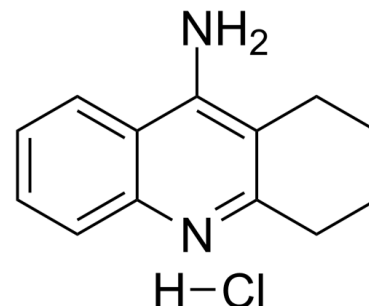


Data Sheet

Product Name:	Tacrine (hydrochloride)
Cat. No.:	CS-0013186
CAS No.:	1684-40-8
Molecular Formula:	C ₁₃ H ₁₅ ClN ₂
Molecular Weight:	234.72
Target:	AChE; iGluR
Pathway:	Membrane Transporter/Ion Channel; Neuronal Signaling
Solubility:	H ₂ O : 83.33 mg/mL (355.02 mM; Need ultrasonic)



BIOLOGICAL ACTIVITY:

Tacrine hydrochloride is a potent inhibitor of both **AChE** and **BChE**, with **IC₅₀s** of 31 nM and 25.6 nM, respectively. Tacrine hydrochloride is also a **NMDAR** inhibitor, with an **IC₅₀** of 26 μM. Tacrine hydrochloride can be used for the research of Alzheimer's disease^{[1][2]}. **IC₅₀ & 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 **IC₅₀** of ~500 μM^[2].

Tacrine inhibits the NMDAR responses in a concentration-dependent manner with an **IC₅₀** of ~190 μM at -60 mV^[2]. **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].

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.

CAIndexNames:

9-Acridinamine, 1,2,3,4-tetrahydro-, hydrochloride (1:1)

SMILES:

NC1=C(CCCC2)C2=NC3=CC=CC=C31.[H]Cl

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

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