



SIGMA-ALDRICH

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Product Information

L-Tyrosine

Product Number **T 3754**
Store at Room Temperature

Product Description

Molecular Formula: $C_9H_{11}NO_3$

Molecular Weight: 181.2

CAS Number: 60-18-4

pI: 5.63¹

pK_A: α -COOH, 2.20; α -NH₂, 9.21; and the phenolic hydroxyl, 10.46¹

λ_{max} : 274.5 nm (0.1 M HCl), 293.0 nm

0.1 M NaOH),^{2,3} 223 nm (0.1 M HCl)⁴

Extinction coefficient: $E^{1\%1cm} = 1.4$ (274.5 nm, 0.1 M HCl), 2.4 (293 nm, 0.1 N NaOH)^{2,3},

0.2 8.2 (223 nm, 0.1 M HCl)⁴

Specific rotation: -9.8° to -11.2° (50 mg/ml, 1 M HCl, 25 °C)⁵

Synonym: p-tyrosine

L-tyrosine is one of the twenty major amino acids. It is considered to be an essential amino acid. It is one of three amino acids with a bulky, uncharged, aromatic side group, a phenol group. However, the hydroxyl group of this amino acid side chain gives it some slight polar characteristics. In addition, the aromatic structure gives this amino acid useful absorption spectra, which can be monitored through ultraviolet and visual spectrophotometry.

This amino acid has been shown to assist in the production of melanin, the pigment found in hair and skin. Tyrosine is also used by the thyroid and adrenal glands to manufacture natural hormones, which regulate the body's ability to produce energy. Tyrosine is a precursor to dopamine, and therefore, plays a role in neurotransmission signaling and the regulation of depression. It also serves to release the appetite suppressing hormone, CCK, and assists in combatting allergic reactions.

This product is prepared from sugar beets.

Precautions and Disclaimer

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

Preparation Instructions

This product is soluble in 1 M HCl (100 mg/ml), with heating. The solubility in water (25 °C) is 0.45 mg/ml in the pH range 3.2 - 7.5.¹ At pH 1.8, the solubility is 2.0 mg/ml; at pH 9.5, the solubility is 1.4 mg/ml; and at pH 10, the solubility is 3.8 mg/ml.

References

1. Molecular Biology: Labfax, Brown, T. A., Bios Scientific Publishers (Oxford, England: 1991), p. 29.
2. J. Biol. Chem., **233**, 1421 (1958).
3. J. Biol. Chem., **237**, 2778 (1962).
4. Data for Biochemical Research, 3rd ed., Dawson, R. M. C., et al., Oxford University Press (New York, NY: 1986), p. 30.
5. United States Pharmacopeia USP XXI NF XVI, United States Pharmacopeial Convention (Rockville, MD: 1984), p. 1109.

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