

Native *Bacillus stearothermophilus* Leucine Dehydrogenase

Cat. No. NATE-1905

Lot. No. (See product label)

Introduction

Description In enzymology, a leucine dehydrogenase (EC 1.4.1.9) is an enzyme that catalyzes the chemical reaction: L-leucine + H₂O + NAD⁺ ↔ 4-methyl-2-oxopentanoate + NH₃ + NADH + H⁺. The 3 substrates of this enzyme are L-leucine, H₂O, and NAD⁺, whereas its 4 products are 4-methyl-2-oxopentanoate, NH₃, NADH, and H⁺. This enzyme belongs to the family of oxidoreductases, specifically those acting on the CH-NH₂ group of donors with NAD⁺ or NADP⁺ as acceptor. This enzyme participates in valine, leucine and isoleucine degradation and valine, leucine and isoleucine biosynthesis.

Applications The enzyme is useful for determination of L-leucine, L-valine or L-isoleucine.

Synonyms EC 1.4.1.9; Leucine dehydrogenase; L-leucine: NAD⁺ oxidoreductase (deaminating); L-leucine dehydrogenase; L-leucine: NAD⁺ oxidoreductase (deaminating); LeuD_H

Product Information

Source *Bacillus stearothermophilus*

Appearance Lyophilized

EC Number EC 1.4.1.9

CAS No. 9082-71-7

Molecular Weight ca. 300,000; Subunit molecular weight : ca. 49,000.

Specific Activity more than 40 U/mg protein

Contaminants (as LeuD_H activity = 100 %) NADH oxidase: < 0.01 %; Lactate dehydrogenase: < 0.01 %.

pH Stability 6.0 - 11.5

Optimum pH 10.6

Thermal stability No detectable decrease in activity up to 60 °C.

Michaelis Constant (125mM Sodium phosphate buffer, pH 10.5, at 30 °C) L-Leucine: 3.4 mM; NAD⁺: 0.3 mM.

Specificity L-Leucine: 100 %; L-Valine : 86 %; L-Isoleucine: 73 %.

Unit Definition One unit of activity is defined as the amount of LeuD_H that forms 1 μmol of NADH per minute at 30 °C

Reaction L-Leucine + NAD⁺ + H₂O ↔ α-Ketoisocaproate + NH₄⁺ + NADH

Storage and Shipping Information

Storage Stable at -20 °C for at least one year.