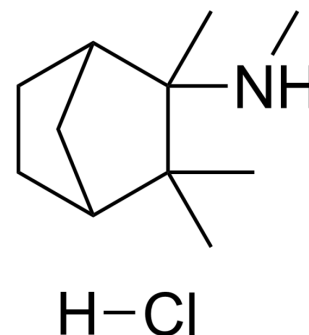


Mecamylamine hydrochloride

Cat. No.:	HY-B1395
CAS No.:	826-39-1
Molecular Formula:	C ₁₁ H ₂₂ ClN
Molecular Weight:	203.75
Target:	nAChR; Histamine Receptor
Pathway:	Membrane Transporter/Ion Channel; Neuronal Signaling; GPCR/G Protein; Immunology/Inflammation
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

H₂O : 100 mg/mL (490.80 mM; Need ultrasonic)
DMSO : 31.25 mg/mL (153.37 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	4.9080 mL	24.5399 mL	49.0798 mL
	5 mM	0.9816 mL	4.9080 mL	9.8160 mL
	10 mM	0.4908 mL	2.4540 mL	4.9080 mL

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

In Vivo

- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 2.08 mg/mL (10.21 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.08 mg/mL (10.21 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 2.08 mg/mL (10.21 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Mecamylamine hydrochloride is an orally active, nonselective, noncompetitive nAChR antagonist. Mecamylamine hydrochloride is also a ganglionic blocker. Mecamylamine hydrochloride can cross the blood-brain barrier. Mecamylamine hydrochloride can be used in the research of neuropsychiatric disorders, hypertension, antidepressant area^{[1][2][5]}.

IC₅₀ & Target

nAChR^[1], histamine receptor^[2]

In Vitro

Mecamylamine hydrochloride (0.5-9 μM, bath administered) increases the firing frequency of identified 5-HT DRN (dorsal

raphe nucleus) neurons^[1].

Mecamylamine hydrochloride (0.5-9 μ M, bath administered) increases the glutamatergic and decreases the GABAergic input of 5-HT DRN neurons^[1].

Mecamylamine hydrochloride (1 mM, 5 min) blocks the histamine receptor and the histamine-induced contractions in helically cut strips of rabbit aorta^[2].

Mecamylamine hydrochloride (1-100 nM, 30 min) dose-dependently attenuates endothelial tube formation in HDMVECs^[4].

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

Western Blot Analysis^[3]

Cell Line:	SCG neurons
Concentration:	10 μ M
Incubation Time:	48 h
Result:	Reduced the nicotine-facilitated increase in ERK1/2.

In Vivo

Mecamylamine hydrochloride (subcutaneous pumps, 50 mg/kg/day, 2 days) inhibits Choroidal neovascularization (CNV) in CNV mice model^[4].

Mecamylamine hydrochloride (intraperitoneal injection, 0.5-1 mg/kg) has antidepressant-like effects in both the TST (tail suspension test) and FST (forced swim test) in C57BL/6J mice, which are dependent on both β 2 and α 7 subunits^[5].

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

Animal Model:	Choroidal neovascularization (CNV) mice model ^[1]
Dosage:	50 mg/kg/day, 2 days
Administration:	Subcutaneous pumps implanted beneath the skin of the back, 200 μ L and mean pumping rate of 0.5 μ L/h.
Result:	Suppressed the development of CNV at Bruch's membrane rupture sites in the absence of nicotine.

Animal Model:	C57BL/6J mice ^[5]
Dosage:	0.5-1 mg/kg
Administration:	Intraperitoneal injection
Result:	Had no effect in β 2 knockout mice and α 7 knockout mice, but decreased immobility time in wildtype littermates in the FST.

CUSTOMER VALIDATION

- Nat Commun. 2023 Apr 17;14(1):2182.
- Acta Pharmacol Sin. 2024 Mar 4.
- bioRxiv. 2023 Jul 6.

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REFERENCES

- [1]. Omar Hernández-González, et al. Mechanisms of stimulatory effects of mecamylamine on the dorsal raphe neurons. *Brain Res Bull.* 2020 Nov;164:289-298.
- [2]. C P Robinson, et al. The influence of mecamylamine on contractions induced by different agonists and on the role of calcium ions in the isolated rabbit aorta. *J Pharmacol Exp Ther.* 1976 Apr;197(1):57-65.
- [3]. Mahadevappa P Badanavalu, et al. Nicotine is neuroprotective to neonatal neurons of sympathetic ganglion in rat. *Auton Neurosci.* 2019 Jan;216:25-32.
- [4]. Katsuji Kiuchi, et al. Mecamylamine suppresses Basal and nicotine-stimulated choroidal neovascularization. *Invest Ophthalmol Vis Sci.* 2008 Apr;49(4):1705-11.
- [5]. Rabenstein RL, et al. The nicotinic antagonist mecamylamine has antidepressant-like effects in wild-type but not beta2- or alpha7-nicotinic acetylcholine receptor subunit knockout mice. *Psychopharmacology (Berl).* 2006 Dec;189(3):395-401.
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Caution: Product has not been fully validated for medical applications. For research use only.

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