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Product Information

DL-Arginine hydrochloride

Product Number **A 4881**
Store at Room Temperature

Product Description

Molecular Formula: $C_6H_{14}N_4O_2 \cdot HCl$
Molecular Weight: 210.7
CAS Number: 32042-43-6
 pK_a : 1.82 (COOH), 8.99 (α -NH₂),
12.48 (guanido group)¹

Synonyms: 2-amino-5-guanidinopentanoic acid,
2-amino-5-[(aminoiminomethyl)amino]pentanoic acid,
2-amino-5-guanidinovaleric acid²

Arginine is one of the three amino acids with basic side chains, and is very hydrophilic in character. It contains a guanidino group in the side chain, and this moiety is protonated at physiological pH. Arginine is biosynthesized in the kidneys from citrulline, whose precursor is glutamate via the formation of ornithine. In amino acid degradation *in vivo*, arginine is hydrolyzed to urea and ornithine by arginase. Arginine can be metabolized to glutamate, which in turn is converted to α -ketoglutarate for entry into the citric acid cycle. Cells utilize arginine as a precursor for the production of nitric oxide (NO), which is an activator of guanylyl cyclase and leads to the production of the second messenger cGMP.^{3,4}

A crystallographic analysis of DL-arginine monohydrate has been reported.⁵ A TLC enantioresolution method for the analysis of DL-arginine that uses optically pure (1R, 3R, 5R)-2-azabicyclo[3,3,0]octan-3-carboxylic acid as a chiral selector has been described.⁶

DL-arginine has been utilized to culture *Eubacterium lentum* and produce 3 α - and 12 α -hydroxysteroid dehydrogenases.⁷ The use of DL-arginine at 3.3 mM to probe the potential of the inner mitochondrial membrane from rat liver has been investigated.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), with heat as needed, yielding a clear to hazy, colorless to yellow solution.

Storage/Stability

Solutions of arginine may be autoclaved. Aqueous solutions of this product are strongly alkaline and tend to absorb carbon dioxide from the atmosphere on standing.²

References

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5. Kingsford-Adaboh, R., et al., DL-arginine monohydrate at 100 K. Acta Crystallogr. C., **56(Pt 10)**, 1274-1276 (2000).
6. Bhushan, R., et al., Direct thin layer chromatography enantioresolution of some basic DL-amino acids using a pharmaceutical industry waste as chiral impregnating reagent. J. Pharm. Biomed. Anal., **21(6)**, 1143-1147 (2000).
7. MacDonald, I. A., et al., NAD-dependent 3 α - and 12 α -hydroxysteroid dehydrogenase activities from *Eubacterium lentum* ATCC no. 25559. Biochim. Biophys. Acta, **489(3)**, 466-476 (1977).
8. Villalobos-Molina, R., et al., Accumulation of D-arginine by rat liver mitochondria. Biochem. Cell. Biol., **65(12)**, 1057-1063 (1987).

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