SIGNALCHEM DIAGNOSTICS

Glycerol Kinase

EC 2.7.1.30

Catalog # GK01D-E311H
Lot # 139I2724A001

Product Description

This enzyme is a diagnostic grade reagent from a microorganism host. It is useful for enzymatic determination of glycerol and of triglyceride when coupled with glycerol-3-phosphate oxidase or pyruvate kinase and lactate dehydrogenase, lipoprotein lipase in clinical analysis

PRINCIPLE

ATP: glycerol 3-phophotransferase

ATP + glycerol $\xrightarrow{Mg^{2+}}$ ADP + glycerol 3-phosphate

STORAGE AND STABILITY

Product can be stored at 2~8°C for transportation process up to ten days but long-term storage should be at –20°C

SPECIFICATION

Unit Definition	One unit causes the formation of one micromole of hydrogen peroxide (half a micromole of quinoneimine dye) per minute at pH 7.9 and 37°C.	
Appearance	: White amorphous powder, lyophilized	
Activity	: 30 U/mg-solid or more	
Contaminants	: Catalase	≤1.0×10^{-1} %
	NADH oxidase	≤1.0×10^{-3} %
	Adenosine triphosphatase	≤1.0×10^{-3} %

PROPERTIES

Molecular weight	: 56.1 kDa	
Isoelectric point	: 5.83	
Michaelis constant	: 6.88×10^{-5} M (Glycerol), 4.88×10^{-5} M (NAD+)	
Inhibitors	: Ag^{+}, Hg^{2+}, NEM, SDS, Proclin300	
Optimum pH	: 7.5 ~ 8.0	(Fig.1)
Optimum temperature	: 50°C	(Fig.2)
pH stability	: pH 5.5~10.0 (25°C, 20hr)	(Fig.3)
Thermal stability	: below 65°C (pH 7.5, 30 min)	(Fig.4)
Substrate specificity	: (Table 1)	
Effect of various chemicals	: (Table 2)	

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Table 1. Substrate Specificity of Glycerol kinase

Substrate(4.76 mM)	Relative activity (%)	Substrate(4.76 mM)	Relative activity (%)
Glycerol	100	2,3-Butanediol	0.48
Glycerol-a-monochlorohydrin	11	1,4-Butanediol	0.48
Glucose	1.4	D-manitol	0
1,3-Propanediol	1.93	Ethanol	0

Table 2. Effect of Various Chemicals on Glycerol kinase

The enzyme dissolved in 20mM K-phosphate buffer, pH 7.5 (100U/ml) was incubated with each chemical at 25°C for 1hr.

Chemical	Concn.(mM)	Residual activity (%)	Chemical	Concn.(mM)	Residual activity (%)
None	—	100	BME	2	96
$CaCl_2$	2	98	Hydroxylamine	2	104
$MgSO_4$	2	103	EDTA	5	105
$ZnSO_4$	2	93	NaF	20	103
$NiCl_2$	2	94	NaN_3	20	106
$CoCl_2$	2	101	Proclin-300	0.045% (v/v)	15
$MnCl_2$	2	99	SDS	0.05% (w/v)	1
$FeCl_3$	2	94	Na-Cholate	0.1%(w/v)	122
$CuSO_4$	2	99	Tween-20	0.1%(v/v)	111
$AgNO_3$	2	75	Triton X-100	0.1% (v/v)	117
$HgSO_4$	2	1	Span-20	0.1% (v/v)	113
NEM	2	12	Brij-35	0.1% (w/v)	114
IAA	2	104			

Fig.1. pH Activity

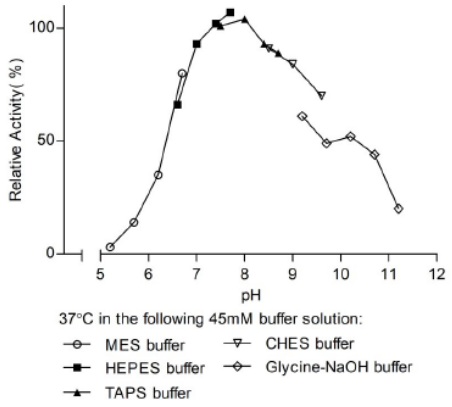


Fig.2. Temperature Activity

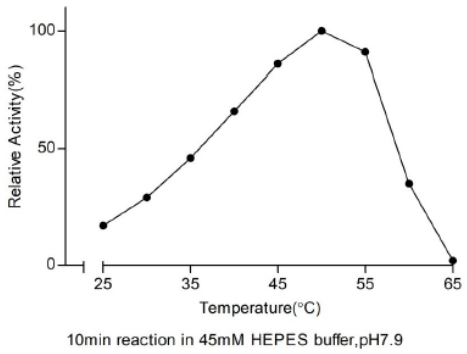


Fig.3. pH Stability

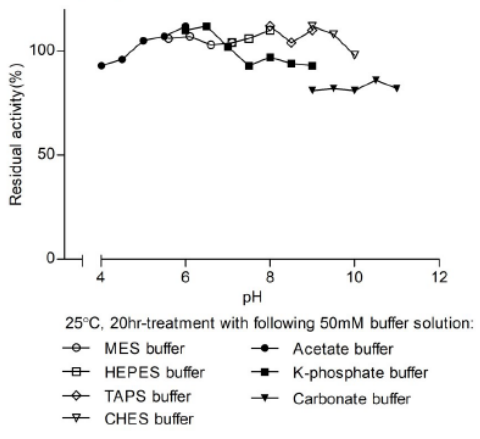
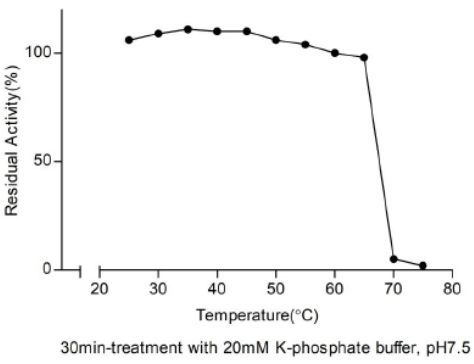


Fig.4. Thermal Stability



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