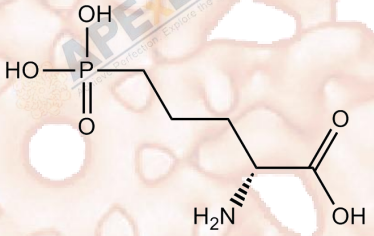
Product Data Sheet

D-AP5



Cat. No.:	B6205
CAS No.:	79055-68-8
Formula:	C5H12NO5P
M.Wt:	197.13
Synonyms:	D-APV; D-2-Amino-5-phosphonovaleric acid
Target:	iGluR; NMDAR
Pathway:	Neuroscience; Membrane transporter/Ion channel
Storage:	Store at -20° C

Solvent & Solubility

In Vitro

insoluble in DMSO; insoluble in EtOH; ⩾28.1 mg/mL in H2O

Preparing Stock Solutions

Concentration \ Solvent \ Mass	1mg	5mg	10mg
1 mM	5.0728 mL	25.3640 mL	50.7279 mL
5 mM	1.0146 mL	5.0728 mL	10.1456 mL
10 mM	0.5073 mL	2.5364 mL	5.0728 mL

Please refer to the solubility information to select the appropriate solvent.

Biological Activity

Shortsummary

D-AP5 (CAS 79055-68-8) is a highly selective and competitive NMDA receptor antagonist, acting primarily in neuronal tissues by binding to the glutamate recognition site of the NMDA receptor complex and blocking receptor activation. This compound exhibits potent antagonist activity in central nervous system tissues, thereby inhibiting excitatory neurotransmission mediated by NMDA receptors. Additionally, D-AP5 impedes synaptic plasticity processes that are dependent on NMDA receptor activation.

In electrophysiological and neuropharmacological studies, D-AP5 demonstrates inhibitory effects on NMDA receptor-mediated responses with an IC50 value of [ ], tested in various neuronal preparations and cell

cultures. It can also reduce calcium influx in neurons following NMDA receptor stimulation and prevent excitotoxic neuronal cell death under experimental conditions. D-AP5 is widely utilized to block NMDA-induced synaptic currents, assess the role of NMDA receptors in synaptic plasticity, and investigate excitatory amino acid-mediated signal transduction.

In neuroscience research and pharmacological application contexts, D-AP5 is widely used for the study of NMDA receptor function, elucidation of glutamatergic signaling pathways, and the evaluation of neuroprotective strategies in models of neurological disorders, such as stroke, epilepsy, and neurodegeneration.

IC_{50} & Target

In Vitro

Cell Viability Assay

Cell Line:	Neonatal slices, juvenile slices
Preparation method:	Soluble to 100 mM in sterile water. General tips for obtaining a higher concentration: Please warm the tube at 37 ℃ for 10 minutes and/or shake it in the ultrasonic bath for a while. Stock solution can be stored below -20℃ for several months.
Reacting conditions:	100 μM
Applications:	In neonatal slices, a 5 Hz/3 min train of stimuli did not induce LTD of field EPSPs in the presence of 100 μM D-AP5. In juvenile slices, a 5 Hz/3 min train of stimuli did not induce LTD of field EPSPs in the presence of 100 μM D-AP5. In the presence of 100 μM D-AP5, voltage-clamping the cells at -80 mV during the induction protocol prevented the induction of mGluR-LTD.

In Vivo

Animal experiment

Animal models:	Rats
Dosage form:	0–50 mM
Applications:	In rats, D-AP5 (0–50 mM) via osmotic minipumps impaired spatial learning in a linear dose-dependent manner, highly correlated with its corresponding impairment of hippocampal LTP. No concentration of D-AP5 was observed to block LTP without affecting learning. Acute intrahippocampal infusion of radiolabelled D-AP5 revealed relatively restricted diffusion and was used to estimate whole-tissue hippocampal drug concentrations. Chronic i.c.v. infusions of D-AP5 caused a delay-dependent impairment of memory.
Preparation method:	Soluble to 100 mM in sterile water. General tips for obtaining a higher concentration: Please warm the tube at 37 ℃ for 10 minutes and/or shake it in the ultrasonic bath for a while. Stock solution can be stored below -20℃ for several months.
Other notes:	Please test the solubility of all compounds indoor, and the actual solubility may slightly differ with the theoretical value. This is caused by an experimental system error and it is normal.

Product Citations

See more customer validations on www.apexbt.com.

References

1. Oliet S H R, Malenka R C, Nicoll R A. Two distinct forms of long-term depression coexist in CA1 hippocampal pyramidal cells[J]. Neuron, 1997, 18(6): 969-982.

2. Davis S, Butcher S P, Morris R G. The NMDA receptor antagonist D-2-amino-5-phosphonopentanoate (D-AP5) impairs spatial learning and LTP in vivo at intracerebral concentrations comparable to those that block LTP in vitro[J]. Journal of Neuroscience, 1992, 12(1): 21-34.

3. Steele R J, Morris R G M. Delay - dependent impairment of a matching - to - place task with chronic and intrahippocampal infusion of the NMDA - antagonist D - AP5[J]. Hippocampus, 1999, 9(2): 118-136.

Caution

FOR RESEARCH PURPOSES ONLY.

NOT FOR HUMAN, VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

Specific storage and handling information for each product is indicated on the product datasheet. Most APExBIO products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Shortterm storage of many products are stable in the short-term at temperatures that differ from that required for long-term storage. We ensure that the product is shipped under conditions that will maintain the quality of the reagents. Upon receipt of the product, follow the storage recommendations on the product data sheet.

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