

Recombinant Alcohol Dehydrogenase (ADH)

rp226533

Storage temperature: Store at 2-8°C short term (1-2 weeks). Store at -20°C (2 years). Avoid freeze/thaw cycle. Store in the dark. Desiccated.

Introduction:

Alcohol dehydrogenases are a group of dehydrogenase enzymes that occur in many organisms and facilitate the interconversion between alcohols and aldehydes or ketones with the reduction of nicotinamide adenine dinucleotide (NAD⁺ to NADH). In humans and many other animals, they serve to break down alcohols that otherwise are toxic, and they also participate in generation of useful aldehyde, ketone, or alcohol groups during biosynthesis of various metabolites. In yeast, plants, and many bacteria, some alcohol dehydrogenases catalyze the opposite reaction as part of fermentation to ensure a constant supply of NAD⁺.

Source: Microorganism

Isoelectric point: 6.5

Michaelis constant: 8.0×10⁻⁴M (Ethanol)

Optimum pH: 9.5~10.5

Optimum temperature: 50°C~60°C

pH Stability: 6.0~9.5 (25°C, 20hr)

Thermal stability: <55°C (pH 7.5, 30min)

Inhibitors: Cu²⁺, Ni²⁺, Zn²⁺, NEM, Proclin, Na-cholate, SDS, Triton X-100, Tween20

Effect of various chemicals: Table 1

Fig. 1

Fig. 3

Fig. 2

Fig. 4

Reaction:



Table 1.

Effect of Various Chemicals on ADH

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

Chemical	Concn. (mM)	Residual activity
None	-	100%
CaCl ₂	2.0	93%
CoCl ₂	2.0	100%
CuSO ₄	2.0	26%
FeCl ₃	2.0	100%
MgSO ₄	2.0	100%
MnSO ₄	2.0	95%
NiCl ₂	2.0	76%
ZnSO ₄	2.0	40%
K ₄ Fe(CN) ₆	2.0	86%

Chemical	Concn. (mM)	Residual activity
BME	2.0	100%
NEM	2.0	25%
EDTA	5.0	100%
NaN ₃	20.0	100%
Proclin	0.045%	8%
Na-cholate	0.10%	24%
SDS	0.05%	24%
Triton X-100	0.10%	61%
Tween 20	0.10%	36%

Fig. 1 pH Activity

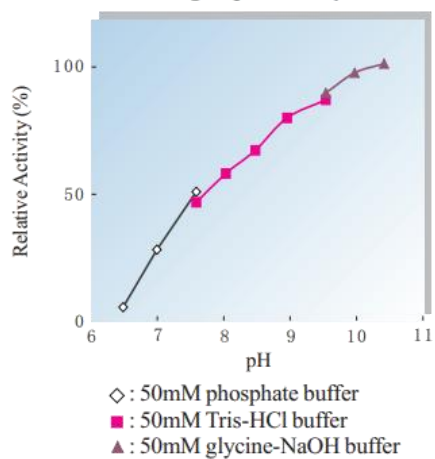


Fig. 3 Temperature activity

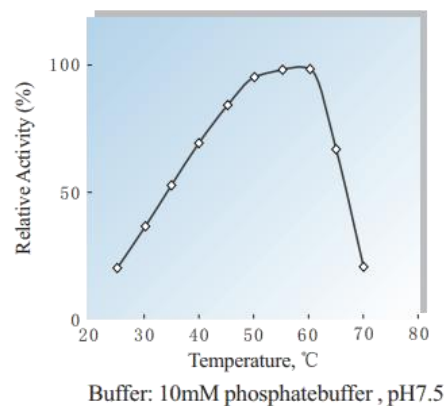


Fig. 2 pH Stability

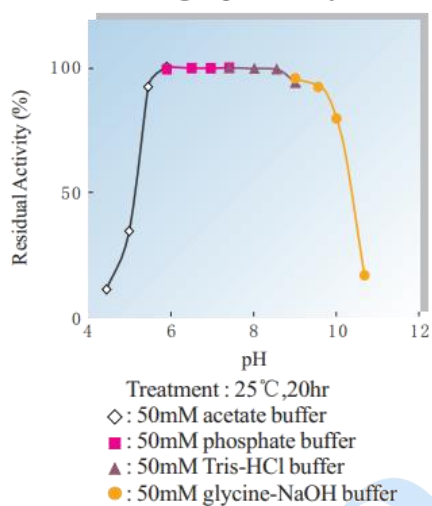


Fig. 4 Thermal stability

