



Product Information

L-Leucine, from non-animal source Cell culture tested, meets EP, JP, & USP testing specifications

Product Number **L8912**
Store at Room Temperature

Product Description

Molecular Formula: $C_6H_{13}NO_2$
Molecular Weight: 131.2
CAS Number: 61-90-5
pI: 6.04¹
pK_a: 2.33 (-COOH), 9.74 (-NH₂)¹
Specific Rotation: +15.1° (0.026 M, 6 N HCl, 25 °C)²
Synonyms: 2-amino-4-methylvaleric acid,
 α -aminoisocaproic acid, Leu²

This product is cell culture tested (4 μ g/ml) and is tested for endotoxin levels.

The alkyl amino acid L-leucine is one of the two purely ketogenic amino acids, or amino acids that are degraded to give ketone bodies. The metabolism of leucine is initiated in muscle, and it is metabolized to isovaleryl CoA via the formation of α -ketoisocaproate. While leucine does not act as a carbon source for the net synthesis of glucose, it does provide a source of nitrogen for transport to the liver and kidney.^{3,4} A review of the extended leucine biosynthetic pathway in *Saccharomyces cerevisiae* has been published.⁵ The role of the various amino acids in nonproteinogenic pathways has been reviewed.⁶

The use of leucine in a 96-well plate spectrophotometric assay for the activity of branched-chain amino acid aminotransferases has been described.⁷ Leucine has been used as a molecular marker in the recovery of DNA from palaeontological samples for PCR analysis.⁸ L-Leucine is used in cell culture media and is a component of MEM amino acids solution (Product No. M 5550).

Leucine has been utilized as a starting material in the synthesis of the (-)-fumiquinazolines A, B, and I.⁹ The surface tension of L-leucine in various aqueous solutions has been studied.¹⁰

Precautions and Disclaimer

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

Preparation Instructions

This product is soluble in 1 M HCl (50 mg/ml). Its solubility in water has been reported to be 24.3 mg/ml.^{1,2}

References

1. Molecular Biology LabFax, Brown, T. A., ed., BIOS Scientific Publishers (Oxford, UK: 1991), p. 29.
2. The Merck Index, 12th ed., Entry# 5475.
3. Biochemistry, 3rd ed., Stryer, L., W. H. Freeman (New York, NY: 1988), pp. 18, 503, 510-511.
4. Textbook of Biochemistry with Clinical Correlations, 5th ed., Devlin, T. M., ed., Wiley-Liss (New York, NY: 2002), pp. 95, 634-636, 787, 811-812.
5. Kohlhaw, G. B., Leucine biosynthesis in fungi: entering metabolism through the back door. *Microbiol. Mol. Biol. Rev.*, **67(1)**, 1-15 (2003)
6. Meijer, A. J., Amino acids as regulators and components of nonproteinogenic pathways. *J. Nutr.*, **133(6 Suppl 1)**, 2057S-2062S (2003).
7. Cooper, A. J., et al., A continuous 96-well plate spectrophotometric assay for branched-chain amino acid aminotransferases. *Anal. Biochem.*, **308(1)**, 100-105 (2002).
8. Bachmann, L., et al., Voltage-induced release of nucleic acids from palaeontological samples. *Electrophoresis*, **21(8)**, 1488-1492 (2000).
9. Snider, B. B., and Zeng, H., Total synthesis of (-)-fumiquinazolines A, B, C, E, H, and I. Approaches to the synthesis of fiscalin A. *J. Org. Chem.*, **68(2)**, 545-563 (2003).
10. Gliniski, J., et al., Surface properties of aqueous solutions of L-leucine. *Biophys. Chem.*, **84(2)**, 99-103 (2000).

GCY/RXR 3/07

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.