



Product Information

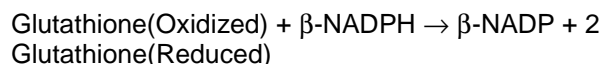
Glutathione Reductase from baker's yeast (*S. cerevisiae*)

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 kDa¹
Extinction Coefficient: $E^{1\%} = 15.4$ (280 nm)¹
pI: 4.9 and 5.9²
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:



The K_m values for the enzyme are: oxidized glutathione (61 μM) and $\beta\text{-NADPH}$ (7.6 μM).¹ Glutathione 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-nitrofurans

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

1. Mavis, R. D., and Stellwagen, E., Purification and subunit structure of glutathione reductase from baker's yeast. *J. Biol. Chem.*, **243(4)**, 809-814 (1968).
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 disulfide 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.

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