Glutathione Reductase
human, recombinant
expressed in Escherichia coli

Catalog Number G9297
Storage Temperature –20 °C

CAS RN 9001-48-3
EC 1.8.1.7 (formerly 1.6.4.2)
Synonyms: GR, NADPH:oxidized glutathione oxidoreductase, glutathione-disulfide reductase

Product Description
Glutathione reductase (GR) is an ubiquitous flavoenzyme involved in protecting cells from stress. GR catalyzes the reduction of oxidized glutathione (GSSG) to glutathione (GSH). It is an essential component of the glutathione redox cycle, which maintains adequate levels of reduced cellular GSH. GSH serves as an antioxidant, reacting with free radicals and organic peroxides. Glutathione is also an electron donor for glutathione peroxidases and a substrate for glutathione S-transferases contributing to the detoxification and elimination of toxic electrophilic metabolites and xenobiotics.\(^1,2\)

Glutathione reductase is a homodimeric enzyme containing 1 FAD molecule and 1 NADPH binding domain per subunit.\(^3\) Both human GR (hGR) and Plasmodium falciparum GR (PfGR) are essential for the survival of the malaria parasite within human erythrocytes.\(^4\) Thus, this enzyme may be used for studies of antimalaria drug candidates.

This product is supplied as a solution containing 25 mM Tris-HCl, pH 7.4, 1 mM EDTA, and 50% (v/v) glycerol.

Purity: ≥90% (SDS-PAGE)

Specific activity: ≥12 units/mg protein

Unit definition: 1 unit will reduce 1.0 µmole of DTNB to TNB per minute at 25 °C at pH 7.5. The assay is based on the reduction of oxidized glutathione by NADPH in the presence of glutathione reductase, followed by transfer of the reducing power to 5,5′-dithiobis (2-nitrobenzoic acid) [DTNB]. The absorbance is measured at 412 nm and the reaction product (TNB) is calculated using \(ε_{	ext{mM}} = 14.15\).\(^6\)

Precautions and Disclaimer
This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability
The product ships on wet ice and storage at –20 °C is recommended. The product is stable at –20 °C for at least 2 years.

References
6. Han, J.C., and Han, G.Y., A procedure for quantitative determination of Tris(2-carboxyethyl) phosphine, an odorless reducing agent more stable and effective than dithiothreitol. Anal. Biochem., 220, 5-10 (1994).

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