

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	Grade III 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

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Stabilizers Sucrose, mannitol, bovine serum albumin

Storage and Shipping Information

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