Mitochondrial fusion promoter M1

Cat. No.: HY-111475

CAS No.: 219315-22-7

Molecular Formula: $C_{14}H_{10}Cl_4N_2O$

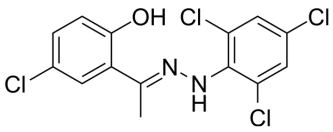
Molecular Weight: 364.05

Target: Mitochondrial Metabolism

Pathway: Metabolic Enzyme/Protease

Storage:

Powder	-20°C	3 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 41.67 mg/mL (114.46 mM; ultrasonic and warming and heat to 60°C)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	2.7469 mL	13.7344 mL	27.4688 mL
	5 mM	0.5494 mL	2.7469 mL	5.4938 mL
	10 mM	0.2747 mL	1.3734 mL	2.7469 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (5.71 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: 0.5 mg/mL (1.37 mM); Clear solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 0.5 mg/mL (1.37 mM); Suspended solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Mitochondrial fusion promoter M1 is a mitochondrial dynamic modulator. Mitochondrial fusion promoter M1 preserves the mitochondrial function and promotes cellular respiration. Mitochondrial fusion promoter M1 alleviates cardiac and brain damage in rats with cardiac ischemia/reperfusion injury[1][2][3].

In Vitro

Mitochondrial fusion promoter M1 (5-25 μM; 24 h) promotes mitochondrial elongation in both Mitofusin-1 and Mitofusin -2 knock-out fibroblasts[2].

Mitochondrial fusion promoter M1 (20 μM; 12 h) decreases mito ROS to 1.0±0.44 fold, enhances mitochondrial membrane potential from 0.29±0.05 fold to 0.5±0.07 fold and restores mitochondrial architecture in BRIN-BD11 pancreatic beta cells[3].

Mitochondrial fusion promoter M1 (20 μM; 12 h) prevents the impairment of oxygen consumption rate in pancreatic beta cells due to cholesterol exposure[3].
Mitochondrial fusion promoter M1 (20 μM; 12 h) prevents the impairment of non-mitochondrial respiration and extracellular acidification rate (ECAR) in cholesterol enriched pancreatic beta cells[3].
Mitochondrial fusion promoter M1 (20 μM; 12 h) restores Glucose Stimulated Insulin Secretion (GSIS) in cholesterol treated pancreatic beta cells[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Mitochondrial fusion promoter M1 (2 mg/kg; i.v.) significantly protects rats with cardiac I/R injury against brain damage[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Male Wistar rats (250-300g) receiving cardiac ischemia/reperfusion (I/R)[1]
Dosage:	2 mg/kg
Administration:	I.v. 15 minutes before cardiac I/R injury
Result:	Increased brain mitochondrial fusion. Increased blood-brain barrier (BBB) tight junction protein, and reduced macrophage infiltration in the brain. Reduced brain mitochondrial dysfunction and apoptosis, but it did not reduce mitochondrial oxidative stress. Reduced the expression of Alzheimer's disease (AD)-related proteins.

CUSTOMER VALIDATION

- Ecotoxicol Environ Saf. 2023 Apr 5;256:114876.

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REFERENCES

[1]. Surinkaew P, et, al. Mitochondrial Fusion Promoter Alleviates Brain Damage in Rats with Cardiac Ischemia/Reperfusion Injury. J Alzheimers Dis. 2020;77(3):993-1003.

[2]. Wang D, et, al. A small molecule promotes mitochondrial fusion in mammalian cells. Angew Chem Int Ed Engl. 2012 Sep 10;51(37):9302-5.

[3]. Asalla S, et, al. Restoring Mitochondrial Function: A Small Molecule-mediated Approach to Enhance Glucose Stimulated Insulin Secretion in Cholesterol Accumulated Pancreatic beta cells. Sci Rep. 2016 Jun 10;6:27513.

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