

Mitochonic acid 5

Chemical Properties

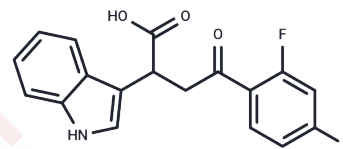
CAS No. : 1354707-41-7

Formula: C₁₈H₁₃F₂N₃

Molecular Weight: 329.3

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	Mitochonic acid 5 (MA-5) is a derivative of the plant hormone indole-3-acetic acid. Mitochonic acid 5 binds mitochondria and ameliorates renal tubular and cardiac myocyte damage. It has been shown to improve survival of fibroblasts from patients with mitochondrial diseases.
Targets(IC50)	OXPPOS, Mitochondrial Metabolism
In vitro	Treatment with MA-5 reduced mitochondrial apoptosis via upregulation of mitophagy. Increased mitophagy degraded damaged mitochondria, disrupting mitochondrial apoptosis, neutralizing ROS overproduction, and improving cellular energy production. We also identified that MA-5 regulated mitophagy via Bnip3 through the MAPK-ERK-Yap signaling pathway. Inhibiting this signaling pathway or knocking down Bnip3 expression prevented MA-5 from having beneficial effects on mitochondrial homeostasis and increased microglial apoptosis[1].
Cell Research	TNF α was used to induce inflammatory injury in mouse microglial BV-2 cells with and without prior MA-5 treatment. Cellular apoptosis was assessed using the MTT and TUNEL assays. Mitochondrial functions were evaluated via mitochondrial membrane potential JC-1 staining, ROS flow cytometry analysis, mPTP opening assessment, and immunofluorescence of cyt-c. Mitophagy was examined using western blots and immunofluorescence. The pathways analysis was carried out using western blots and immunofluorescence with a pathway blocker[1].

Solubility Information

Solubility	DMSO: 120 mg/mL (364.41 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: 3.3 mg/mL (10.02 mM), Sonication is recommended. <i>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.</i>

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.0367 mL	15.1837 mL	30.3674 mL
5 mM	0.6073 mL	3.0367 mL	6.0735 mL
10 mM	0.3037 mL	1.5184 mL	3.0367 mL
50 mM	0.0607 mL	0.3037 mL	0.6073 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

Lei Q, et al. Mitochondrial acid 5 activates the MAPK-ERK- γ signaling pathways to protect mouse microglial BV-2 cells against TNF α -induced apoptosis via increased Bnip3-related mitophagy. *Cell Mol Biol Lett*. 2018 Apr 5;23:14.
Suzuki T, et al. Mitochondrial Acid 5 Binds Mitochondria and Ameliorates Renal Tubular and Cardiac Myocyte Damage. *J Am Soc Nephrol*. 2016 Jul;27(7):1925-32.

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