensation through glucose and glutamine utilization. Cancer Res. 74:3535-3545. 6. Mohammad, M. K. et al. (2014). Watermelon (Citrullus lanatus (Thunb.) Matsum. and Nakai) juice modulates oxidative damage induced by low dose X-ray in mice. Biomed Res Int. 2014:512834. 7. Mohamed, M. I. et al. (2014). Induction of oxidative stress following low dose ionizing radiation in ICR mice. World J Med Sci. 10:198-203. 8. Mani, S. et al. (2013). Decreased endogenous production of hydrogen sulfide accelerates atherosclerosis. Circulation. 127: 2523-2534. 9. Karakus, E. et al. (2013). Agomelatine: an antidepressant with new potent hepatoprotective effects on paracetamol-induced liver damage in rats. Human and Experimental Toxicology. 10.01177/0960327112472994.

For Research Use Only. Not for use in diagnostic or therapeutic procedures. Small volumes of product may become entrapped in the seal of the vial during shipment and storage; if necessary, briefly centrifuge the vial on a tabletop centrifuge to dislodge any liquid in the cap.

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Online datasheet: <https://stage.aaabiotech.com/assay-kits/oxiselect-total-glutathione-gssg-gsh/11416>