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ProductInformation

L-Glutamic acid hydrochloride

Product Number **G 2128**
Store at Room Temperature

Replacement for Product Number 14,941-1

Product Description

Molecular Formula: $C_5H_9NO_4$ • HCl
Molecular Weight: 183.6
CAS Number: 138-15-8
pI: 3.08[1]
pK_a: 2.10 (α-COOH), 9.47 (α-NH_2), 4.07 (ω-COOH)[1]
Melting Point: 214 °C (with decomposition)[1]
Optical Rotation: +24.4° (6 g/100 ml H_2O, 22 °C)[1]
Synonyms: (S)-2-aminoglutaric acid hydrochloride, (S)-2-aminopentanedioic acid hydrochloride, 1-aminopropane-1,3-dicarboxylic acid hydrochloride, Glu[2]

L-Glutamic acid is one of the two amino acids that contains a carboxylic acid group in its side chains. Glutamic acid is commonly referred to as "glutamate", because its carboxylic acid side chain will be deprotonated and thus negatively charged in its anionic form at physiological pH. In amino acid metabolism, glutamate is formed from the transfer of amino groups from amino acids to α-ketoglutarate. It thus acts as an intermediary between ammonia and the amino acids *in vivo*. Glutamate is converted to glutamine via glutamine synthetase, and to γ-aminobutyric acid (GABA) via glutamate decarboxylase.[3,4]

L-Glutamic acid is used in cell culture as a component of MEM non-essential amino acids solution (Product No. M 7145). L-Glutamic acid has been used as a nitrogen source in the culture of *Aspergillus fumigatus* NRRL 2436 for fumagillin production.[5] The competitive roles of L-glutamic acid and L-aspartic acid in the growth of *Oenococcus oeni* NCFB 1707 have been studied.[6]

The synthesis of single stereoisomers of 4-fluorinated glutamic acids starting from L-glutamic acid has been described.[7] A study of the binding of L-glutamic acid to a DEAE weak anion-exchange disk monolithic column has been described.[8]

Precautions and Disclaimer

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

Preparation Instructions

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

Storage/Stability

Aqueous glutamic acid solutions will form pyrrolidonecarboxylic acid slowly at room temperature and more rapidly at 100 °C.[9]

References

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5. Yang, W., et al., Carbon and nitrogen source nutrition of fumagillin biosynthesis by *Aspergillus fumigatus*. Curr. Microbiol., **46(4)**, 275-279 (2003).
6. Vasserot, Y., et al., A study into the role of L-aspartic acid on the metabolism of L-malic acid and D-glucose by *Oenococcus oeni*. J. Appl. Microbiol., **90(3)**, 380-387 (2001).

7. Konas, D. W., and Coward, J. K., Electrophilic fluorination of pyroglutamic acid derivatives: application of substrate-dependent reactivity and diastereoselectivity to the synthesis of optically active 4-fluoroglutamic acids. J. Org. Chem., **66(26)**, 8831-8842 (2001).
8. Mihelic, I., et al., Temperature influence on the dynamic binding capacity of a monolithic ion-exchange column. J. Chromatogr. A, **987(1-2)**, 159-168 (2003).
9. Data for Biochemical Research, 3rd ed., Dawson, R. M. C., et al., Oxford University Press (New York, NY: 1986), pp. 16-17.

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