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ProductInformation

Glucose-6-phosphate Dehydrogenase
from *Leuconostoc mesenteroides*

Product Number **G 5885**
Storage Temperature 2-8 °C

Product Description

Enzyme Commission (EC) Number: 1.1.1.49
CAS Number: 9001-40-5
Molecular Weight:
128 kDa (gel filtration)[9]
103.7 kDa for the dimer (equilibrium sedimentation)[1]
Approximately 50 kDa for the monomer (denaturing gel electrophoresis)[2]
λ_{max}: 280.5 nm[1]
Extinction Coefficient: $E^{0.1\%}$ = 1.15 (280.5 nm, 0.09 M Tris-HCl, pH 7.2)[1]
Synonym: G-6-PDH

Glucose-6-Phophate Dehydrogenase (G-6-PDH) consists of two subunits of equivalent molecular weight.[3] The amino acid sequence of the monomer has been published.[4]

G-6-PDH has been utilized in assays for nicotinamide adenine dinucleotide[11] and tissue pyridine nucleotides.[12]

The K_M value for NAD^+ as a substrate is approximately 1.8 times better than that for $NADP^+$.[5] At pH 7.8 in Tris buffer, $K_M = 5.3 \times 10^{-4}$ M for glucose-6-phosphate and $K_M = 0.99 \times 10^{-4}$ M for $NADP^+$.[6] Binding constants have been reported for the native and pyridoxal-modified enzyme.[7] A lysine is in the active site (modified by pyridoxal phosphate).[8]

G-6-PDH can be reactivated from urea-denatured solutions.[2]

Glucose 6-phosphate dehydrogenase is a key regulatory enzyme in the first step of the pentose phosphate pathway. G-6-P-DH oxidizes glucose-6-phosphate in the presence of $NADP^+$ to yield 6-phosphogluconate. Polyacrylamide gel electrophoresis, activity staining, and anti-yeast G-6-PDH antibody immunoblotting studies have indicated that G-6-PDH is a glycoprotein.[10]

This product is approximately 25% protein; the remainder is the buffer from which it is lyophilized. The product is lyophilized in the presence of a neutral, colloidal stabilizer, Tris buffer, and a trace of magnesium chloride. The stabilizer added to this product is an inert neutral polymer, which is not expected to interfere in a biological assay. It protects the product through the lyophilization process. A DEAE ion exchange column can be used with a buffer of approximately pH 7.3 to remove this stabilizer. Product No. G 5760 is an ammonium sulfate suspension of the enzyme and does not contain this stabilizer.

Precautions and Disclaimer

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

Preparation Instructions

The product can be dissolved at 1 mg/ml in 5 mM glycine buffer, pH 8, (with or without 0.1% BSA) or in deionized water at 1 mg/ml (buffer is preferable).

Storage/Stability

Solutions dissolved at 1 mg/ml in 5 mM glycine buffer, pH 8, (with or without 0.1% BSA) or in deionized water (1 mg/ml) can be aliquoted and stored frozen for approximately 2 months. It is best to subject the aliquot to no more than one freeze/thaw cycle. For storage in the refrigerator, use an ammonium sulfate suspension of this enzyme (Product No. G 5760).

References

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