

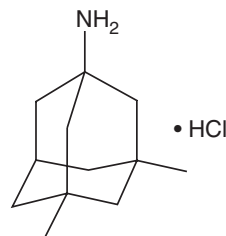
# PRODUCT INFORMATION



## Memantine (hydrochloride)

Item No. 14184

**CAS Registry No.:** 41100-52-1  
**Formal Name:** 3,5-dimethyl-tricyclo[3.3.1.1<sup>3,7</sup>]decan-1-amine, monohydrochloride  
**Synonyms:** NSC 102290, SUN Y7017  
**MF:** C<sub>12</sub>H<sub>21</sub>N • HCl  
**FW:** 215.8  
**Purity:** ≥98%  
**Supplied as:** A crystalline solid  
**Storage:** Room temperature  
**Stability:** ≥2 years



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

### Laboratory Procedures

Memantine (hydrochloride) is supplied as a crystalline solid. A stock solution may be made by dissolving the memantine (hydrochloride) in the solvent of choice. Memantine (hydrochloride) is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide, which should be purged with an inert gas. The solubility of memantine (hydrochloride) in these solvents is approximately 20, 10, and 2.5 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 memantine (hydrochloride) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of Memantine (hydrochloride) in PBS, pH 7.2, is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

### Description

Memantine is an NMDA receptor antagonist that blocks NMDA-induced currents in rat retinal ganglion cells by 90% when used at a concentration of 12 μM.<sup>1</sup> It reverses inhibition of dephosphorylation of the synthetic tau phosphopeptide p17 (tau<sub>194-207</sub>) induced by the endogenous inhibitor of protein phosphatase 2A (PP2A) I<sub>1</sub><sup>PP2A</sup> *in vitro*.<sup>2</sup> *In vivo*, memantine (2 mg/kg) restores PP2A activity, decreases GSK-3β and amyloid-β (Aβ) levels in the hippocampus, cerebral cortex, and ventricular areas, and attenuates spatial learning and memory in the AAV1-I<sub>1</sub><sup>PP2A</sup> rat model of Alzheimer's disease. Memantine (20 mg/kg) reduces responding on the ethanol-associated lever in a cue-induced ethanol-seeking test in rats.<sup>3</sup> It also decreases secretion of matrix metalloproteinase-9 (MMP-9), degradation of collagen IV, the size of cerebral ischemia-induced brain infarcts, and neuronal cell death in a mouse model of focal cerebral ischemia.<sup>4</sup>

### References

1. Chen, H.-S.V., Pellegrini, J.W., Aggarwal, S.K., *et al.* *J. Neurosci.* **12**(11), 4427-4436 (1992).
2. Wang, X., Blanchard, J., Grundke-Iqbal, I., *et al.* *PLoS One* **10**(12), e0145441, (2015).
3. Vangeliene, V., Olevska, A., and Spanagel, R. *J. Neurochem.* **135**(6), 1080-1085 (2015).
4. Chen, Z.-Z., Yang, D.-D., Zhao, Z., *et al.* *Life Sci.* **150**, 8-14 (2016).

#### 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.

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