Hello Bio, Inc. 304 Wall St., Princeton, NJ 08540 USA

T. 609-683-7500 F. 609-228-4994

customercare-usa@hellobio.com



DATASHEET

Memantine hydrochloride

Product overview

Name Memantine hydrochloride

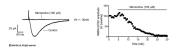
Cat No HB0407

Alternative names Axura, Akatinol, Namenda, Ebixa, Abixa, Memox

Biological action Antagonist >98%

Description Non-competitive NMDA receptor antagonist

Images







Biological Data

Biological description

Non-competitive NMDA receptor antagonist (IC $_{50}$ = 1.25 μ 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.

Application notes

Improves cognitive function and shows anti-Alzheimer's activity.

The voltage sensitive NMDA receptor antagonist memantine is effective at concentrations of 10-100 μ M. In CA1 hippocampal neurons held at – 30 Mv, Hello Bio memantine (at 100 μ 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 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

Solubility overview Soluble in water (100mM) **Storage instructions** Room temperature

Storage of solutions Prepare and use solutions on the same day if possible. Store solutions at -20 °C for up to one month if

storage is required. Equilibrate to RT and ensure the solution is precipitate free before use.

Shipping Conditions

Important

Stable for ambient temperature shipping. Follow storage instructions on receipt.

This product is for RESEARCH USE ONLY and is not intended for therapeutic or diagnostic use. Not

for human or veterinary use.

HCI

 NH_2

Chemical Data

Chemical name Molecular Weight Chemical structure 3,5-Dimethyl-tricyclo[3.3.1.13,7]decan-1-amine hydrochloride

215.77

Molecular Formula $C_{12}H_{21}N.HCI$

CAS Number 41100-52-1
PubChem identifier 181458

InChi InChi=1S/C12H21N.CIH/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

MDL number MFCD00214336 Appearance White solid

References

InChiKey

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