Glucose-6-phosphate dehydrogenase (EC 1.1.1.49), *Leuconostoc mesenteroides*

Catalogue number:

AE00161, 5000 U (1 mL)

Description

Glucose-6-phosphate dehydrogenase (G6PDH; EC 1.1.1.49) from *Leuconostoc mesenteroides* is purified from a recombinant *E. coli* strain. G6PDH is a cytosolic enzyme that converts glucose-6-phosphate into 6-phosphoglucono-δ-lactone, the rate-limiting step of the pentose phosphate pathway, a metabolic pathway that supplies reducing energy to cells by maintaining the level of the co-enzyme nicotinamide adenine dinucleotide phosphate (NADPH). G6PDH is widely distributed in many species from bacteria to man. G6PDH is remarkable for its genetic diversity. Many variants of G6PDH, mostly produced from missense mutations, have been described with wide ranging levels of enzyme activity and associated clinical symptoms. G6PD deficiency is very common worldwide, and causes acute hemolytic anemia in the presence of simple infection, ingestion of fava beans, or reaction with certain medicines, antibiotics, antipyretics and antimalarials. The enzyme is supplied in 3.2 M ammonium sulphate suspension and should be stored at 4 °C. Swirl to mix the enzyme suspension immediately before use.

Purity

Glucose-6-phosphate dehydrogenase has been determined to be >95% pure, according to SDS polyacrylamide gel electrophoresis (PAGE) followed by Coomassie Blue staining (Figure 1).

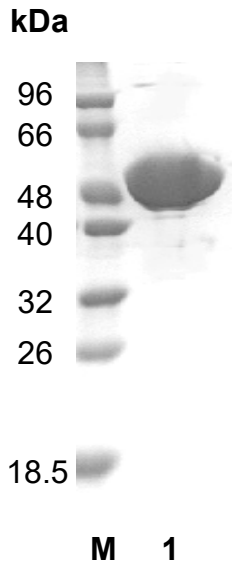

Figure 1. SDS-PAGE analysis of *L. mesenteroides* glucose-6-phosphate dehydrogenase. Electrophoresis was performed using a 12% polyacrylamide gel. Lane M, molecular weight marker; Lane 1, purified glucose-6-phosphate dehydrogenase (56.4 kDa).

Storage temperature

Glucose-6-phosphate dehydrogenase should be stored at 2°C to 8°C.

Temperature and pH optimum

The optimum pH and temperature are 7.8 and 30 °C, respectively.

Specific activity

5000 U/ml

Unit definition

One unit is defined as the amount of enzyme required to convert 1 μmol of glucose-6-phosphate to 6-phosphogluconate per minute in a reaction mixture containing 50 mM Tris-HCl buffer, pH 7.8, 5 mM D-glucose-6-phosphate, 3 mM $MgCl_2$ and 2 mM of NAD^+, at 30 °C.

Substrate specificity

Under the reaction conditions specified the enzyme does not present any other detectable catalytic activity.

Use conditions/recommendations

Swirl to mix the enzyme suspension immediately prior to use.

Reference

Cosgrove M.S., Naylor C., Paludan S., Adams M.J., Levy H.R. On the mechanism of the reaction catalyzed by glucose 6-phosphate dehydrogenase. *Biochemistry* 1998 Mar 3;37(9); 2759-67.

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Certificate of Analysis

Test	Criteria	Result
Protein purity	Purity in line with the stated value	Meets specification
Activity	Up to 10% higher than stated value	Meets specification

Approved by:

Patrícia Ponte
Senior Manager, Quality Systems

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