D-Serine

Cat. No.: HY-100808

CAS No.: 312-84-5

Molecular Formula: $C_3H_7NO_3$

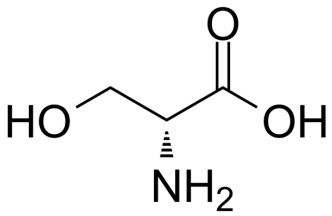
Molecular Weight: 105.09

Target: iGluR; Endogenous Metabolite

Pathway: Membrane Transporter/Ion Channel; Neuronal Signaling; Metabolic Enzyme/Protease

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

H_2O : ≥ 50 mg/mL (475.78 mM)

Methanol : < 1 mg/mL (ultrasonic;warming;heat to 60°C) (insoluble)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Concentration \ Solvent \ Mass	1 mg	5 mg	10 mg
1 mM	9.5157 mL	47.5783 mL	95.1565 mL
5 mM	1.9031 mL	9.5157 mL	19.0313 mL
10 mM	0.9516 mL	4.7578 mL	9.5157 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 50 mg/mL (475.78 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

D-Serine ((R)-Serine), an endogenous amino acid involved in glia-synapse interactions that has unique neurotransmitter characteristics, is a potent co-agonist at the NMDA glutamate receptor. D-Serinee has a cardinal modulatory role in major NMDAR-dependent processes including NMDAR-mediated neurotransmission, neurotoxicity, synaptic plasticity, and cell migration[1][2].

IC_{50} & Target		
	NMDA Receptor	Human Endogenous Metabolite

In Vitro

(R)-Serine is synthesized from L-Ser by serine racemase (SR) and degraded by D-amino acid oxidase (DAAO) and SR. Distribution of D-Ser and NMDAR as determined by chemical measurement and immunohistochemistry supports D-Ser as an endogenous coagonist acting on the glycine modulatory site of the NR1 subunits of the NMDAR[3].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

(R)-Serine (10 g/L; p.o.; throughout 8 weeks) regulates HFD induced weight gain[4].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Four week old male C57Bl/6 mice
Dosage:	10 g/L
Administration:	Oral administration (drinking water supplemented with 10 g/l D-serine); throughout 8 weeks
Result:	Showed strongly reduced weight gain during the first week of supplementation with paralleled weight gain to HFD fed mice, but no catch up thereafter.

CUSTOMER VALIDATION

- Research Square Preprint. 2022 Jan.

See more customer validations on www.MedChemExpress.com

REFERENCES

[1]. Andrea R. Durrant, et al. D-Serine in Neuropsychiatric Disorders: New Advances.

[2]. MacKay MB, et al. D-Serine: Potential Therapeutic Agent and/or Biomarker in Schizophrenia and Depression? Front Psychiatry. 2019 Feb 6;10:25.

[3]. Dai X, et al. D-Serine made by serine racemase in Drosophila intestine plays a physiological role in sleep. Nat Commun. 2019 May 7;10(1):1986.

[4]. Suwandhi L, et al. Chronic d-serine supplementation impairs insulin secretion. Mol Metab. 2018 Oct;16:191-202.

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