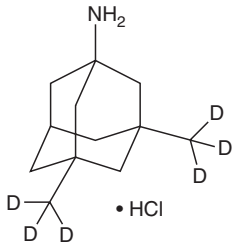
PRODUCT INFORMATION

Memantine-d_6 (hydrochloride)

Item No. 25463

CAS Registry No.:	1189713-18-5
Formal Name:	3,5-di(methyl-d_3)-tricyclo[3.3.1.$1^{3,7}$] decan-1-amine, monohydrochloride
MF:	$C_{12}H_{15}D_6N \bullet HCl$
FW:	221.8
Chemical Purity:	≥98% (Memantine)
Deuterium Incorporation:	≥99% deuterated forms (d_1-d_6); ≤1% d_0
Supplied as:	A 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

Memantine-d_6 (hydrochloride) is intended for use as an internal standard for the quantification of memantine (Item No. 14184) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

Memantine-d_6 (hydrochloride) is supplied as a solid. A stock solution may be made by dissolving the memantine-d_6 (hydrochloride) in the solvent of choice, which should be purged with an inert gas. Memantine-d_6 (hydrochloride) is soluble in DMSO and methanol.

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.[1] It reverses inhibition of dephosphorylation of the synthetic tau phosphopeptide p17 ($tau_{194-207}$) induced by the endogenous inhibitor of protein phosphatase 2A (PP2A) I_1^{PP2A} *in vitro*.[2] *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 deficits in the AAV1-I_1^{PP2A} 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.[3] 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.[4]

References

1. Chen, H.S.V., Pellegrini, J.W., Aggarwal, S.K., *et al.* Open-channel block of N-methyl-D-aspartate (NMDA) responses by memantine: Therapeutic advantage against NMDA receptor-mediated neurotoxicity. *J. Neurosci.* **12(11)**, 4427-4436 (1992).
2. Wang, X., Blanchard, J., Grundke-Iqbal, I., *et al.* Memantine attenuates Alzheimer's disease-like pathology and cognitive impairment. *PLoS One* **10(12)**, e0145441, (2015).
3. Vangeliene, V., Olevska, A., and Spanagel, R. Long-lasting effect of NMDA receptor antagonist memantine on ethanol-cue association and relapse. *J. Neurochem.* **135(6)**, 1080-1085 (2015).
4. Chen, Z.-Z., Yang, D.-D., Zhao, Z., *et al.* Memantine mediates neuroprotection *via* regulating neurovascular unit in a mouse model of focal cerebral ischemia. *Life Sci.* **150**, 8-14 (2016).

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