Creative Enzymes®

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); LeuDH

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 LeuDH 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 LeuDH 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.