Triheptanoin

Cat. No.: HY-W013136

CAS No.: 620-67-7

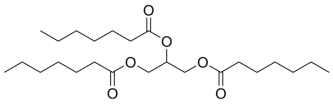
Molecular Formula: $C_{24}H_{44}O_6$

Molecular Weight: 428.61

Target: Others

Pathway: Others

Storage: 4°C, protect from light
* In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 50 mg/mL (116.66 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.3331 mL	11.6656 mL	23.3312 mL
	5 mM	0.4666 mL	2.3331 mL	4.6662 mL
	10 mM	0.2333 mL	1.1666 mL	2.3331 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (5.83 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (5.83 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (5.83 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Triheptanoin (Propane-1,2,3-triyl triheptanoate) is a synthetic medium-chain triglyceride (MCT) consisting of three odd-chain 7-carbon (heptanoate) fatty acids on a glycerol backbone. Triheptanoin can be used for the research of inherited metabolic disorders[1].

In Vivo

In long-chain fatty acid oxidation disorders (LC-FAOD), Triheptanoin is used as an anaplerotic compound, acting as a source of calories and fatty acids to bypass the LC-FAOD enzyme deficiencies[1].
Triheptanoin can be used for the research of ataxia-telangiectasia (A-T)[2].
Triheptanoin functions as an anaplerotic agent replenishing tricarboxylic acid (TCA) cycle intermediates by metabolism to heptanoate (C7) and subsequently acetyl-CoA and propionyl-CoA that feed into the TCA cycle to supply energy[2].

Triheptanoin mitigates brain ATP depletion and mitochondrial dysfunction, including respiration and redox balance in a mouse model of Alzheimer's disease, supporting the energy failure hypothesis for that disorder[2].
Triheptanoin (Mice were treated with Triheptanoin (35E%) for 10 days prior to pilocarpine injection to induce status epilepticus) preserved mitochondrial functions in the hippocampal formations of pilocarpine-induced status epilepticus (SE) mice[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	7-8 week old male CD1 (35-40 g)[3]
Dosage:	35E% oral Triheptanoin was mixed into mouse chow
Administration:	Given 35E% Triheptanoin treatment 10 days prior to SE induction
Result:	Preserved mitochondrial functions in SE mice.

REFERENCES

[1]. Matt Shirley. Triheptanoin: First Approval. Drugs. 2020 Oct;80(15):1595-1600.

[2]. A J Yeo, et al. An anaplerotic approach to correct the mitochondrial dysfunction in ataxia-telangiectasia (A-T). Mol Metab. 2021 Dec;54:101354.

[3]. Kah Ni Tan, et al. Triheptanoin protects against status epilepticus-induced hippocampal mitochondrial dysfunctions, oxidative stress and neuronal degeneration. J Neurochem. 2018 Feb;144(4):431-442.

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