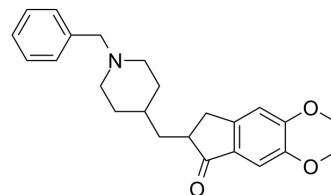


Donepezil

Cat. No.:	HY-14566
CAS No.:	120014-06-4
Molecular Formula:	C ₂₄ H ₂₉ NO ₃
Molecular Weight:	379.49
Target:	Cholinesterase (ChE)
Pathway:	Neuronal Signaling
Storage:	4°C, sealed storage, away from moisture and light * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 33.33 mg/mL (87.83 mM; Need ultrasonic)
H₂O : < 0.1 mg/mL (insoluble)

Concentration	Solvent	Mass		
		1 mg	5 mg	10 mg
Preparing Stock Solutions	1 mM	2.6351 mL	13.1756 mL	26.3512 mL
	5 mM	0.5270 mL	2.6351 mL	5.2702 mL
	10 mM	0.2635 mL	1.3176 mL	2.6351 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: ≥ 2.5 mg/mL (6.59 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.5 mg/mL (6.59 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 2.5 mg/mL (6.59 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Donepezil (E2020 free base) is a specific and potent AChE inhibitor with IC₅₀s of 8.12 nM and 11.6 nM for bovine AChE and human AChE, respectively^[1].

In Vitro

Donepezil (E2020 free base) inhibits the carbachol-stimulated increase in intracellular Ca²⁺ concentration in human SHSY5Y neuroblastoma cells in a concentration dependent manner, indicating that Donepezil have muscarinic antagonist activity. Intraperitoneal administration of Donepezil in rats produces a dose dependent increase in salivation and tremor, which are overt cholinergic behavioural signs, with an ED₅₀ of 6 μmol/kg. Donepezil is found to be somewhat less potent with a ED₅₀

of 50 $\mu\text{mol/kg}$ following oral administration^[2].

A recent study shows that Donepezil can protect human umbilical vein endothelial cells (HUVECs) against H₂O₂-induced cell injury. This may be useful as a potential therapy for oxidative stress in cardiovascular and cerebrovascular diseases^[3].

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

CUSTOMER VALIDATION

- Clin Transl Med. 2021 May 28.
- Eur J Med Chem. 2023 Dec 21, 116071.
- Comput Struct Biotech. 2023 Feb 24.
- Foods. 2022, 11(14), 2095.
- J Integr Neurosci. 2023 May 16, 22(3), 76.

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REFERENCES

[1]. Ogura, H., et al., Comparison of inhibitory activities of donepezil and other cholinesterase inhibitors on acetylcholinesterase and butyrylcholinesterase in vitro. Methods Find Exp Clin Pharmacol, 2000. 22(8): p. 609-13.

[2]. Snape, M.F., et al., A comparative study in rats of the in vitro and in vivo pharmacology of the acetylcholinesterase inhibitors tacrine, donepezil and NXX-066. Neuropharmacology, 1999. 38(1): p. 181-93.

[3]. Huang, Z.H., et al., Donepezil protects endothelial cells against hydrogen peroxide-induced cell injury. CNS Neurosci Ther, 2012. 18(2): p. 185-7.

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

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