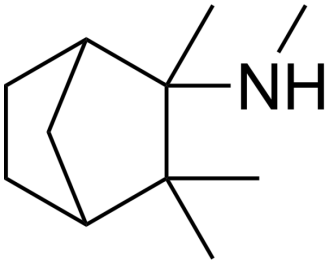
Mecamylamine

Cat. No.:	HY-B1395A
CAS No.:	60-40-2
Molecular Formula:	$C_{11}H_{21}N$
Molecular Weight:	167.29
Target:	nAChR; Histamine Receptor
Pathway:	Membrane Transporter/Ion Channel; Neuronal Signaling; GPCR/G Protein; Immunology/Inflammation
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

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

IC_{50} & Target

nAChR[1], histamine receptor[2]

In Vitro

Mecamylamine (0.5-9 μM, bath administered) increases the firing frequency of identified 5-HT DRN (dorsal raphe nucleus) neurons[1].

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

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

Mecamylamine (10 μM,48 h) attenuates the effect of nicotine's action of neuroprotection[3].

Mecamylamine (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 μM
Incubation Time:	48 h
Result:	Reduced the nicotine-facilitated increase in ERK1/2.

In Vivo

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

Mecamylamine (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 β2 and α7 subunits[5].

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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 μL and mean pumping rate of 0.5 μL/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 β2 knockout mice and α7 knockout mice, but decreased immobility time in wildtype littermates in the FST.

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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