



Product Information

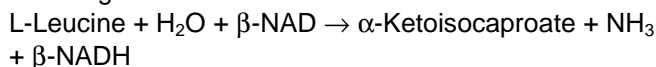
L-Leucine Dehydrogenase from *Bacillus cereus*

Product Number **L 5135**
Storage Temperature -0 °C

Product Description

Enzyme Commission (EC) Number: 1.4.1.9
CAS Number: 9082-71-7
Molecular Weight: 245 kDa¹
Extinction coefficient: $E^{1\%} = 9.18$ (280 nm)¹

Leucine dehydrogenase is a hexamer consisting of 6 identical subunits. The enzyme catalyzes the following reaction:



The K_m values for this reaction are: L-leucine (1mM), β -NAD (0.39 mM), β -NADH (0.035 mM), α -ketoisocaproate (0.31 mM), and ammonia (200 mM). Isoleucine, valine, norvaline, and norleucine may also be utilized as substrates. The following K_m values and activities have been reported¹:

Substrate	Relative Activity	K_m (mM)
L-Leucine	100	1.0
L-Valine	74	1.7
L-Isoleucine	58	1.8
L-Norleucine	10	6.3

Leucine dehydrogenase is a sulfhydryl containing enzyme which is strongly inhibited by p-chloromercuribenzoate and HgCl_2 . The enzyme is also competitively inhibited by D-enantiomers of the substrate amino acids and by pyridoxal phosphate.^{1,2}

Leucine dehydrogenase is useful for the enzymatic determination of L-leucine. Leucine dehydrogenase can be used in conjunction with urease to quantitate urea in serum and urine,³ and can be used in an enzymatic oxidation system for the synthesis of enantiomerically pure D-tert-leucine.⁴

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This enzyme is soluble in 25 mM potassium phosphate buffer, pH 7.2 (0.2 mg/ml), yielding a clear, colorless solution.

Storage/Stability

The enzyme is stable to 60 °C when heated for 5 minutes in 10 mM potassium phosphate buffer (pH 7.2) and the enzyme was very stable at pH 6.5 to 9.0 when incubated at 50 °C for 5 minutes.¹

References

- Ohshima, T., et al., Properties of crystalline leucine dehydrogenase from *Bacillus sphaericus*. J. Biol. Chem., **253**, 5719-5725 (1978).
- Matsuyama, T., et al., Leucine dehydrogenase from *Bacillus stearothermophilus*: identification of active lysine by modification with pyridoxal phosphate. J. Biochem., **112**, 258-265 (1992).

3. Morishita, Y., et al., Kinetic assay of serum and urine for urea with use of urease and leucine dehydrogenase. Clin. Chem., **43**, 1932-1936 (1997).
4. Hummel, W., et al., An efficient and selective enzymatic oxidation system for the synthesis of enantiomerically pure D-tert-leucine. Org. Lett., **5(20)**, 3649-3650 (2003).

TMG/CRF 12/03

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