

5-Aminolevulinic acid hydrochloride

Chemical Properties

CAS No. : 5451-09-2

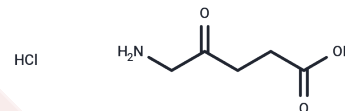
Formula: C₅H₁₀ClNO₃

Molecular Weight: 167.59

Storage: Store at low temperature, Store under nitrogen, Keep away from moisture

Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Actual storage temperature shall be subject to the COA.



Biological Description

Description	5-Aminolevulinic acid hydrochloride (5-ALA) is an intermediate in heme biosynthesis and a universal precursor of tetrapyrroles.
Targets(IC50)	Apoptosis, Mitophagy, Endogenous Metabolite, Autophagy
In vitro	5-Aminolevulinic acid (5-ALA), a non-fluorescent prodrug, facilitates the intracellular build-up of fluorescent porphyrins in malignant gliomas, aiding in their intraoperative identification and removal. A study with a median follow-up of 35.4 months (95% CI 1.0-56.7) showed that 65% (90 out of 139) of patients treated with 5-ALA achieved complete resection of contrast-enhancing tumors, compared to only 36% (47 out of 131) in those using white light, marking a significant difference of 29% (95% CI 17-40, p<0.0001). Additionally, those treated with 5-ALA exhibited a higher 6-month progression-free survival rate of 41.0% (32.8-49.2) versus 21.1% (14.0-28.2) for the white light group, a difference of 19.9% (9.1-30.7, p=0.0003, Z test). However, 5-ALA alone was deemed insufficient for achieving gross total resection without risking postoperative neurological damage. In treating functional grade III gliomas, the combination of intraoperative MRI (iMRI) with functional neuronavigation significantly outperformed the 5-ALA resection technique.

Solubility Information

Solubility	H ₂ O: 31 mg/mL (184.98 mM), Sonication is recommended. Ethanol: 6 mg/mL (35.8 mM), Sonication is recommended. DMSO: 138 mg/mL (823.44 mM), Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 4 mg/mL (23.87 mM), Sonication is recommended. <i>Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.</i>

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	5.9669 mL	29.8347 mL	59.6694 mL
5 mM	1.1934 mL	5.9669 mL	11.9339 mL
10 mM	0.5967 mL	2.9835 mL	5.9669 mL
50 mM	0.1193 mL	0.5967 mL	1.1934 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Karmakar S, et al. *Neurosci Lett*,2007, 415(3), 242-247.

Wang L, Qi C, Cao H, et al. Engineered Cytokine-Primed Extracellular Vesicles with High PD-L1 Expression Ameliorate Type 1 Diabetes. *Small*.2023: 2301019.

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Emanuelli T, et al. *Neurochem Int*,2001, 38(3), 213-218.

Jan CR, et al. *Biochim Biophys Acta*,1999, 1448(3), 533-542.

Cheng J, et al. *Int J Nanomedicine*,2013, 8, 669-676.

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