SIGNALCHEM

GLUCOSE-6-PHOSPHATE DEHYDROGENASE

from Microorganism

D-Glucose-6-phosphate: $NADP^+$ 1-oxidoreductase (EC 1.1.1.49)

D-Glucose-6-phosphate + $NAD(P)^+$ ⇌ *D-Glucono-δ-lactone-6 phosphate* + *NAD(P)H* + H^+

PREPARATION and SPECIFICATION

Appearance	: White amorphous powder, lyophilized	
Activity	: 280U/mg-solid or more (NAD^+)	
Contaminants	: Creatine phosphokinase & Phosphoglucomutase	All ≤1.0×10^{-3}%
	6-Phosphogluconate dehydrogenase	≤5.0×10^{-3}%
	Phosphoglucose isomerase	≤1.0×10^{-2}%
	Glutathione reductase	≤1.0×10^{-3}%
	Hexokinase & Myokinase	All ≤1.0×10^{-2}%
	NADH oxidase & NADPH oxidase	All ≤1.0×10^{-2}%

PROPERTIES

Stability	: Product shipped on dry ice, but long-term storage should be at –20°C.	
Molecular weight	: 55 kDa	
Isoelectric point	: 5.1	
Michaelis constant	: 1.1×10-4M (G6P), 2.0×10-4M (NAD^+)	
Inhibitors	: Fe^{3+}, Ni^{2+}, Hg^{2+}, SDS	
Optimum pH	: 7.0 ~ 8.0	(Fig.1)
Optimum temperature	: 55°C	(Fig.2)
pH stability	: pH 4.4~10.5 (25°C, 20hr)	(Fig.3)
Thermal stability	: below 45°C (pH 7.5,15 min)	(Fig.4)
Substrate Specificity	: (Table 1)	
Effect of various chemicals	: (Table 2)	

UNIT DEFINITION

One unit causes the formation of one micromole of NADH per minute at pH 7.8 at 30°C

APPLICATIONS

This enzyme is useful for enzymatic determination of NAD^+($NADP^+$) and G-6-P, and activities of phosphoglucose isomerase, phosphoglucomutase and hexokinase. The enzyme is also used for enzymatic determination of glucose and creatine phosphokinase activity when coupled with hexokinase.

Manufactured in an ISO 9001 certified facility: Suzhou SignalChem Biotechnologies Corp.

Table 1. Substrate Specificity of Glucose-6-phosphate dehydrogenase

3.3mM of substrate,50mM Tris-HCl buffer, pH7.8

Substrate(0.1mM)	Relative activity(%)	Substrate(0.1mM)	Relative activity(%)
Glucose-6-phosphate	100	Fructose-6-phosphate	0
Glucose-1-phosphate	0	Gluconate-6-phosphate	0

Table 2. Effect of Various Chemicals on Glucose-6-phosphate dehydrogenase

The enzyme solution was dissolved in 50mM Tris-HCl buffer, pH 7.5 containing 0.1% of BSA (30U/ml) and incubated with each chemical at 25°C for 1hr.

Chemical	Concn.(mM)	Residual activity(%)	Chemical	Concn.(mM)	Residual activity(%)
None	—	100	BME	2	100
$CaCl_2$	2	96	Hydroxylamine	2	100
$MgSO_4$	2	102	EDTA	5	95
$ZnSO_4$	2	101	NaF	20	98
$NiCl_2$	2	73	NaN_3	20	98
$CoCl_2$	2	85	Borate	50	99
$MnCl_2$	2	104	Proclin-300	0.045% (v/v)	98
$FeCl_3$	2	1	SDS	0.05%	0
$CuSO_4$	2	115	Na-Cholate	0.1%	102
$AgNO_3$	2	99	Tween-20	0.1% (v/v)	99
$HgSO_4$	2	0	Triton X-100	0.1% (v/v)	102
NEM	2	98	Span-20	0.1% (v/v)	100
IAA	2	99	Brij-35	0.1%	100

Fig.1. pH Activity

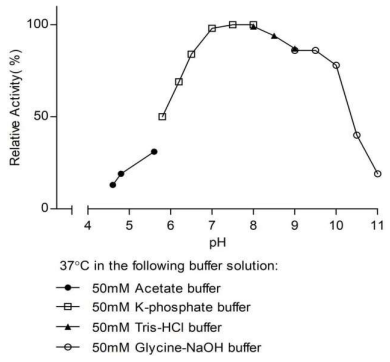

Fig.2. Temperature Activity

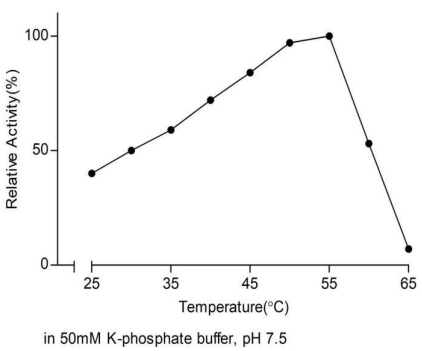

Fig.3. pH Stability

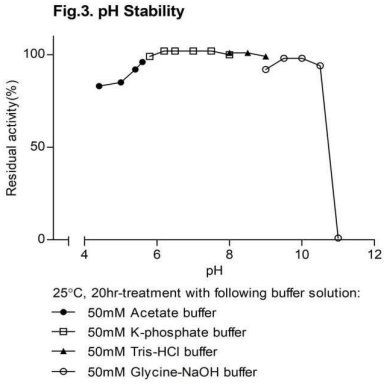

Fig.4. Thermal Stability