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L-Serine

Product Number **S4500**
Storage at Room Temperature

Product Description

Molecular Formula: $C_3H_7NO_3$
Molecular Weight: 105.1
CAS Number: 56-45-1
pK_a: 2.19 (-COOH), 9.21 ($-NH_2$)[2]
Melting point: 228 °C (with decomposition)[1]
Synonym: (S)-2-amino-3-hydroxypropionic acid, β-hydroxyalanine, α-amino-β-hydroxypropionic acid, Ser[1]

L-Serine is one of the two biological amino acids with a hydroxyl substituted side chain, and thus is hydrophilic in character. The L-serine side chain is a hydroxymethyl ($HOCH_2$-) group. Serine is biosynthesized from the glycolysis intermediate 3-phosphoglycerate through the formation of 3-phosphohydroxypyruvate and 3-phosphoserine as intermediates. In turn, serine can be converted into the gluconeogenesis intermediate 3-phosphglycerate. Serine is also a precursor for the biosynthesis of glycine, cysteine, and selenocysteine.[3,4]

The role of L-serine in brain development and function has been reviewed.[5] The biosynthesis and degradation of L-serine in *Escherichia coli* has been discussed.[6] A comprehensive review of the chemistry of serine has been published.[7]

The influence of pulsed applications of serine on polyglucose synthesis by *Fusobacterium nucleatum* cultures has been studied.[8] Supplementation of minimal media with serine has been shown to restore growth in *Escherichia coli* that lack the *PII* and *GlnK* genes.[9]

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. The solubility of L-serine in water has also been reported to be 250 mg/ml (20 °C).[2].

References

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8. Zilm, P. S., et al., Growth pH and transient increases in amino acid availability influence polyglucose synthesis by *Fusobacterium nucleatum* grown in continuous culture. FEMS Microbiol. Lett., **215(2)**, 203-208 (2002).
9. Blauwkamp, T. A., and Ninfa, A. J., Nac-mediated repression of the serA promoter of *Escherichia coli*. Mol. Microbiol., **45(2)**, 351-363 (2002).

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