3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

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

Product Number **A7469**
Store at Room Temperature

Product Description

Molecular Formula: $C_3H_7NO_2$
Molecular Weight: 89.09
CAS Number: 56-41-7
pK_a (25 °C): 2.35 (-COOH), 9.87 ($-NH_2$) [1]
Specific rotation: +13.7° to +15.1° (100 mg/ml, 6 M HCl, 25 °C); +2.42° (100 mg/ml, H_2O)[2]
Synonyms: L-α-aminopropionic acid, (S)-2-aminopropionic acid, Ala[2]

This product is cell culture tested (0.45 mg/ml) and is tested for endotoxin levels.

L-Alanine was one of the first amino acids to be synthesized before its isolation from natural sources. In 1850, Strecker prepared alanine via the cyanohydrin reaction by reacting acetaldehyde and ammonia with hydrocyanic acid, and subsequent hydrolysis by HCl. The name alanine derives from the term aldehyde, reflecting one of the starting reagents. The isolation of alanine from natural sources was described by Schützenberger and colleagues in 1875 and 1879 from silk and ovalbumin, respectively, and by Weyl in 1888 from silk fibroin.[3] In amino acid metabolism, alanine reacts with α-ketoglutarate to yield pyruvate and glutamate.[4]

Alanine has been used as an amino donor in a study of the conversion of ketomethiobutyrate to methionine in several species of *Bacillus*.[5] A study in *Escherichia coli* has utilized L-alanine to investigate protein expression related to adhesive factors.[6] L-Alanine has been shown to enhance the rates of germination of *Bacillus subtilis* spores.[7] L-Alanine is used in cell culture media and is a component of MEM non-essential amino acids solution (Product No. M7145).

Precautions and Disclaimer

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

Preparation Instructions

This product is soluble in water (100 mg/ml), yielding a clear, colorless solution.

References

1. Molecular Biology LabFax, Brown, T. A., ed., BIOS Scientific Publishers Ltd. (Oxford, UK: 1991), p. 29.
2. The Merck Index, 12th ed., Entry# 205.
3. The Chemistry of the Amino Acids, Volume 3, Greenstein, J. P., and Winitz, M., Robert E. Krieger Publishing Company (Malabar, FL: 1984), pp. 1819-1840.
4. Biochemistry, 3rd ed., Stryer, L., W. H. Freeman (New York, NY: 1988), pp. 504.
5. Berger, B. J., et al., Methionine regeneration and aminotransferases in *Bacillus subtilis*, *Bacillus cereus*, and *Bacillus anthracis*. J. Bacteriol., **185(8)**, 2418-2431 (2003).
6. Crost, C., et al., Leucine-responsive regulatory protein-mediated repression of clp (encoding CS31A) expression by L-leucine and L-alanine in *Escherichia coli*. J. Bacteriol., **185(6)**, 1886-1894 (2003).
7. Cabrera-Martinez, R. M., et al., Effects of overexpression of nutrient receptors on germination of spores of *Bacillus subtilis*. J. Bacteriol., **185(8)**, 2457-2464 (2003).

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