Data Sheet (Cat.No.T4808)

TargetMol

Agmatine sulfate

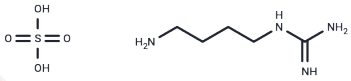
Chemical Properties

CAS No. : 2482-00-0

Formula: C5H16N4O4S

Molecular Weight: 228.27

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.



Biological Description

Description	Agmatine sulfate (Agmatine sulfate salt) is a bioactive metabolite of the arginine amino acid. It exerts modulatory action at multiple molecular targets, such as neurotransmitter systems, ion channels and nitric oxide synthesis. It is an endogenous agonist at imidazoline receptor and a NO synthase inhibitor.
Targets(IC50)	Endogenous Metabolite,NO Synthase,Imidazoline Receptor
In vitro	Agmatine, locally synthesized, is an endogenous agonist at imidazoline receptors, a noncatecholamine ligand at alpha 2-adrenergic receptors and may act as a neurotransmitter[1]. Agmatine is synthesized in the brain, stored in synaptic vesicles in regionally selective neurons, accumulated by uptake, released by depolarization, and inactivated by agmatinase. Agmatine inhibits nitric oxide synthase and induces the release of some peptide hormones[2]. Agmatine, 4-(aminobutyl)guanidine, is produced by decarboxylation of L-arginine by the enzyme arginine decarboxylase. Agmatine is a competitive inhibitor of all NOS isoenzymes but not a NO precursor. Ki values are approximately 660 μM (NOS I), 220 μM (NOS II) and 7.5 mM (NOS III)[3]. Agmatine stimulates nitrite production three-fold above basal nitrite formation by endothelial cells. Agmatine displaces [3H]-idazoxan from endothelial cell membranes and is found to induce transients in the cytosolic calcium of endothelial cells. The transients could be downregulated by repeated exposure to agmatine but are not affected by pretreatment with norepinephrine[4].
In vivo	Agmatine exhibits an antidepressant-like effect in the forced swimming test and the tail suspension test in mice (dose range 0.01-50 mg/kg, i.p.), with no alterations in ambulation in an open-field[5].

Solubility Information

Solubility	DMSO: Insoluble, H2O: 10 mM,Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	4.3808 mL	21.9039 mL	43.8078 mL
5 mM	0.8762 mL	4.3808 mL	8.7616 mL
10 mM	0.4381 mL	2.1904 mL	4.3808 mL
50 mM	0.0876 mL	0.4381 mL	0.8762 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Li G, et al. Agmatine: an endogenous clonidine-displacing substance in the brain. Science. 1994 Feb 18;263(5149):966-9.
Reis DJ, et al. Is agmatine a novel neurotransmitter in brain? Trends Pharmacol Sci. 2000 May;21(5):187-93.
Galea E, et al. Inhibition of mammalian nitric oxide synthases by agmatine, an endogenouspolyamine formed by decarboxylation of arginine. Biochem J. 1996 May 15;316 (Pt 1):247-9.
Morrissey JJ, et al. Agmatine activation of nitric oxide synthase in endothelial cells. Proc Assoc Am Physicians. 1997 Jan;109(1):51-7.
Zomkowski AD, et al. Agmatine produces antidepressant-like effects in two models of depression in mice. Neuroreport. 2002 Mar 25;13(4):387-91.
Ahn SS, et al. Effects of agmatine on blood-brain barrier stabilization assessed by permeability MRI in a rat model of transient cerebral ischemia. AJNR Am J Neuroradiol. 2015 Feb;36(2):283-8.
Neis VB, et al. Agmatine enhances antidepressant potency of MK-801 and conventional antidepressants in mice. Pharmacol Biochem Behav. 2015 Mar;130:9-14.