



# LKT Laboratories, Inc.

## Donepezil Hydrochloride

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### Product Information

Product ID D5753  
CAS No. 120011-70-3

#### Chemical Name

Synonym Aricept

Formula  $C_{24}H_{29}NO_3 \cdot HCl$

Formula Wt. 415.95

Melting Point

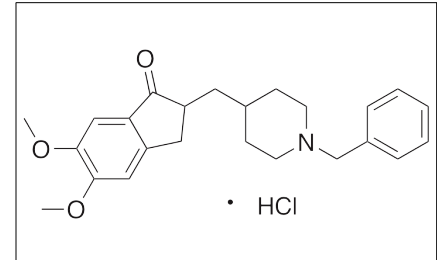
Purity  $\geq 98\%$

Solubility

Store Temp Ambient

Ship Temp Ambient

**Description** Donepezil is an acetylcholinesterase (AChE) inhibitor that is clinically used to treat Alzheimer's disease. Donepezil displays neuroprotective, cognition enhancing, cardioprotective, and anti-inflammatory activities. In animal models, donepezil improves memory and learning ability. In vitro, donepezil downregulates expression of the NR1 subunit of NMDA receptors, inhibiting glutamate-mediated  $Ca^{2+}$  entry into cells; this mechanism is thought to be dependent on donepezil activity on  $\alpha 7$  nicotinic acetylcholine receptors (nAChRs). Additionally, this compound inhibits glycogen synthase kinase 3 (GSK3) and activates PI3K/Akt signaling, helping to prevent amyloid- $\beta$  (A $\beta$ ) toxicity. Donepezil also binds to  $\sigma 1$  receptors. In animal models of congestive heart failure, donepezil decreases left ventricular end diastolic pressure, increases left ventricular contractility, decreases left ventricular expression of brain natriuretic peptide (BNP), and decreases heart weight, resulting in greater survival rates.



**Bulk quantities available upon request**

Product ID	Size
D5753	25 mg
D5753	100 mg
D5753	500 mg

**References** Jiang Y, Zou Y, Chen S, et al. The anti-inflammatory effect of donepezil on experimental autoimmune encephalomyelitis in C57 BL/6 mice. *Neuropharmacology*. 2013 Oct;73:415-24. PMID: 23831366.

Xia Z, Zhang R, Wu P, et al. Memory defect induced by  $\beta$ -amyloid plus glutamate receptor agonist is alleviated by catalpol and donepezil through different mechanisms. *Brain Res*. 2012 Mar 2;1441:27-37. PMID: 22305339.

Shen H, Kihara T, Hongo H, et al. Neuroprotection by donepezil against glutamate excitotoxicity involves stimulation of  $\alpha 7$  nicotinic receptors and internalization of NMDA receptors. *Br J Pharmacol*. 2010 Sep;161(1):127-39. Erratum in: *Br J Pharmacol*. 2010 Nov;161(5):1200. PMID: 20718745.

Handa T, Katare RG, Kakinuma Y, et al. Anti-Alzheimer's drug, donepezil, markedly improves long-term survival after chronic heart failure in mice. *J Card Fail*. 2009 Nov;15(9):805-11. PMID: 19879468.

Ishikawa M, Sakata M, Ishii K, et al. High occupancy of sigma1 receptors in the human brain after single oral administration of donepezil: a positron emission tomography study using [<sup>11</sup>C]SA4503. *Int J Neuropsychopharmacol*. 2009 Sep;12(8):1127-31. PMID: 19573265.

Noh MY, Koh SH, Kim Y, et al. Neuroprotective effects of donepezil through inhibition of GSK-3 activity in amyloid-beta-induced neuronal cell death. *J Neurochem*. 2009 Mar;108(5):1116-25. PMID: 19077054.

**Caution:** This product is intended for laboratory and research use only. It is not for human or drug use.