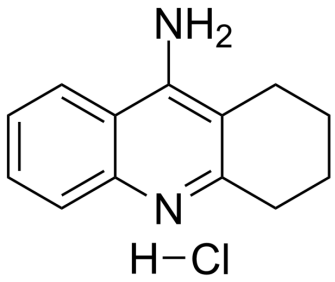
Tacrine hydrochloride

Cat. No.: HY-B1488
CAS No.: 1684-40-8
Molecular Formula: $C_{13}H_{15}ClN_2$
Molecular Weight: 234.72
Target: AChE; iGluR
Pathway: Neuronal Signaling; Membrane Transporter/Ion Channel
Storage: 4°C, stored under nitrogen
* In solvent : -80°C, 6 months; -20°C, 1 month (stored under nitrogen)



SOLVENT & SOLUBILITY

In Vitro

H_2O : 83.33 mg/mL (355.02 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	4.2604 mL	21.3020 mL	42.6040 mL
5 mM	0.8521 mL	4.2604 mL	8.5208 mL
10 mM	0.4260 mL	2.1302 mL	4.2604 mL

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

BIOLOGICAL ACTIVITY

Description

Tacrine hydrochloride is a potent inhibitor of both AChE and BChE, with IC_{50}s of 31 nM and 25.6 nM, respectively. Tacrine hydrochloride is also a NMDAR inhibitor, with an IC_{50} of 26 μM. Tacrine hydrochloride can be used for the research of Alzheimer's disease[1][2].

IC_{50} & Target

IC50: 31 nM (AChE), 25.6 nM (BChE), 26 μM (NMDAR)[1][2]

In Vitro

Tacrine (12.5-37.5 nM) inhibits venom acetylcholinesterase as well as human serum butyrylcholinesterase in a concentration-dependent manner[1].
Tacrine reduces the neurotoxicity induced by the activation of the NMDARs in murine cortical neuronal cultures with an IC_{50} of ~500 μM[2].
Tacrine inhibits the NMDAR responses in a concentration-dependent manner with an IC_{50} of ~190 μM at -60 mV[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Tacrine (20-40 μmol/kg; s.c.) disrupts retention of learning in 17- and 30-day old mice in passive avoidance, and while the low dose of tacrine treatment (5 μmol/kg; s.c.) improves retention in 17-day old mice[2].
Tacrine (0.1-0.4 mg/mL; i.p. for 7 d) inhibits the expression of AChE, but does not significantly improve the protection of the retina function and morphology in mice[3].

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

CUSTOMER VALIDATION

- Cell Death Dis. 2022 Jan 10;13(1):48.

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REFERENCES

[1]. Ahmed M, et, al. Inhibition of two different cholinesterases by tacrine. Chem Biol Interact. 2006 Aug 25; 162(2):165-71.c

[2]. Horak M, et, al. The pharmacology of tacrine at N-methyl-d-aspartate receptors. Prog Neuropsychopharmacol Biol Psychiatry. 2017 Apr 3;75: 54-62.

[3]. The protective role of tacrine and donepezil in the retina of acetylcholinesterase knockout mice. Yi YM, et, al. Int J Ophthalmol. 2015 Oct 18; 8(5): 884-90.

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