

Glutathione reductase (EC 1.8.1.7), *Escherichia coli*

Catalogue number:

AE00221, 500 U (14.2 mg)

Description

Glutathione reductase (EC 1.8.1.7) is a ubiquitous homodimeric enzyme with molecular weights ranging from 100 kDa, for the human erythrocyte enzyme, to 118 kDa, for the yeast enzyme. It contains one FAD per protein subunit and shows K_m values of 4-9 μM for NADPH and of 55-65 μM for oxidized glutathione. The GR is inhibited by divalent metal ions, such as Zn^{2+} and Cd^{2+} , which can be prevented by the addition of EDTA. The enzyme is also inhibited by ammonium sulphate (>60 mM) but not by urea (0.6 M), Triton X-100 (1%) and KCl (100 mM).

The biochemical function of flavoprotein glutathione reductase is to catalyse the NADPH-dependent reduction of oxidized glutathione. The glutathione is a tripeptide widely distributed in both plants and animals. Thus, the enzyme is found in many tissues, enabling the cells to maintain adequate levels of reduced glutathione. Reduced glutathione is an important cellular antioxidant and is also a substrate for the glutathione peroxidases, which provide a mechanism for the detoxification of xenobiotics.

The enzyme is provided in 3.2 M ammonium sulphate.

Purity

Glutathione reductase has been determined to be >95% pure, according to SDS polyacrylamide gel electrophoresis (PAGE) followed by Coomassie Blue staining (Figure 1).

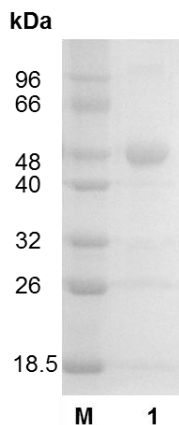


Figure 1. SDS-PAGE analysis of *E. coli* glutathione reductase. Electrophoresis was performed using a 12% polyacrylamide gel. Lane M, molecular weight marker; Lane 1, purified glutathione reductase (49.5 kDa).

Storage temperature

Glutathione reductase should be stored at 2°C to 8°C.

Specific activity

35 U/mg protein, 98 U/ml.

Unit definition

One Unit of glutathione reductase was defined as the amount of enzyme responsible for the oxidation of 1 μmole of NADPH at 25 °C and pH 7.5.

References

Scrutton *et al.* (1987) *Biochemical Journal* 245, 875-880.

Certificate of Analysis

Test	Criteria	Result
Protein purity	Purity in line with the stated value	Meets specification
Protein concentration	Concentration in line with the stated value	Meets specification
Catalytic activity	Activity in line with the stated value	Meets specification
Blank assay variability	Absorbance values with less than 10% of variability	Meets specification

Approved by:



Patricia Ponte
Senior Manager, Quality Systems

For research use only

