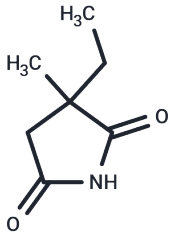
Data Sheet (Cat.No.T0728)

TargetMol

Ethosuximide

Chemical Properties



CAS No. : 77-67-8

Formula: C7H11NO2

Molecular Weight: 141.17

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	Ethosuximide (Zarontin) is an anticonvulsant, blocks the low voltage-activated T-type calcium channel used in the treatment of absence seizures unaccompanied by other types of seizures.
Targets(IC50)	Calcium Channel
In vitro	Ethosuximide(ETH) enhances hippocampal derived NSC proliferation and neurospheres formation in vitro. Low concentration of ETH induces proliferation of NSC, while higher concentrations of ETH are cytotoxic. Also, ETH activates the PI3K/Akt signal transduction pathway in adult hippocampal NSC in vitro. Blockade of the PI3K/Akt pathway inhibits ETH induced hippocampal NSC neuronal differentiation[3].
In vivo	Anti-epileptic drug ethosuximide rescues the short lifespan and chemosensory defects exhibited by C. elegans null mutants of dnj-14, the worm orthologue of the DNAJC5 gene mutated in autosomal-dominant adult-onset neuronal ceroid lipofuscinosis. It also ameliorates the locomotion impairment and short lifespan of worms expressing a human Tau mutant that causes frontotemporal dementia[1]. Ethosuximide extends lifespan by inhibiting the function of specific chemosensory neurons[2]. It increases neurogenesis, reduces neurodegeneration, and reverses cognitive impairments in rat model of AD like phenotypes[3].
Cell Research	Mouse Neuro2A (N2A) neuroblastoma cells are cultured on 6-well plates and treated with retinoic acid to induce neuronal differentiation. After 24 h, N2A cells are treated with vehicle control (PBS) or increasing concentrations of ethosuximide for 5 h. Total RNA is then isolated, DNase-treated and reverse transcribed to cDNA. qRT-PCR is run above normalising to the reference genes glyceraldehyde-3-phosphate dehydrogenase (GAPDH) and β-actin (ACTB). (Only for Reference)

Solubility Information

Solubility	H2O: 198.3 mM,Sonication is recommended. DMSO: 250 mg/mL (1770.91 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 2 mg/mL (14.17 mM),Sonication is recommended. 10% DMSO+90% Saline: 10 mg/mL (70.84 mM),Solution.

In vivo Formulation	*Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	7.0837 mL	35.4183 mL	70.8366 mL
5 mM	1.4167 mL	7.0837 mL	14.1673 mL
10 mM	0.7084 mL	3.5418 mL	7.0837 mL
50 mM	0.1417 mL	0.7084 mL	1.4167 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

Chen X, et al. Mol Neurodegener. 2015, 10:51.
Wang X, Luo J, Wen Z, et al. Diltiazem inhibits SARS-CoV-2 cell attachment and internalization and decreases the viral infection in mouse lung. PLoS pathogens. 2022, 18(2): e1010343.
Collins JJ, et al. PLoS Genet. 2008, 4(10):e120200230.
Tiwari SK, et al. J Biol Chem. 2015, 290(47):28540-28558.
Coulter DA, et al. Ann Neurol. 1989, 25(6):582-93.

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