Recombinant Purine-Nucleoside Phosphorylase (PNP)

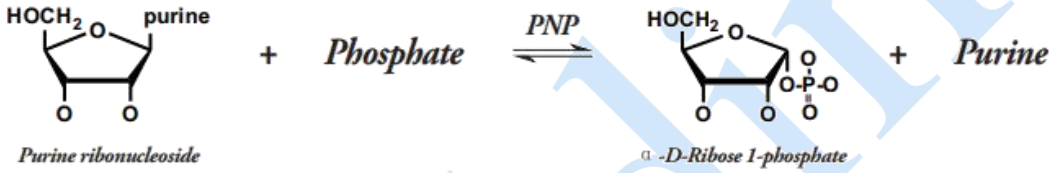
R1505814

Storage temperature: -20℃. Avoid freeze/thaw cycle. Store in the dark. Desiccated.

Introduction

Purine nucleoside phosphorylase (PNP) is a key enzyme in purine metabolism, which is involved in the purine rescue pathway. The deficiency of Purine nucleoside phosphorylase resulted in impaired T cell function. In the presence of inorganic orthophosphate as the second substrate, Purine nucleoside phosphorylase catalyzes the breaking of the glycosidic bond between ribose and deoxyribonucleoside to generate purine base and ribose (deoxyribose) -1-phosphate.

Reaction



Purine ribonucleoside + *Phosphate* ⇌ *α -D-Ribose 1-phosphate* + *Purine*

Product description

Appearance: White amorphous powder.

Source: Microorganism.

Enzyme Commission Number: EC 2.4.2.1.

CAS Number: 9030-21-1.

Storage temperature: -20℃.

Activity: ≥40U/mg enzyme powder; ≥200U/mg protein.

Unit definition: One unit will cause the phosphorolysis of one micromole of inosine to hypoxanthine and ribose 1-phosphate per min at pH 7.7 at 37℃.

Properties

Stability	Stable at -20℃ for at least five years	
Molecular weight	32 kDa (SDS-PAGE)	
Isoelectric point	6.0	
Michaelis constant	2.2×10^{-4}M (Inosine)	
Optimum pH	7.5-8.0	Fig. 1
Optimum temperature	60℃	Fig. 3
pH Stability	6.0-9.0 (30℃, 16hr)	Fig. 2

Thermal stability	< 55℃ (pH 7.7, 30min)	Fig. 4
Inhibitors	Cu^{2+},NEM,Proclin,SDS	
Effect of various chemicals		Table 1

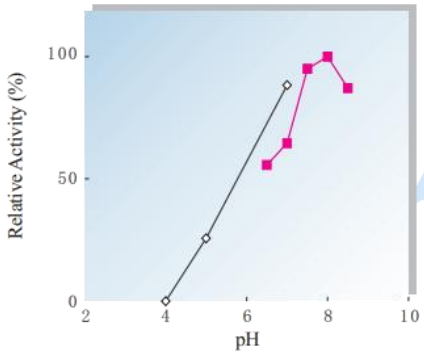
Table 1. Effect of Various Chemicals on PNP

[The enzyme dissolved in 50mM K-phosphate buffer, pH 7.5 (10U/ml) was incubated with each chemical at 37℃ for 2hr.]

Chemical	Concn. (mM)	Residual activity
None	-	100%
$CaCl_2$	2.0	98%
$CoCl_2$	2.0	84%
$CuSO_4$	2.0	25%
$FeCl_3$	2.0	83%
$MgSO_4$	2.0	103%
$MnSO_4$	2.0	100%
$NiCl_2$	2.0	94%
$ZnSO_4$	2.0	93%

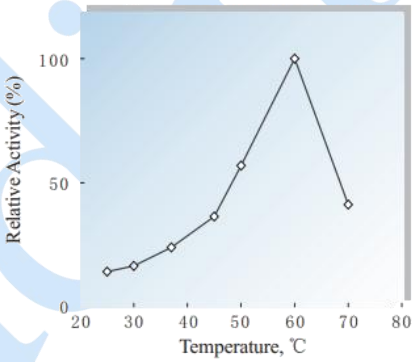
Chemical	Concn. (mM)	Residual activity
BME	2.0	100%
NEM	2.0	6%
EDTA	5.0	97%
NaN_3	20.0	99%
Proclin	0.045%	12%
Na-cholate	0.10%	104%
SDS	0.05%	78%
Triton X-100	0.10%	107%
Tween 20	0.10%	112%

Fig. 1 pH Activity



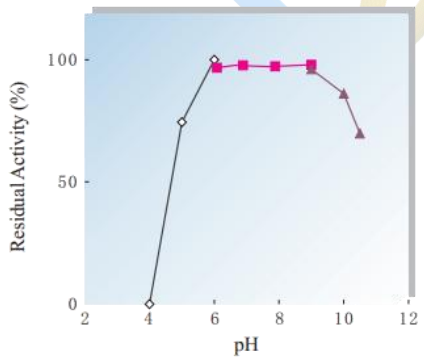
◇ : 50mM acetate buffer
■ : 50mM phosphate buffer

Fig. 3 Temperature activity



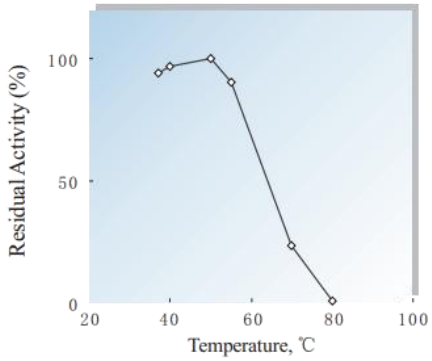
Buffer: 50mM K-phosphate buffer , pH 7.7

Fig. 2 pH Stability



Treatment : 30℃,16hr
◇ : 50mM acetate buffer
■ : 50mM phosphate buffer
▲ : 50mM borate buffer

Fig. 4 Thermal stability



Treatment: 50mM K-phosphate buffer, pH 7.7, 30min