

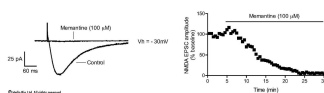
## DATASHEET

### Memantine hydrochloride

#### Product overview

<b>Name</b>	Memantine hydrochloride
<b>Cat No</b>	HB0407
<b>Alternative names</b>	Axura, Akatinol, Namenda, Ebixa, Abixa, Memox
<b>Biological action</b>	Antagonist
<b>Purity</b>	>98%
<b>Description</b>	Non-competitive NMDA receptor antagonist

#### Images



#### Biological Data

<b>Biological description</b>	Non-competitive NMDA receptor antagonist ( $IC_{50} = 1.25 \mu M$ ). Binds to ion channel site.  Shows low affinity but has rapid blocking and unblocking ability at the NMDAR.  Selectively blocks extrasynaptic NMDARs.  Enhances hippocampal long-term potentiation (LTP) and reverses LTP suppression.
<b>Application notes</b>	Improves cognitive function and shows anti-Alzheimer's activity. The voltage sensitive NMDA receptor antagonist memantine is effective at concentrations of 10-100 $\mu M$ . In CA1 hippocampal neurons held at $-30 mV$ , Hello Bio memantine (at $100 \mu M$ ) gradually inhibited evoked NMDA receptor mediated excitatory currents over time (see Fig 1 above).

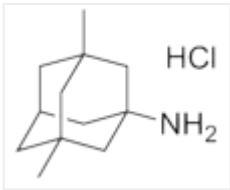
#### **#Protocol 1: Assay evoked NMDAR currents at -30 mV (used for memantine)**

- NMDAR currents were recorded via whole cell voltage clamp recordings of CA1 pyramidal neurons from the rat hippocampal brain slice and evoked via a stimulating electrode placed in the CA3 region to stimulate the Schaffer collateral pathway.
- Each NMDAR current was evoked via a single square (150  $\mu s$ ) pulse every 10 sec at a stimulus intensity that gave a reliable NMDAR current.
- Neurons were constantly held at  $-30 mV$  and NMDAR currents recorded in response to continual bath applications of NMDAR antagonists.
- All NMDAR recordings were made in the presence of GABAA-R and AMPA-R antagonists.

## Solubility & Handling

<b>Storage instructions</b>	Room temperature
<b>Solubility overview</b>	Soluble in water (100mM)
<b>Important</b>	This product is for RESEARCH USE ONLY and is not intended for therapeutic or diagnostic use. Not for human or veterinary use.

## Chemical Data

<b>Chemical name</b>	3,5-Dimethyl-tricyclo[3.3.1.1 <sup>3,7</sup> ]decan-1-amine hydrochloride
<b>Molecular Weight</b>	215.77
<b>Chemical structure</b>	
<b>Molecular Formula</b>	C <sub>12</sub> H <sub>21</sub> N.HCl
<b>CAS Number</b>	41100-52-1
<b>PubChem identifier</b>	181458
<b>SMILES</b>	Cl.CC13CC2(C)CC(N)(C1)CC(C2)C3
<b>InChi</b>	InChI=1S/C12H21N.ClH/c1-10-3-9-4-11(2,6-10)8-12(13,5-9)7-10;/h9H,3-8,13H2,1-2H3;1H
<b>InChiKey</b>	LDDHMLJTFXJGPI-UHFFFAOYSA-N
<b>MDL number</b>	MFCD00214336
<b>Appearance</b>	White solid

## References

### The N-methyl-D-aspartate receptor channel blockers memantine, MRZ 2/579 and other amino-alkyl-cyclohexanes antagonise 5-HT(3) receptor currents in cultured HEK-293 and N1E-115 cell systems in a non-competitive manner.

Rammes G *et al* (2001) *Neurosci Lett* 306(1-2)

**PubMedID** [11403963](#)

### Memantine is a clinically well tolerated N-methyl-D-aspartate (NMDA) receptor antagonist--a review of preclinical data.

Parsons CG *et al* (1999) *Neuropharmacology* 38(6)

**PubMedID** [10465680](#)

### Memantine binding to a superficial site on NMDA receptors contributes to partial trapping.

Kotermanski SE *et al* (2009) *J Physiol* 587(Pt 19)

**PubMedID** [19687120](#)

### Memantine selectively blocks extrasynaptic NMDA receptors in rat substantia nigra dopamine neurons.

Wu and Johnson (2015) *Brain Res.* 1603

**PubMedID** [25656790](#)

### Effects of memantine on hippocampal long-term potentiation, gamma activity, and sensorimotor gating in freely moving rats.

Ma *et al* (2015) *Neurobiol Aging* 36(9)

**PubMedID** [26119223](#)