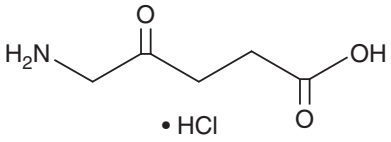
PRODUCT INFORMATION

5-Aminolevulinic Acid (hydrochloride)

Item No. 9001902

CAS Registry No.: 5451-09-2
Formal Name: 5-amino-4-oxo-pentanoic acid, monohydrochloride
Synonyms: 5-ALA, δ-Aminolevulinic Acid
MF: $C_5H_9NO_3$ • HCl
FW: 167.6
Purity: ≥95%
UV/Vis.: λ_{max}: 265 nm
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

5-Aminolevulinic acid (5-ALA) (hydrochloride) is supplied as a crystalline solid. A stock solution may be made by dissolving the 5-ALA (hydrochloride) in the solvent of choice, which should be purged with an inert gas. 5-ALA (hydrochloride) is soluble in organic solvents such as DMSO and dimethyl formamide. The solubility of 5-ALA (hydrochloride) in these solvents is approximately 10 and 5 mg/ml, respectively.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of 5-ALA (hydrochloride) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of 5-ALA (hydrochloride) in PBS, pH 7.2, is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

5-ALA is a precursor in the biosynthesis of porphyrins, including heme. The conversion of 5-ALA to protoporphyrins within tissues produces a photosensitive target that produces reactive oxygen species upon exposure to light.[1] In this way, it is used in photodynamic therapy for a range of dermatological conditions, cancers, and other diseases.[1-3] Also, oral administration of 5-ALA leads to the preferential accumulation of the fluorescent molecule protoporphyrin IX within certain types of cancer cells.[4,5] This allows fluorescence-based identification of tumor tissue for accurate resection of diseased tissue.[4,5]

References

1. Matei, C., Tampa, M., Poteca, T., *et al.* Photodynamic therapy in the treatment of basal cell carcinoma. *J. Med. Life* **6(1)**, 50-54 (2013).
2. Anand, S., Ortel, B.J., Pereira, S.P., *et al.* Biomodulatory approaches to photodynamic therapy for solid tumors. *Cancer Letters* **326(1)**, 8-16 (2012).
3. Issa, M.C. and Manela-Azulay, M. Photodynamic therapy: A review of the literature and image documentation. *An. Bras. Dermatol.* **85(4)**, 501-511 (2010).
4. Roberts, D.W., Valdés, P.A., Harris, B.T., *et al.* Glioblastoma multiforme treatment with clinical trials for surgical resection (aminolevulinic acid). *Neurosurg. Clin. N. Am.* **23(3)**, 371-377 (2012).
5. Zhao, S., Wu, J., Wang, C., *et al.* Intraoperative fluorescence-guided resection of high-grade malignant gliomas using 5-aminolevulinic acid-induced porphyrins: A systematic review and meta-analysis of prospective studies. *PLoS One* **8(5)**, e63682 (2013).

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