



LKT Laboratories, Inc.

Amitriptyline Hydrochloride

Phone: 888-558-5227
651-644-8424
Fax: 888-558-7329
Email: getinfo@lktlabs.com
Web: lktlabs.com

Product Information

Product ID A5235

CAS No. 549-18-8

Chemical Name

Synonym 3-(10,11-Dihydro-5H-dibenzo[a,d]cycloheptene-5-ylidene)-N,N-dimethyl-1-propanamine hydrochloride

Formula C₂₀H₂₃N · HCl

Formula Wt. 313.86

Melting Point 195-197C

Purity ≥98%

Solubility Soluble in water, ethanol, DMSO

Store Temp Ambient

Ship Temp Ambient

Description Amitriptyline exhibits antidepressant, antipsychotic, analgesic, and antinociceptive activities; it acts as an antagonist at 5-HT_{2A/2C/6/7} receptors, M₁₋₅ muscarinic acetylcholine receptors (mAChRs), H_{1/4} histamine receptors, α₁-adrenergic receptors, and also on the serotonin transporter (SERT) and norepinephrine transporter (NET). Additionally, amitriptyline acts as an agonist at α₁ receptors and TrkA/B receptors. Amitriptyline inhibits shaker-related Kv1.1 (KCNA1), Kv7.2 (KCNQ2), and Kv7.3 (KCNQ3) voltage-gated K⁺ channels and L-type voltage-gated Ca²⁺ channels; it inhibits expression of Nav1.1 (SCN1A) and Nav1.2 (SCN2A) voltage-gated Na⁺ channels and activates ryanodine RyR2 receptors. Amitriptyline also decreases levels of α₁-adrenergic receptors in the cortex and cerebellum in vivo. In animal models of chronic constrictive injury and neuropathic pain, amitriptyline decreases thermal hyperalgesia. In PC12 neurons, this compound exhibits neuroprotective activity, increasing neurite outgrowth and decreasing cell death. Amitriptyline is also a function inhibitor of acid sphingomyelinase (FIASMA).



Bulk quantities available upon request

Product ID	Size
A5235	10 g
A5235	25 g
A5235	100 g

References Effects of chronic administration of amitriptyline, gabapentin and minocycline on spinal brain-derived neurotrophic factor expression and neuropathic pain behavior in a rat chronic constriction injury model. Vanelder P, Rouwette T, Kozicz T, Heylen R, Van Zundert J, Roubos EW, Vissers K. Reg Anesth Pain Med. 2013 Mar-Apr;38(2):124-30. PMID: 23337936.

Ramakrishna D, Subhash MN. Differential modulation of α-1 adrenoceptor subtypes by antidepressants in the rat brain. J Neural Transm. 2010 Dec;117(12):1423-30. PMID: 21136124.

Yan L, Wang Q, Fu Q, et al. Amitriptyline inhibits currents and decreases the mRNA expression of voltage-gated sodium channels in cultured rat cortical neurons. Brain Res. 2010 Jun 8;1336:1-9. PMID: 20398637.

Jang SW, Liu X, Chan CB, et al. Amitriptyline is a TrkA and TrkB receptor agonist that promotes TrkA/TrkB heterodimerization and has potent neurotrophic activity. Chem Biol. 2009 Jun 26;16(6):644-56. PMID: 19549602.

Chopra N, Laver D, Davies SS, et al. Amitriptyline activates cardiac ryanodine channels and causes spontaneous sarcoplasmic reticulum calcium release. Mol Pharmacol. 2009 Jan;75(1):183-95. PMID: 18845675.

Werling LL, Keller A, Frank JG, et al. A comparison of the binding profiles of dextromethorphan, memantine, fluoxetine and amitriptyline: treatment of involuntary emotional expression disorder. Exp Neurol. 2007 Oct;207(2):248-57. PMID: 17689532.

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