

Product Datasheet

Hemicholinium-3

Catalog No. **BP-02413** · CAS **312-45-8** · Form **free base** · Physical state **solid** · Color **White to off-white** · Version **1.0** ·
Revision **2026-09-10**

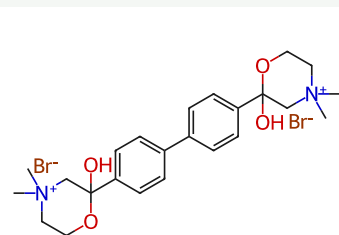
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Target Cholinesterase (ChE)	Research area Neurological Disease
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Molecular formula **C₂₄H₃₄Br₂N₂O₄**

Molecular weight **574.3460**

STRUCTURE



DESCRIPTION

Hemicholinium 3 is a competitive inhibitor of the high affinity choline transporter (HACU) with a K_i value of 25 nM. Hemicholinium 3, a neuromuscular blocking agent which inhibits the synthesis and the release of acetylcholine (ACh). Hemicholinium 3 inhibits the Epibatidine-evoked contraction and [³H]acetylcholine release with IC₅₀s of 897 nM and 693 nM, respectively.

BIOLOGICAL ACTIVITY

In Vitro

Hemicholinium 3 (HC-3) inhibits the presynaptic nicotinic acetylcholine receptors of myenteric neurons. HC-3 inhibits nAChRs located on the terminal region of myenteric neurons of guinea-pig longitudinal muscle strip preparation.

Hemicholinium 3 (HC-3) inhibits [³H]choline uptake with the K_i value of 13.3 μM in NCI-H69 cells.

HC-3 (1 mM) significantly inhibits cell viability and increases caspase-3/7 activity in NCI-H69 cells.

Hemicholinium 3 (Hemicholinium-3) inhibits sodium dependent high affinity choline uptake (IC₅₀=18 nM).

In Vivo

Hemicholinium-3 impairs spatial learning. Hemicholinium-3 (2.5, 5.0 μg/rat/ICV; 1 h before training) dose dependently impairs spatial learning.

SOLUBILITY

Soluble in DMSO : 50 mg/mL

REFERENCES

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- [2].Péter Mandl, et al. Inhibitory effect of hemicholinium-3 on presynaptic nicotinic acetylcholine receptors located on the terminal region of myenteric motoneurons. Neurochem Int. 2006 Sep;49(4):327-33.
- [3].Masato Inazu, et al. Functional expression of choline transporter-like protein 1 (CTL1) in small cell lung carcinoma cells: a target molecule for lung cancer therapy. Pharmacol Res. 2013 Oct;76:119-31.
- [4].T K Chatterjee, et al. Methylpiperidine analog of hemicholinium-3: a selective, high affinity non-competitive inhibitor of sodium dependent choline uptake system. Eur J Pharmacol. 1988 May 10;149(3):241-8.
- [5].J J Hagan, et al. Hemicholinium-3 impairs spatial learning and the deficit is reversed by cholinomimetics. Psychopharmacology (Berl). 1989;98(3):347-56.
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