

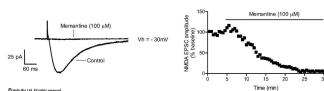
DATASHEET

Memantine hydrochloride

Product overview

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

Images



Biological Data

Biological description	<p>Non-competitive NMDA receptor antagonist ($IC_{50} = 1.25 \mu M$). Binds to ion channel site.</p> <p>Shows low affinity but has rapid blocking and unblocking ability at the NMDAR.</p> <p>Selectively blocks extrasynaptic NMDARs.</p> <p>Enhances hippocampal long-term potentiation (LTP) and reverses LTP suppression.</p>
Application notes	<p>Improves cognitive function and shows anti-Alzheimer's activity.</p> <p>The voltage sensitive NMDA receptor antagonist memantine is effective at concentrations of 10-100 μM. 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).</p>

#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 μs) 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

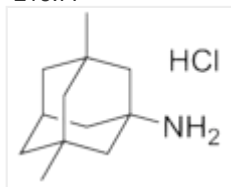
Storage instructions Solubility overview Important

Room temperature
Soluble in water (100mM)
This product is for RESEARCH USE ONLY and is not intended for therapeutic or diagnostic use. Not for human or veterinary use.

Chemical Data

Chemical name Molecular Weight Chemical structure

3,5-Dimethyl-tricyclo[3.3.1.1^{3,7}]decan-1-amine hydrochloride
215.77



Molecular Formula CAS Number PubChem identifier SMILES InChi InChiKey MDL number Appearance

C₁₂H₂₁N.HCl
41100-52-1
181458
Cl.CC13CC2(C)CC(N)(C1)CC(C2)C3
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
LDDHMLJTFXJGPI-UHFFFAOYSA-N
MFCD00214336
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](#)