3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

DL-2-Amino-5-phosphonopentanoic acid

Product Number **A 5282**
Store at Room Temperature

Product Description

Molecular Formula: $C_5H_{12}NO_5P$
Molecular Weight: 197.1
CAS Number: 76326-31-3
Synonyms: DL-2-amino-5-phosphonovaleric acid; AP-5; APV; 5-phosphono-DL-norvaline

DL-2-Amino-5-phosphonopentanoic acid (AP-5) is a widely used competitive antagonist for N-methyl-D-aspartate (NMDA) receptors.[1-4] The microinjection of AP-5 into the nucleus tractus solitarii of rats has been shown to result in a dose-dependent blockade of the bradycardic response.[5] A review of the use of AP-5 to study serotonin release by GABA and excitatory amino acids in rats has been published.[6]

The use of AP-5 to investigate the synaptic inhibition of neurons in the pedunculopontine tegmental nucleus of rat has been described.[7] AP-5 has been utilized in a whole cell patch-clamp study of cultured rat embryonic spinal cord and medullary neurons to probe spontaneous inhibitory postsynaptic currents.[8] A whole-cell voltage-clamp investigation of synaptic currents in the immature rat nucleus tractus solitarii has used AP-5 at 20-50 μM.[9]

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 (5.6 mg/ml). This product is insoluble in organic solvents.

Storage/Stability

Solutions may be stored for several weeks at 4 °C.

References

1. Hara, S., et al., Distinct effects of MK-801 and (+/-)-2-amino-5-phosphonopentanoic acid on *N*-methyl-D-aspartate-induced rise of brain temperature in rats. Life Sci., **61(20)**, 289-294 (1997).
2. McNally, G. P., and Westbrook, R. F., et al., Effects of systemic, intracerebral, or intrathecal administration of an *N*-methyl-D-aspartate receptor antagonist on associative morphine analgesic tolerance and hyperalgesia in rats. Behav. Neurosci., **112(4)**, 966-978 (1998).
3. Baunez, C., and Amalric, M., Evidence for functional differences between entopeduncular nucleus and substantia nigra: effects of APV
4. (DL-2-amino-5-phosphonovaleric acid) microinfusion on reaction time performance in the rat. Eur. J. Neurosci., **8(9)**, 1972-1982 (1996).
5. Watkins, J. C., and Evans, R. H., et al., Excitatory amino acid transmitters. Annu. Rev. Pharmacol. Toxicol., **21**, 165-204 (1981).
6. Machado, B. H., Neurotransmission of the cardiovascular reflexes in the *nucleus tractus solitarii* of awake rats. Ann. NY Acad. Sci., **940**, 179-196 (2001).
7. Tao, R., and Auerbach, S. B., Regulation of serotonin release by GABA and excitatory amino acids. J. Psychopharmacol., **14(2)**, 100-113 (2000).
8. Saitoh, K., et al., Nigral GABAergic inhibition upon cholinergic neurons in the rat pedunculopontine tegmental nucleus. Eur. J. Neurosci., **18(4)**, 879-886 (2003).

9. Lewis, C. A., and Faber, D. S., Giant, TTX-insensitive, inhibitory postsynaptic currents in cultured rat spinal cord and medullary neurons. J. Neurophysiol., **76(5),** 3341-3350 (1996).

10. Smith, B. N., et al., Vagally evoked synaptic currents in the immature rat *nucleus tractus solitarii* in an intact in vitro preparation. J. Physiol., **512(Pt 1)**, 149-162 (1998).

GCY/RXR 12/03