

Product Information

Glutaredoxin-2, human recombinant, expressed in *E. coli*

Catalog Number **G6673**

Storage Temperature $-20\text{ }^{\circ}\text{C}$

Synonyms: GLRX2, GRX2, Thioltransferase-2, TTase-2

Product Description

Glutaredoxins (GRX) participate in thio-disulfide exchange reactions in the presence of GSH, NADPH, and glutathione reductase. Glutaredoxins and thioredoxins belong to related families of low molecular mass enzymes that catalyze thio-disulfide exchange reactions. These enzymes are involved in electron transport, formation of disulfide linkage, protein folding, and protein regulation by thiol redox control.^{1,2}

Two Glutaredoxins have been identified in mammals:

1. GRX1 is found in the cytosol and supplies ribonucleotide reductase with electrons. It is involved in general disulfide-dithiol exchanges,² dehydroascorbate reduction,³ cellular differentiation,⁴ regulation of transcription factors^{5,6} and apoptosis.^{7,8}
2. GRX2 plays a role in the cellular response to apoptotic stimuli and oxidative stress at the mitochondrial checkpoint. It efficiently catalyzes both glutathionylation and deglutathionylation of mitochondrial complex I,⁹ which in turn regulates the superoxide production by the complex.¹⁰ Moreover, overexpression of GRX2a decreases susceptibility to apoptosis and prevents loss of cardiolipin and cytochrome c release.¹¹ GRX2 has two isoforms (GRX2a and GRX2b) derived from alternative first exons. GRX2a is targeted to mitochondria; whereas, GRX2b is predicted to be localized in the nucleus.^{12,13} Unlike GRX1, GRX2 is not inhibited by oxidation of structural Cys residues. In addition, GRX2 can receive electrons not only from GSH, but also from thioredoxin reductase supporting both monothiol and dithiol reactions.¹⁴

The product is the mature form of GRX2a, i.e., does not contain the mitochondria localization signal. It is supplied as a solution in 10 mM MES buffer, pH 6.5, with 1 mM EDTA, 1 mM DTT, and 100 mM NaCl.

Purity: $\geq 90\%$ (SDS-PAGE)

Specific activity: ≥ 20 units/mg-P

Unit definition: 1 unit oxidizes 1 μmole of NADPH per minute at pH 8 at $25\text{ }^{\circ}\text{C}$ in a coupled reaction with glutathione reductase.¹⁵

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

Store the product at $-20\text{ }^{\circ}\text{C}$. The product is stable for at least 2 years as supplied. Avoid repeated freezing and thawing.

After initial thawing, the enzyme should be refrozen at $-20\text{ }^{\circ}\text{C}$ in aliquots.

References

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