

Aldehyde reductase YqhD, *Escherichia coli*

Catalogue number:

AE00021, 2.0 mg

Description

YqhD from *E. coli* is a homodimeric protein, localized in the cytoplasm, which coordinates of the 3D structure have been deposited in the RCSB Protein Data Bank as entry 1Oj7 (Sulzenbacher *et al.*, 2004). Each monomer has a two-domain structure, one domain that binds the cofactor NADPH and the other the catalytic metal Zn²⁺. This enzyme belongs to the aldo-keto reductase superfamily, a group of enzymes responsible for a wide array of biological functions. Pérez *et al.* (2008) showed that YqhD is an aldehyde reductase involved in the cellular resistance to Reactive Oxygen Species (ROS)-generating compounds and "reactive aldehydes". YqhD catalyses the NADPH-dependent reduction of various membrane peroxidation derived aldehydes, including acetaldehyde, propanaldehyde, butanaldehyde, acrolein and malondialdehyde (MDA). It was suggested that YqhD is part of a specific defense mechanism against reactive aldehydes generated by membrane peroxidation in *E. coli* (Pérez *et al.*, 2008). The enzyme is provided in 3.2 M ammonium sulphate.

Purity

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

Storage temperature

Aldehyde reductase YqhD should be stored at 2 °C to 8 °C.

Temperature and pH optimum

The optimum pH and temperature are 7.0 and 25 °C, respectively.

Catalytic activity

The reaction mixture should contain 50 mM potassium phosphate buffer, pH 7.0, 2 mM NADPH, a specific aldehyde and purified YqhD (10 µg/ml). NADPH oxidation is determined by measuring the reduction in absorbance at 340 nm. The enzyme does not present NADP⁺-dependent dehydrogenase activity on methanol, ethanol, propanol, butanol or isopropanol.

References

Pérez *et al.* (2008) The Journal of Biological Chemistry 283, 7346-7353.

Sulzenbacher *et al.*, (2004) Journal of Molecular Biology 342, 489-502.

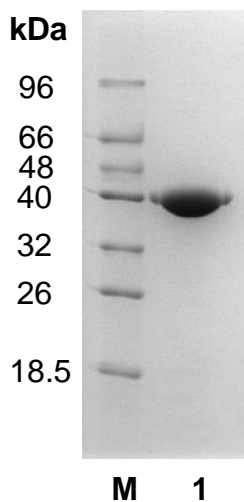


Figure 1. SDS-PAGE analysis of *E. coli* aldehyde reductase YqhD. Electrophoresis was performed using a 10% polyacrylamide gel. Lane M, molecular weight marker; Lane 1, purified YqhD from *E. coli* K12.

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
Blank assay variability	Absorbance values with less than 10% of variability	Meets specification

Approved by:



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