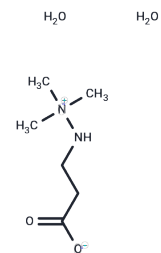


Mildronate dihydrate

Chemical Properties

CAS No. :	86426-17-7
Formula:	C ₆ H ₁₈ N ₂ O ₄
Molecular Weight:	182.22
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	Mildronate dihydrate is an inhibitor of biosynthesis of L-carnitine by gamma-butyrobetaine (GBB) hydroxylase and as a competitive inhibitor of renal carnitine reabsorption.
Targets(IC50)	Others, Mitochondrial Metabolism
In vitro	Mildronate (40 μM) inhibits the reaction of γ-butyrobetaine hydroxylase with γ-butyrobetaine with Km and Vmax of 36.8 μM and 0.08 nmol/min/mg protein, respectively. [1]
In vivo	Mildronate administered orally to rats for 10 days (150 mg/kg) elicits a reduction in myocardial free carnitine and long-chain acyl carnitine content by 63.7 and 74.3%, respectively. Mildronate treatment (100 mg/kg, orally) subsequent administration of isoproterenol results in a reduction in free carnitine concentration by 48.7% in comparison with the rats receiving isoproterenol. A prior administration of Mildronate effectively protects the myocardium from isoproterenol-induced variations in the content of ATP and myocardial energy charge, as well as preventing a rise in creatine phosphokinase and lactic dehydrogenase activity. [1] Mildronate (200 mg/kg) long-term treatment significantly increases the rate of insulin-stimulated glucose uptake by 35% and the expression of glucose transporter 4 (1.7-fold increase), hexokinase II (2.1-fold increase), insulin receptor proteins (2.5-fold increase) and carnitine palmitoyltransferases IA (2.2-fold increase) in mouse hearts. Mildronate long-term treatment statistically significantly decreases fed state blood glucose from 6 to 5 mM. [2] Mildronate reduces the azidothymidine-induced alterations in mouse brain tissue. Mildronate (50 mg/kg) normalizes the increase in caspase-3, cellular apoptosis susceptibility protein (CAS) and iNOS expression. Mildronate also normalizes the changes in cytochrome c oxidase (COX) expression, reduces the expression of glial fibrillary acidic protein (GFAP) and cellular infiltration. [3]

Solubility Information

Solubility	DMSO: Insoluble, H ₂ O: 10 mM, Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
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Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	5.4879 mL	27.4394 mL	54.8787 mL
5 mM	1.0976 mL	5.4879 mL	10.9757 mL
10 mM	0.5488 mL	2.7439 mL	5.4879 mL
50 mM	0.1098 mL	0.5488 mL	1.0976 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

- Simkhovich BZ, et al. *Biochem Pharmacol*, 1988, 37(2), 195-202.
- Liepinsh E, et al. *Life Sci*, 2008, 83(17-18), 613-619.
- Pupure J, et al. *Neurosci Lett*, 2010, 470(2), 100-105.
- Liepinsh E, et al. *Br J Pharmacol*, 2009, 157(8), 1549-1556.

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