

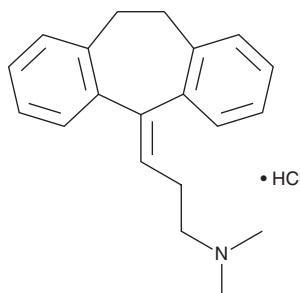
# PRODUCT INFORMATION



## Amitriptyline (hydrochloride)

Item No. 15881

**CAS Registry No.:** 549-18-8  
**Formal Name:** 3-(10,11-dihydro-5H-dibenzo[a,d]cyclohepten-5-ylidene)-N,N-dimethyl-1-propanamine, monohydrochloride  
**Synonyms:** NIH 10794, Ro 4-1575  
**MF:** C<sub>20</sub>H<sub>23</sub>N • HCl  
**FW:** 313.9  
**Purity:** ≥98%  
**UV/Vis.:** λ<sub>max</sub>: 239 nm  
**Supplied as:** A crystalline solid  
**Storage:** -20°C  
**Stability:** ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Laboratory Procedures

Amitriptyline (hydrochloride) is supplied as a crystalline solid. A stock solution may be made by dissolving the amitriptyline (hydrochloride) in the solvent of choice, which should be purged with an inert gas. Amitriptyline (hydrochloride) is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of amitriptyline (hydrochloride) in these solvents is approximately 25 mg/ml.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of amitriptyline (hydrochloride) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of amitriptyline (hydrochloride) in PBS, pH 7.2, is approximately 0.5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

### Description

Amitriptyline is a first generation tricyclic antidepressant.<sup>1</sup> It inhibits serotonin (5-HT) uptake by isolated human platelets by 39 and 68% when used at concentrations of 1 and 4 μg/ml, respectively, and inhibits norepinephrine uptake in rat brain by 77% when administered at a dose of 10 mg/kg.<sup>2,3</sup> It is also an antagonist of the 5-HT receptor subtype 5-HT<sub>2A</sub> (K<sub>i</sub> = 20 nM), as well as histamine H<sub>1</sub>, muscarinic acetylcholine, and α<sub>1</sub>-adrenergic receptors (K<sub>i</sub>s = 1.1, 18, and 27 nM, respectively).<sup>4-6</sup> Amitriptyline (5-25 μM) prevents acid sphingomyelinase activation and subsequent ceramide release induced by infection with replication-deficient vesicular stomatitis virus pseudoviral particles (pp-VSV) presenting the severe acute respiratory coronavirus 2 (SARS-CoV-2) spike protein in Vero cells, an effect that can be overcome with exogenous application of C16 ceramide (Item No. 10681) or recombinant human acid sphingomyelinase.<sup>7</sup> Formulations containing amitriptyline have been used in the treatment of depression and nerve pain. This product is also available as an analytical reference standard (Item Nos. 19029 | 19031).

### References

1. Spencer, P.S. *Br. J. Clin. Pharmacol.* **4(Suppl 2)**, 57S-68S (1977).
2. Yates, C.M., Todrick, A., and Tait, A.C. *J. Pharm. Pharmacol.* **16**, 460-463 (1964).
3. Glowinski, J. and Axelrod, J. *Nature* **204**, 1318-1319 (1964).
4. Honda, M., Nishida, T., and Ono, H. *Eur. J. Pharmacol.* **458(1-2)**, 91-99 (2003).
5. Richelson, E. and Nelson, A. *Antagonism J. Pharmacol. Exp. Ther.* **230(1)**, 94-102 (1984).
6. Cusack, B., Nelson, A., and Richelson, E. *Psychopharmacology (Berl.)* **114(4)**, 559-565 (1994).
7. Carpinteiro, A., Edwards, M.J., Hoffmann, M., et al. *Cell Rep. Med.* **1(8)**, 100142 (2020).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

#### WARRANTY AND LIMITATION OF REMEDY

Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

Copyright Cayman Chemical Company, 11/23/2022

#### CAYMAN CHEMICAL

1180 EAST ELLSWORTH RD  
ANN ARBOR, MI 48108 · USA

PHONE: [800] 364-9897

[734] 971-3335

FAX: [734] 971-3640

CUSTSERV@CAYMANCHEM.COM

WWW.CAYMANCHEM.COM