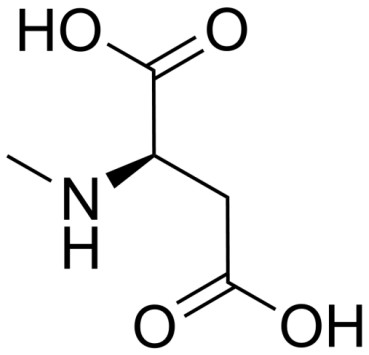
Data Sheet

Product Name:	NMDA
Cat. No.:	CS-2194
CAS No.:	6384-92-5
Molecular Formula:	$C_5H_9NO_4$
Molecular Weight:	147.13
Target:	Endogenous Metabolite; iGluR
Pathway:	Membrane Transporter/Ion Channel; Metabolic Enzyme/Protease; Neuronal Signaling
Solubility:	DMSO : 10 mg/mL (ultrasonic);H_2O : 33.33 mg/mL (ultrasonic)



BIOLOGICAL ACTIVITY:

NMDA is a specific agonist for **NMDA receptor** mimicking the action of glutamate, the neurotransmitter which normally acts at that receptor. ***In Vitro:***NMDA exerts a significant augmentation of the adrenal binding independently of the incubation temperature in a concentration-dependent manner[2]. ***In Vivo:***NMDA (0.2 nmol) shows significant effects on MF, IF, IL, and EL, respectively, decreasing the mount and intromission frequencies, and shortening the intromission and ejaculation latencies. NMDA and AP-5 significantly, respectively, facilitates and inhibits the ejaculatory behavior during the copulation testing 30 min. Bilateral microinjection of NMDA into PVN significantly increases the baseline LSNA, the peaking increment of LSNA occurred within 5 min from the time of NMDA microinjected into PVN[1].

PROTOCOL (Extracted from published papers and Only for reference)

Kinase Assay:[2]Adrenal membranous homogenate suspensions are incubated with 10 nM [^{3}H]Glu in 500/zl 50 mM Tris-acetate buffer (pH 7.4) at 2°C or 30°C in the presence and absence of various compounds. Incubation is terminated by the addition of 3 mL ice-cold buffer and subsequent filtration through a Whatman GF/B glass filter under a constant vacuum of 15 mm Hg. After washing the filter 4 times with 3 mL icecold buffer, the radioactivity trapped on the filter is measured by a liquid scintillation spectrometer using 5 mL modified Triton-toluene scintillant at a counting efficiency of 40-42%. The radioactivity found in the presence of 1 mM non-radioactive Glu is subtracted from each experimental value to obtain the specific binding of [^{3}H]Glu in accordance with the y-aminobutyric acid (GABA) receptor binding assay system. The kinetic parameters of [^{3}H]Glu binding, K_d and Bma x, are calculated by Scatchard analysis of the specific binding using a personal computer with a programme for non-linear regression analysis developed in our own laboratory. **Animal Administration:**NMDA is formulated in saline.[1]Thirty male rats are paired with different receptive females for a total of three times (once every 3 days) a week prior to the experiment, only the males that ejaculated at least three times during this period are included. After selecting the male rats with normal ejaculatory ability. Saline (100 nL), NMDA (0.20 nmol in 100 nL saline), and AP-5 (10.0 nmol in 100 nL saline) are adminitration into the bilateral PVN of each male rat in random order. After 5 min, the behavioral testing is performed and recorded as described above. Copulatory behaviors occur once a week and the entire experiment lasted 4 weeks.

References:

[1]. Xia JD, et al. Centrally mediated ejaculatory response via sympathetic outflow in rats: role of N-methyl-D-aspartic acid receptors in paraventricular nucleus. Andrology. 2016 Nov 16.

[2]. Yoneda Y, et al. Enhancement of [3H]glutamate binding by N-methyl-D-aspartic acid in rat adrenal. Brain Res. 1987 Mar 17;406(1-2):24-31.

[3]. Jiang L, et al. Decrease of growth and differentiation factor 10 contributes to neuropathic pain through N-methyl-D-aspartate receptor activation. Neuroreport. 2017 May 24;28(8):444-450.

CAIndexNames:

D-Aspartic acid, N-methyl-

SMILES:

O=C(O)C[C@H](C(O)=O)NC

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