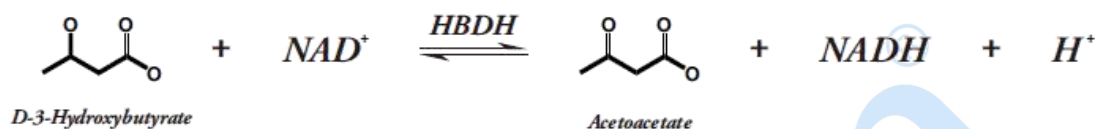


Recombinant 3-Hydroxybutyrate Dehydrogenase (HBDH)

D1493002

3-Hydroxybutyrate Dehydrogenase (3-HBDH) is a mitochondrial enzyme, is often used in biochemical studies. 3-hydroxybutyrate dehydrogenase is involved in the synthesis and degradation of ketone bodies and butanoate metabolism. 3-Hydroxybutyrate dehydrogenase catalyzes (R)-3-hydroxybutanoate converts into acetoacetate.

Reaction



Product description

Appearance: White amorphous powder

Source: Microorganism

Enzyme Commission Number: EC 1.1.1.30

CAS Number: 9028-38-0

Specific activity: $\geq 500\text{U/mg protein}$

Unit definition: One unit converts one micromole of 3-hydroxybutyrate to acetoacetate per min at pH 8.5 at 37°C.

Properties

Stability:	Stable at -20°C for at least five years	
Molecular weight:	27kDa (SDS-PAGE)	
Isoelectric point:	7.2	
Michaelis constant:	2.1×10^{-3} M (D-3-Hydroxybutyrate)	
Optimum pH:	7.0~9.0	{Fig. 1}
Optimum temperature:	60°C	{Fig. 3}
pH Stability:	6.0~11.0 (25°C, 24hr)	{Fig. 2}
Thermal stability:	< 37°C (pH 8.5, 30min)	{Fig. 4}
Inhibitors:	Cu^{2+} , Fe^{3+} , Zn^{2+} , NEM, Proclin, SDS	
Effect of various chemicals:		{Table 1}

Storage Conditions

Store at -20°C long term (5 years). Upon reconstitution, it is recommended to aliquot. Avoid freeze/thaw cycle. Store in the dark. Desiccated.

Table 1.

Effect of Various Chemicals on HBDH

[The enzyme dissolved in 50mM Tris-HCl buffer, pH 8.5 (20U/ml) was incubated with each chemical at 37°C for 2hr.]

Chemical	Concn. (mM)	Residual activity
None	-	100%
CaCl ₂	2.0	105%
CoCl ₂	2.0	98%
CuSO ₄	2.0	59%
FeCl ₃	2.0	65%
MgSO ₄	2.0	103%
MnSO ₄	2.0	96%
NiCl ₂	2.0	102%
ZnSO ₄	2.0	48%
BME	2.0	103%

Chemical	Concn. (mM)	Residual activity
NEM	2.0	0%
EDTA	5.0	104%
NaN ₃	20.0	105%
Proclin	0.045%	0%
Boric Acid-Borax	2.0	106%
Na-cholate	0.10%	119%
SDS	0.05%	0%
Triton X-100	0.10%	113%
Tween 20	0.10%	112%

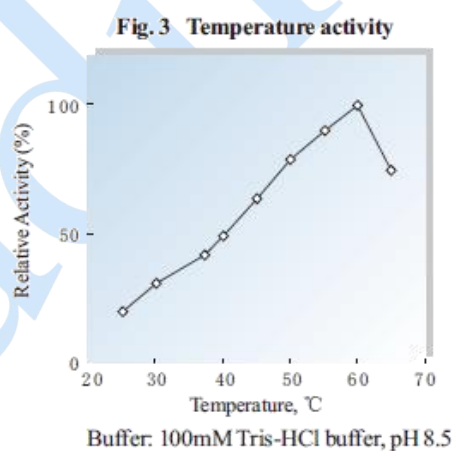
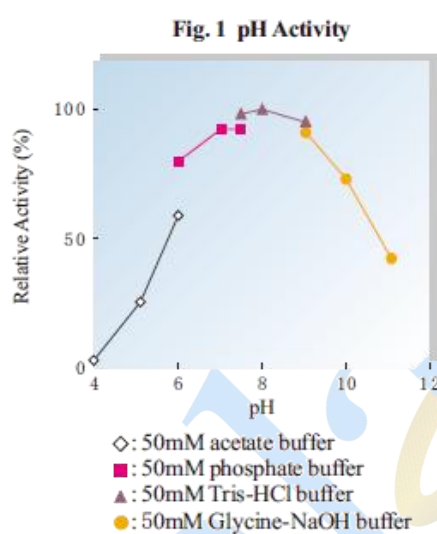


Fig. 2 pH Stability

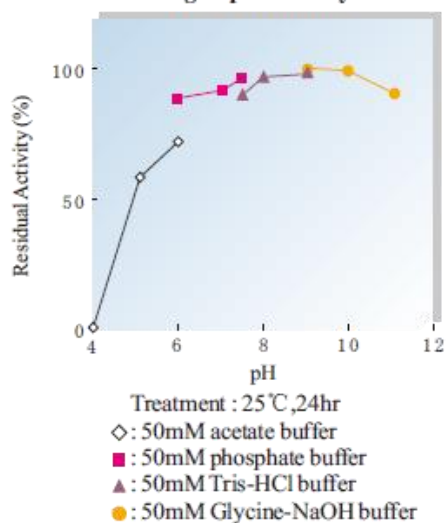


Fig. 4 Thermal stability

