EPI-743

Cat. No.: HY-16772

CAS No.: 1213269-98-7

Molecular Formula: $C_{29}H_{44}O_3$

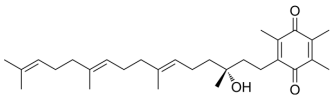
Molecular Weight: 440.66

Target: Mitochondrial Metabolism; Ferroptosis

Pathway: Metabolic Enzyme/Protease; Apoptosis

Storage:

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



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (226.93 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	2.2693 mL	11.3466 mL	22.6932 mL
	5 mM	0.4539 mL	2.2693 mL	4.5386 mL
	10 mM	0.2269 mL	1.1347 mL	2.2693 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 (5.67 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (5.67 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

EPI-743 (Vatiquinone; α-Tocotrienol quinone; PTC-743; NCT04378075) is a potent cellular oxidative stress protectant, inhibits ferroptosis in cells, which could be used for the study for mitochondrial diseases. EPI-743 is a synthetic analog of vitamin E with oral activity, targets repletion of reduced intracellular glutathione[1][2].

IC_{50} & Target

Mitochondria[1].

In Vitro

Ferroptosis is a form of iron- and lipid-dependent regulated cell death associated with glutathione depletion and production of lipid peroxides by lipoxygenase enzymes.
EPI-743 prevents RSL3-induced ferroptosis in PCH6 patient fibroblasts with mean EC_{50} potency values of 17.3-21.8 nM[3].
EPI-743 (37, 111, 333 nM; 24 h) exhibits prevention of BODIPY 581/591 C11 lipid oxidation[3].
EPI-743 (0.1 nM-1 mM; 48 h) potently prevents ferroptosis induced by RSL3 (2 μM), FeC (100 μM), BSO (50 μM)[3].

EPI-743 (1 μM, 3 h) is reduced to EPI-743 hydroquinone (EPI-743-HQ) in PCH6 patient fibroblasts, and EPI-743-HQ (0.1-100 μM; 30 min) inhibits human 15-LO enzyme activity with 20% inhibition at 100 μM, and IC_{50} is 4.4 μM[3].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[3]

Cell Line:	Primary fibroblasts and B-lymphocytes
Concentration:	0-1 mM
Incubation Time:	48 hours
Result:	Inhibited RSL3-mediated ferroptotic cell death in B-lymphocytes in a dose-dependent manner. Restored viability to levels comparable with untreated cells, indicating complete rescue.

REFERENCES

[1]. Avula S, et al. Treatment of Mitochondrial Disorders. Curr Treat Options Neurol. 2014. 16:292.

[2]. Kahn-Kirby AH, et al. Targeting ferroptosis: A novel therapeutic strategy for the treatment of mitochondrial disease-related epilepsy. PLoS One. 2019 Mar 28;14(3):e0214250.

[3]. Kouga T, et al. Japanese Leigh syndrome case treated with EPI-743. Brain Dev. 2018 Feb;40(2):145-149. Brain Dev. 2018 Feb;40(2):145-149.

Caution: Product has not been fully validated for medical applications. For research use only.

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