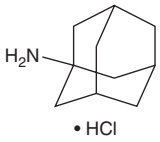
PRODUCT INFORMATION

Amantadine (hydrochloride)

Item No. 21364

CAS Registry No.: 665-66-7
Formal Name: tricyclo[3.3.1.1^{3,7}]decan-1-amine, monohydrochloride
Synonyms: Adamantylamine, Aminoadamantane, NSC 83653
MF: $C_{10}H_{17}N \bullet HCl$
FW: 187.7
Purity: ≥95%
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

Amantadine (hydrochloride) is supplied as a crystalline solid. A stock solution may be made by dissolving the amantadine (hydrochloride) in the solvent of choice, which should be purged with an inert gas. Amantadine (hydrochloride) is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of amantadine (hydrochloride) in these solvents is approximately 5, 50, and 2 mg/ml, respectively.

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 amantadine (hydrochloride) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of amantadine (hydrochloride) in PBS, pH 7.2, is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Amantadine is an NMDA receptor antagonist with IC_{50} values of 0.93, 0.82, and 0.47 µM at -70 mV for NR1-1a/NR2A, NR1-1a/NR2B, and NR1-1a/NR2D subunit-containing recombinant receptors, respectively, expressed in HEK293 cells.[1] It blocks the influenza A M2 proton channel (IC_{50} = 16 µM for the recombinant channel expressed in *Xenopus* oocytes) and inhibits cytotoxicity induced by the influenza A strains H1N1 and H3N2 in MDCK cells (EC_{50}s = 34 and 0.84 µM, respectively).[2] It also improves the survival of mice infected with influenza A when administered 24 hours following viral challenge at a dose of 100 mg/kg per day.[3] Amantadine (40 mg/kg) decreases dyskinesia induced by L-DOPA (Item No. 13248) in a 6-OHDA hemi-parkinsonian mouse model.[4] Formulations containing amantadine have been used in the treatment of various strains of influenza A virus infection and in the treatment of parkinsonism and drug-induced extrapyramidal symptoms.

References

1. Bresink, I., Benke, T.A., Collett, V.J., *et al.* Effects of memantine on recombinant rat NMDA receptors expressed in HEK 293 cells. *Br. J. Pharmacol.* **119(2)**, 195-204 (1996).
2. Rey-Carrizo, M., Torres, E., Ma, C., *et al.* 3-Azatetracyclo[5.2.1.15,8.01,5]undecane derivatives: From wild-type inhibitors of the M2 ion channel of influenza A virus to derivatives with potent activity against the V27A mutant. *J. Med. Chem.* **56(22)**, 9265-9274 (2013).
3. Smee, D.F., Julander, J.G., Tarbet, E.B., *et al.* Treatment of oseltamivir-resistant influenza A (H1N1) virus infections in mice with antiviral agents. *Antiviral Res.* **96(1)**, 13-20 (2012).
4. Bido, S., Marti, M., and Morari, M. Amantadine attenuates levodopa-induced dyskinesia in mice and rats preventing the accompanying rise in nigral GABA levels. *J. Neurochem.* **118(6)**, 1043-1055 (2011).

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