



Product Information

D(-)-2-Amino-5-phosphonopentanoic acid

Product Number **A 8054**

Store at Room Temperature

Product Description

Molecular Formula: $C_5H_{12}NO_5P$

Molecular Weight: 197.1

CAS Number: 79055-68-8

Synonyms: D(-)-AP-5; D(-)-APV

D(-)-2-Amino-5-phosphonopentanoic acid is a potent and selective antagonist for N-methyl-D-aspartate (NMDA) receptors. The D-isomer is the active enantiomer of 2-amino-5-phosphonopentanoic acid. A review has discussed the effect of AP-5 administration to rats on NMDA receptor activation and subsequent early stage development.¹ A kinetic analysis of AP-5 dissociation from NMDA receptors in outside-out patches from cultured hippocampal neurons has been published.²

Administration of D(-)-AP-5 to cultured rat cerebellar granule cells has been demonstrated to diminish glutamate-induced lactic dehydrogenase efflux.³

D(-)-AP-5 has been shown to reduce the neurotoxic effects of 3-nitropropionic acid on organotypic striatal and corticostriatal slice cultures.⁴ A study in cortical neurons has studied the use of D(-)-AP-5 to block the NMDA-induced increase in intracellular Ca^{2+} and its effect on protein synthesis.⁵

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This product is soluble in 1 M NH_4OH (50 mg/ml), yielding a clear, colorless solution. It is also soluble in water (9 mg/ml).

Storage/Stability

Stock solutions of this product (20 mM) may be stored at 4 °C.⁶

References

1. Haberny, K. A., et al., Ontogeny of the N-methyl-D-aspartate (NMDA) receptor system and susceptibility to neurotoxicity. *Toxicol. Sci.*, **68(1)**, 9-17 (2002).
2. Clements, J. D., and Westbrook, G. L., Kinetics of AP5 dissociation from NMDA receptors: evidence for two identical cooperative binding sites. *J. Neurophysiol.*, **71(6)**, 2566-2569 (1994).
3. Berman, F. W., and Murray, T. F., Domoic acid neurotoxicity in cultured cerebellar granule neurons is mediated predominantly by NMDA receptors that are activated as a consequence of excitatory amino acid release. *J. Neurochem.*, **69(2)**, 693-703 (1997).
4. Storgaard, J., et al., 3-Nitropropionic acid neurotoxicity in organotypic striatal and corticostriatal slice cultures is dependent on glucose and glutamate. *Exp. Neurol.*, **164(1)**, 227-235 (2000).
5. Gauchy, C., et al., N-Methyl-D-aspartate receptor activation inhibits protein synthesis in cortical neurons independently of its ionic permeability properties. *Neuroscience*, **114(4)**, 859-867 (2002).
6. Kim, J. H., et al., Use-dependent effects of amyloidogenic fragments of β -amyloid precursor protein on synaptic plasticity in rat hippocampus *in vivo*. *J. Neurosci.*, **21(4)**, 1327-1333 (2001).

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