Small Molecules

Memantine (Hydrochloride)

NMDA receptor antagonist

Catalog #100-0894 50 mg

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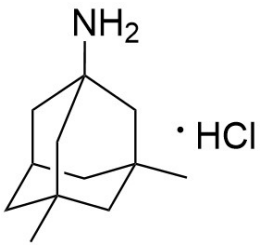
Product Description

Memantine is a N-methyl-D-aspartate (NMDA) receptor antagonist that stimulates the production of dopamine in the brain (Parsons et al.). NMDA receptor is a calcium-permeable ion channel found in neurons and regulated by its ligands glutamate and glycine (Song et al.). NMDA receptor signaling is involved with plasticity, cell survival, and cell death. Hyperactivity of these receptors can result in neuron loss and may contribute to neurodegenerative diseases (Parsons & Raymond; Song et al.). Memantine is used to treat patients with Parkinson's disease and Alzheimer's disease (Meisner et al.; Parsons et al.).

Alternative Names:	Akatinol; Axura; Ebix; Namenda; NSC 102290; SUN Y7017
CAS Number:	41100-52-1
Chemical Formula:	$C_{12}H_{21}N \bullet HCl$
Molecular Weight:	215.8 g/mol
Purity:	≥ 98%
Chemical Name:	3,5-dimethyl-tricyclo[3.3.1.13,7]decan-1-amine, monohydrochloride
Structure:	



Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at room temperature (15 - 25°C) as supplied. Protect product from prolonged exposure to light. For long-term storage, store with a desiccant. Stable as supplied for 12 months from date of receipt.
Solubility:	· PBS (pH 7.2) ≤ 9.2 mM · DMSO ≤ 90 mM · Absolute ethanol ≤ 92 mM

For example, to prepare a 5 mM stock solution in PBS, resuspend 10 mg in 9.3 mL of PBS.

Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported, however, as a general guide we recommend storage in DMSO at -20°C. Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application.

For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use. Avoid final DMSO concentration above 0.1% due to potential cell toxicity.

Published Applications

DISEASE MODELING
· Upregulates the expression of neurotrophic factor brain-derived neurotrophic factor (BDNF) and prevents the onset of dopamine deficiency in macaques infected with simian immunodeficiency virus (SIV; Meisner et al.).

References

Meisner F et al. (2008) Memantine upregulates BDNF and prevents dopamine deficits in SIV-infected macaques: a novel pharmacological action of memantine. Neuropsychopharmacology 33(9): 2228–36.

Parsons CG et al. (2007) Memantine: a NMDA receptor antagonist that improves memory by restoration of homeostasis in the glutamatergic system--too little activation is bad, too much is even worse. Neuropharmacology 53(6): 699–723.

Parsons MP & Raymond LA. (2014) Extrasynaptic NMDA receptor involvement in central nervous system disorders. Neuron 82(2): 279–93.

Song X et al. (2018) Mechanism of NMDA receptor channel block by MK-801 and memantine. Nature 556(7702): 515–9.

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This product is hazardous. Please refer to the Safety Data Sheet (SDS).