5-Aminolevulinic acid hydrochloride

Cat. No.: HY-N0305

CAS No.: 5451-09-2

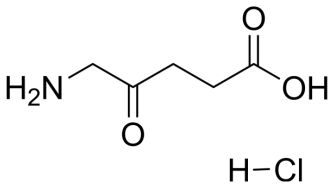
Molecular Formula: $C_5H_{10}ClNO_3$

Molecular Weight: 167.59

Target: Autophagy; Mitophagy; Endogenous Metabolite; Apoptosis

Pathway: Autophagy; Metabolic Enzyme/Protease; Apoptosis

Storage: 4°C, sealed storage, away from moisture
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (596.69 mM; Need ultrasonic)
H_2O : 16.67 mg/mL (99.47 mM; ultrasonic and warming and heat to 60°C)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
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

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 100 mg/mL (596.69 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (12.41 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (12.41 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (12.41 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

5-Aminolevulinic acid hydrochloride (5-ALA hydrochloride) is an intermediate in heme biosynthesis in the body and the universal precursor of tetrapyrroles.

IC_{50} & Target

Human Endogenous Metabolite

In Vitro

5-Aminolevulinic acid hydrochloride (ALA) is a non-fluorescent prodrug that leads to intracellular accumulation of

fluorescent porphyrins in malignant gliomas-a finding that is under investigation for intraoperative identification and resection of these tumours. Median follow-up was 35.4 months (95% CI 1.0-56.7). Contrast-enhancing tumour was resected completely in 90 (65%) of 139 patients assigned 5-aminolevulinic acid compared with 47 (36%) of 131 assigned white light (difference between groups 29% [95% CI 17-40], p<0.0001). Patients allocated 5-aminolevulinic acid had higher 6-month progression free survival than did those allocated white light (41.0% [32.8-49.2] vs 21.1% [14.0-28.2]; difference between groups 19.9% [9.1-30.7], p=0.0003, Z test) [1]. 5-ALA alone proved to be insufficient in attaining gross total resection without the danger of incurring postoperative neurological deterioration. Furthermore, in the case of functional grade III gliomas, iMRI in combination with functional neuronavigation was significantly superior to the 5-ALA resection technique[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Adv Sci (Weinh). 2019 Jan 20;6(5):1802057.
- Genome Biol. 2022 Dec 15;23(1):259.
- EMBO Mol Med. 2023 Feb 6;e16959.
- Pharmacol Res. 2021 Jun 1;105701.
- Cell Death Dis. 2021 Oct 25;12(11):999.

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REFERENCES

[1]. Stummer, W., et al., Fluorescence-guided surgery with 5-aminolevulinic acid for resection of malignant glioma: a randomised controlled multicentre phase III trial. Lancet Oncol, 2006. 7(5): p. 392-401.

[2]. Eyupoglu, I.Y., et al., Improving the extent of malignant glioma resection by dual intraoperative visualization approach. PLoS One, 2012. 7(9): p. e44885.

Caution: Product has not been fully validated for medical applications. For research use only.

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