Native Pseudomonas sp. D-3-hydroxybutyrate dehydrogenase

Cat. No. DIA-204

Lot. No. (See product label)

Introduction

Description In enzymology, a 3-hydroxybutyrate dehydrogenase (EC 1.1.1.30) is an enzyme that catalyzes the chemical reaction: (R)-3-hydroxybutanoate + NAD+ ↔ acetoacetate + NADH + H+. Thus, the two substrates of this enzyme are (R)-3-hydroxybutanoate and NAD+, whereas its three products are acetoacetate, NADH, and H+. This enzyme belongs to the family of oxidoreductases, to be specific, those acting on the CH-OH group of donor with NAD+ or NADP+ as acceptor. This enzyme participates in synthesis and degradation of ketone bodies and butanoate metabolism.

Applications This enzyme is useful for enzymatic determination of ketone bodies (D-3-hydroxybutyrate and acetoacetate) in clinical analysis.

Synonyms (R)-3-hydroxybutanoate: NAD+ oxidoreductase; NAD+-beta-hydroxybutyrate dehydrogenase; hydroxybutyrate oxidoreductase; beta-hydroxybutyrate dehydrogenase; D-beta-hydroxybutyrate dehydrogenase; D-3-hydroxybutyrate dehydrogenase; D-(–)-3-hydroxybutyrate dehydrogenase; beta-hydroxybutyric acid dehydrogenase; 3-D-hydroxybutyrate dehydrogenase; beta-hydroxybutyric dehydrogenase; EC 1.1.1.30

Product Information

Source	Pseudomonas sp.
Appearance	White amorphous powder, lyophilized
EC Number	EC 1.1.1.30
CAS No.	9028-38-0
Molecular Weight	approx. 130 kDa (by gel filtration)
Activity	GradeⅢ 100U/mg-solid or more
Contaminants	Malate dehydrogenase < 2.0×10^{-3}% Lactate dehydrogenase < 2.0×10^{-3}% NADH oxidase < 2.0×10^{-3}%
Isoelectric point	5.6±0.1
pH Stability	pH 5.0-8.5 (25°C, 20hr)
Optimum pH	8.3
Thermal stability	below 40°C (pH 6.5, 15min)
Optimum temperature	55°C
Michaelis Constant	4.2×10^{-4}M (25°C, pH8.3), 7.0×10^{-4}M(37°C, pH8.3)(D-3-Hydroxybutyrate) 4.9×10^{-5}M (25°C, pH8.3), 7.2×10^{-5}M (37°C, pH8.3)(NAD^+) 8.1×10^{-5}M (25°C, pH7.1), 2.4×10^{-4}M (37°C, pH7.1)(Acetoacetate) 8.4×10^{-6}M (25°C, pH7.1), 1.5×10^{-5}M (37°C, pH7.1)(NADH)
Inhibitors	PCMB, MIA, IAA, Ag^+, Hg^{++}, SDS, DAC

Inhibitors	PCMB, MIA, IAA, Ag^{+}, Hg^{2+}, SDS, DAC
Stabilizers	Sucrose, mannitol, bovine serum albumin

Storage and Shipping Information

Stability	Stable at-20°C for at least one year