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Product Information

L-Proline

Product Number **P0380**
Store at Room Temperature

Product Description

Molecular Formula: $C_5H_9NO_2$
Molecular Weight: 115.1
CAS Number: 147-85-3
 pK_a : 1.95 (COOH), 10.64 (NH_2)¹
pI: 6.3¹
Synonyms: (S)-Pyrrolidine-2-carboxylic acid, Pro

The amino acid L-Proline is unique among the 20 amino acids normally found in proteins because it is the only imino acid among them.² The side chain is bonded to both the α -carbon and nitrogen atoms, giving a secondary amino group in the structure, and thus its characterization as an imino acid. *In vivo*, proline is both synthesized from and degraded to glutamate, with glutamate γ -semialdehyde and Δ^1 -pyrroline-5-carboxylate as intermediates, by separate pathways.^{3,4}

In protein structure, collagen and elastin are notably rich in proline content. In collagen in particular, the proline ring structure helps to stabilize the collagen α -helix conformation.⁵ The cis-trans isomerization of proline residues in ribonuclease A has been studied by fluorescence methods.⁶

L-Proline is used in cell culture media and is a component of MEM non-essential amino acids solution (Product No. M 7145). In cell culture research, L-proline has been used in studies of MOLT-4 cells in starvation-induced apoptosis, maintenance of hematopoietic cell cultures derived from the prawn *Nephrops norvegicus*, growth behavior of various *Escherichia coli* strains at various L-proline concentrations, and rat primary hepatocytes in a collagen gel sandwich culture.^{7,8,9,10}

A procedure for the asymmetric self-aldolization of acetaldehyde that uses L-proline as a catalyst has been reported.¹¹ Ground- and transition-state analogue inhibitors of cyclophilin have been synthesized using L-proline as the starting compound.¹² The use of L-proline to synthesize an optically active 1-oxo-2-oxa-5-azaspiro[3.4]octane compound, related to the antibiotic oxazolomycin, has been described.¹³

Precautions and Disclaimer

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

Storage/Stability

This product is soluble in water (50 mg/ml), yielding a clear, colorless solution.

References

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11. Cordova, A., et al., Proline-catalyzed one-step asymmetric synthesis of 5-hydroxy-(2E)-hexenal from acetaldehyde. *J. Org. Chem.*, **67(1)**, 301-303 (2002).
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