Glutathione Assay Kit (Fluorometric) ab65322

Overview

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<th>Product name</th>
<th>Glutathione Assay Kit (Fluorometric)</th>
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<td>Detection method</td>
<td>Fluorescent</td>
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<tr>
<td>Sample type</td>
<td>Urine, Serum, Plasma, Other biological fluids, Tissue Extracts, Cell Lysate, Cell culture media</td>
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<td>Assay type</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Assay time</td>
<td>2h 00m</td>
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<td>Species reactivity</td>
<td>Reacts with: Mammals, Other species</td>
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Product overview

Glutathione Assay Kit (Fluorometric) (ab65322) provides a simple in vitro assay for detection of total glutathione changes during cellular response to toxicity, apoptosis and other conditions. The assay uses the dye monochlorobimane (MCB), which forms an adduct with glutathione in a reaction catalyzed by glutathione-S-Transferase (GST). The unbound MCB is almost nonfluorescent, whereas it emits a fluorescent blue light (Ex/Em = 380nm/461nm) when bound to reduced or oxidized glutathione. Thus, the amount of glutathione can be easily detected using a fluorometer or a 96-well fluorometric plate reader.

This product does not measure total glutathione in the sample. It measures the relative level of glutathione between untreated and treated samples.

Visit our FAQs page for tips and troubleshooting.

Notes

Glutathione (GSH) is a tripeptide that contains L-cysteine, L-glutamic acid and glycine. It is the smallest intracellular protein thiol molecule in the cells, which prevents cell damage caused by reactive oxygen species such as free radicals and peroxides. Glutathione exists in reduced (GSH) and oxidized (GSSG) states. Reduced glutathione (GSH) is a major tissue antioxidant that provides reducing equivalents for the glutathione peroxidase (GPx) catalyzed reduction of lipid hydroperoxides to their corresponding alcohols and hydrogen peroxide to water. In the GPx catalyzed reaction, the formation of a disulfide bond between two GSH molecules generates oxidized glutathione (GSSG). The enzyme glutathione reductase (GR) recycles GSSG to GSH with the simultaneous oxidation of β-nicotinamide adenine dinucleotide phosphate (β-NADPH2).

In healthy cells, more than 90% of the total glutathione pool is in the reduced form (GSH). When cells are exposed to increased levels of oxidative stress, GSSG accumulates and the ratio of GSSG to GSH increases. An increased ratio of GSSG-to-GSH is an indication of oxidative stress. The monitoring of reduced and oxidized GSH in biological samples is essential for evaluating the redox and detoxification status of the cells and tissues against oxidative and free radicals mediated cell injury.
Glutathione is a small peptide composed of three amino acids: cysteine, glutamic acid, and glycine and is present in tissues in concentrations as high as one millimolar. Glutathione is the principal intracellular low-molecular-weight thiol that plays a critical role in the cellular defense against oxidative and nitrosative stress in mammalian cells. Diminished glutathione levels have been observed in the early stages of apoptosis.

Glutathione Detection Kit (Fluorometric) (ab65322)

Glutathione pool measured in THP-1 macrophages: uninfected cells; 

WT: infected with *M. tuberculosis* wild type; 

KO: infected with *M. tuberculosis* OppD knock-out; 

COM: infected with *M. tuberculosis* OppD knock-out complemented with OppDA gene. 

10^6 cells were infected and lysed by treating them with 100µl of ice cold lysis buffer. Cell lysate was diluted and mixed as described in the kit protocol. After 30 min incubation at 37°C, fluorescence was measured at Ex=380nm/ Em=460nm. Results represent the means of ± S.D. of three determinations.

Glutathione assays were performed using various amounts of Glutathione as indicated. Results were analyzed according to the kit instructions.

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