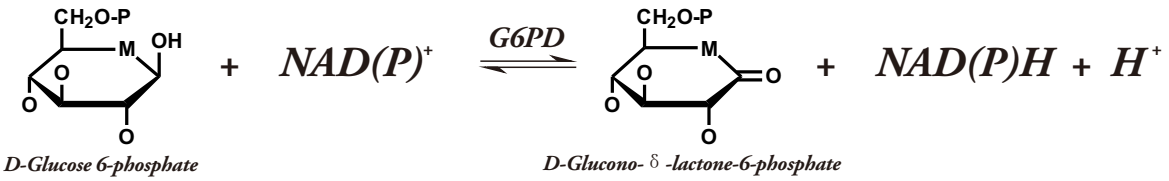
GLUCOSE-6-PHOSPHATE DEHYDROGENASE

D-Glucose-6-phsphate:NAD(P)$^+$ 1-oxidoreductase

REACTION:



D-Glucose 6-phosphate

D-Glucono- δ -lactone-6-phosphate

PRODUCT DESCRIPTION

Catalog No.:	qs50013
Appearance:	White amorphous powder
Source:	Microorganism
Enzyme Commission Number:	EC 1.1.1.49
CAS Number:	9001-40-5
Storage temperature:	-20℃
Specific activity:	≥500U/mg protein
Unit definition:	One unit will oxidate one micromole of D-glucose 6-phosphate per min at pH 7.8 at 30℃.

PROPERTIES

Molecular weight:	57 kDa (SDS-PAGE)	
Isoelectric point:	4.8	
Michaelis constant:	3.7×10^{-4}M (NAD^+),1.9×10^{-4}M (G-6-P)	
Optimum pH:	9.0	{Fig. 1}
Optimum temperature:	50℃	{Fig. 3}
pH Stability:	5.0~10.0 (25℃, 18hr)	{Fig. 2}
Thermal stability:	< 40℃ (pH 7.5, 30min)	{Fig. 4}
Inhibitors:	Ca^{2+},Co^{2+},Cu^{2+},Fe^{3+},Ni^{2+},Zn^{2+},NaN_3,Proclin,SDS,Tween-20	
Effect of various chemicals:		{Table 1}

Table 1.

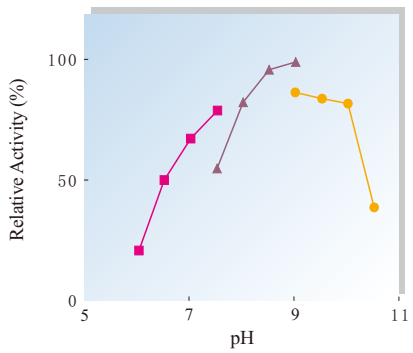
Effect of Various Chemicals on G6PD

[The enzyme dissolved in 55mM Tris-HCl buffer, pH 7.8(20U/ml) was incubated with each chemical at 37℃ for 2hr.]

Chemical	Concn. (mM)	Residual activity
None	-	100%
$CaCl_2$	2.0	51%
$CoCl_2$	2.0	2%
$CuSO_4$	2.0	0%
$FeCl_3$	2.0	2%
$MgSO_4$	2.0	124%
$MnSO_4$	2.0	103%
$NiCl_2$	2.0	43%
$ZnSO_4$	2.0	1%
BME	2.0	94%

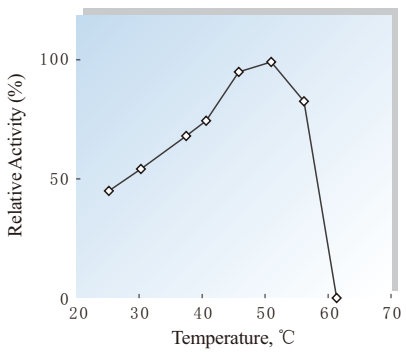
Chemical	Concn. (mM)	Residual activity
NEM	2.0	93%
EDTA	5.0	93%
NaN_3	20.0	71%
Proclin	0.045%	0%
Na-cholate	0.10%	98%
SDS	0. 05%	3%
Triton X-100	0.10%	91%
Tween 20	0.10%	68%
Boric Acid-Borax	50.0	105%

Fig. 1 pH Activity



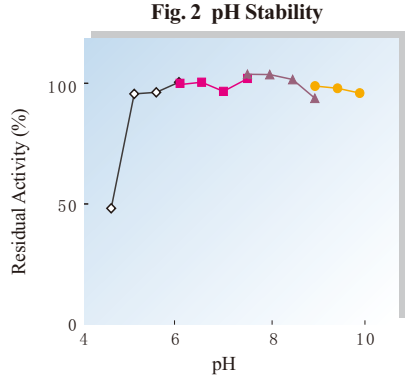
■ : 100mM phosphate buffer
▲ : 100mM Tris-HCl buffer
● : 50mM glycine-NaOH buffer

Fig. 3 Temperature activity



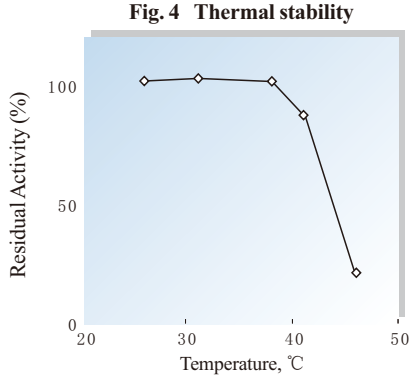
Buffer: 55mM Tris-HCl buffer , pH 7.5

Fig. 2 pH Stability



Treatment : 25℃,18hr
◇ : 100mM acetate buffer
■ : 100mM phosphate buffer
▲ : 100mM Tris-HCl buffer
● : 100mM borate buffer

Fig. 4 Thermal stability



Treatment: 55mM Tris-HCl buffer with 0.1%BSA,pH 7.5, 30min