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ProductInformation

Glutathione Reductase
from baker's yeast (*S. cerevisiae*)

Product Number **G 3664**
Storage Temperature 2-8 °C

Product Description

Enzyme Commission (EC) Number: 1.6.4.2
CAS Number: 9001-48-3
Molecular Weight: 124 kDa[1]
Extinction Coefficient: $E^{1\%}$= 15.4 (280 nm)[1]
pI: 4.9 and 5.9[2]
Synonyms: NADP(H): oxidized-glutathione oxidoreductase,

Glutathione reductase from Baker's yeast is a flavoprotein homodimer consisting of two equal subunits. Each subunit has one mole of FAD which is noncovalently bound. Glutathione reductase is also a sulfhydryl protein containing a total of six sulfhydryl groups.[1-3] The enzyme catalyzes the following reaction:

Glutathione(Oxidized) + β-NADPH → β-NADP + 2 Glutathione(Reduced)

The K_m values for the enzyme are: oxidized glutathione (61 μM) and β-NADPH (7.6 μm).[1]
Gltathione reductase is inhibited by the following inhibitors:[5]

- N-alkylmaleimides
- benzylselenosulphate
- 2-chloroethylisocyanate
- Cu^{2+}
- 2,4-dihydroxybenzylamine
- 1-fluoro-2,4-dinitrobenzene
- p-nitrobenzylselenosulphate
- 2-triazine-5-nitrofuran

Glutathione reductase may be used to regenerate reduced glutathione in a coupled enzyme system with glutathione peroxidase and may also be coupled with glyoxylase I in order to quantitate reduced and oxidized glutathione in biological samples.[6]

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Storage/Stability

This product is offered as an ammonium sulfate suspension. Diluted stock solutions should not be prepared.

References

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2. Carlberg, I., and Mannervik, B., Purification by affinity chromatography of yeast glutathione reductase, the enzyme responsible for the NADPH-dependent reduction of the mixed disuilfide of coenzyme A and glutathione. Biochim. Biophys. Acta., **484(2)**, 268-274 (1977).
3. Colman, R. F., and Black, S., On the role of flavin adenine dinucleotide and thiol groups in the catalytic mechanism of yeast glutathione reductase. J. Biol. Chem., **240**, 1796-1803 (1965).
4. Massey, V., and Williams, Jr., C. H., On the reaction mechanism of yeast glutathione reductase. J. Biol. Chem., **240(11)**, 4470-4480 (1965).

5. Handbook of Enzyme Inhibitors, 2nd ed., Part A, Zollner, H., VCH (New York, NY: 1993), pp. 243-244.

6. Bernt, E. and Bergmyer, H. U., in Methods of Enzymatic Analysis, Bergmyer, H. U., ed., 2nd ed., Vol. 4, Academic Press (New York, NY: 1974), pp. 1643-1647.

TMG/RXR 12/03