

## Chemically modified Glucose-6-phosphate Dehydrogenase from *Leuconostoc mesenteroides*

Cat. No. DIA-280

Lot. No. (See product label)

### Introduction

#### Description

Glucose-6-phosphate dehydrogenase (G6PD or G6PDH) (EC 1.1.1.49) is a cytosolic enzyme that catalyzes the chemical reaction: D-glucose 6-phosphate + NADP<sup>+</sup> ↔ 6-phospho-D-glucono-1,5-lactone + NADPH + H<sup>+</sup>. This enzyme is in the pentose phosphate pathway, a metabolic pathway that supplies reducing energy to cells (such as erythrocytes) by maintaining the level of the co-enzyme nicotinamide adenine dinucleotide phosphate (NADPH).

#### Applications

Use Glucose-6-phosphate Dehydrogenase for the determination of blood glucose or creatine kinase.

#### Synonyms

D-glucose 6-phosphate dehydrogenase; glucose 6-phosphate dehydrogenase (NADP); NADP-dependent glucose 6-phosphate dehydrogenase; 6-phosphoglucose dehydrogenase; Entner-Doudoroff enzyme; glucose-6-phosphate 1-dehydrogenase; G6PDH; GPD; glucose-6-phosphate dehydrogenase

### Product Information

#### Species

*Leuconostoc mesenteroides*

#### Source

*E. coli*

#### Appearance

White lyophilizate

#### Molecular Weight

110 kD (2 identical subunits 55,000 D)

#### Activity

>30 U/mg lyophilizate

#### Contaminants

ATPase: <0.02 Creatine kinase: <0.001 Glutamate dehydrogenase: <0.01  
Glutathione reductase: <0.001 Hexokinase and Glucose dehydrogenase: <0.05  
Myokinase: <0.05 "NADH oxidase": <0.02 "NADPH oxidase": <0.0005 6-  
Phosphogluconate dehydrogenase: <0.001 Phosphoglucose isomerase : <0.01  
Phosphoglucomutase: <0.001 Glucose: <0.3 µg/mg lyophilizate

#### Isoelectric point

4.6

#### pH Stability

5.0-10.0

#### Optimum pH

7.8

#### Thermal stability

Up to +40°C for native G6P-DH, up to +50°C for modified G6P-DH

#### Michaelis Constant

NAD: 1.4 x 10<sup>-4</sup> mmol/l NADP: 3.7 x 10<sup>-5</sup> mmol/l Glucose-6-P: 3.7 x 10<sup>-4</sup> mmol/l  
(NAD as coenzyme) Glucose-6-P: 2.0 x 10<sup>-4</sup> mmol/l (NAD as coenzyme)

#### Specificity

G6P-DH is highly specific for glucose-6-phosphate and does not react with fructose-6-P, fructose-1,6-P2 or glucose-1P. 2-Deoxyglucose-6-P is slowly oxidized with NAD (5%) and with NADP (4%).

#### Activators

Phosphate 5 mmol/l: 100% (NAD) 80% (NADP) Phosphate 50 mmol/l: 100% (NAD)

**Activators**

Phosphate, 5 mmol/l: 100% (NAD), 80% (NADP) Phosphate, 30 mmol/l: 100% (NAD), 80% (NADP) Without Mg<sup>2+</sup>: 90% (NAD), 80% (NADP) Mg<sup>2+</sup>, 3 mmol/l: 100% (NAD), 100% (NADP) Mg<sup>2+</sup>, 30 mmol/l: 100% (NAD), 100% (NADP) HCO<sub>3</sub><sup>-</sup>, 3 mmol/l: 100% (NAD), 100% (NADP)

**Inhibitors**

NADPH is a competitive inhibitor in the NAD-dependent reaction. Unlike the yeast enzyme, myristic acid, dehydroepiandrosterone and palmitoyl CoA do not inhibit.

**Storage and Shipping Information****Stability**

At +2 to +8°C within specification range for 18 months. Store dry.