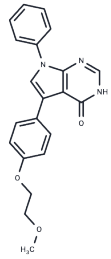
Data Sheet (Cat.No.T5483)

TargetMol

DMX-5804

Chemical Properties



CAS No. : 2306178-56-1

Formula: C21H19N3O3

Molecular Weight: 361.39

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	DMX-5804 is a potent, selective MAP4K4 inhibitor, with an IC50 of 3 nM.DMX-5804 enhances cardiomyocyte survival, and reduces ischemia-reperfusion injury in mice.
Targets(IC50)	MAPK
In vitro	DMX-5804, that rescues cell survival, mitochondrial function.
In vivo	DMX-5804 reduces ischemia-reperfusion injury in mice by more than 50%.
Cell Research	Mitochondrial function in hiPSC-CMs was determined using a Seahorse XFe24 Analyzer.?vCor.4U cells (60,000/well) were transferred to 0.1% gelatin-coated XF24 plates and maintained for 5 d. On day 6, DMX-5804 was added 45 min prior to challenge with menadione for 2 h. The medium was replaced 1 hr before the assay, using bicarbonate-free Seahorse assay medium (8.3 g L-1 DMEM Base , 10 mM glucose, 2 mM L-alanyl-L-glutamine dipeptide, 1 mM sodium pyruvate , pH 7.4).?Cells were maintained at 37 C without supplemental CO2 starting 1 hr before the assay.?For each state measured, three assay cycles were performed (4 min mixing, 2 min wait, and 2 min measurement periods, with readings every 15 s). The basal oxygen consumption rate (OCR) and extracellular acidification rate were determined, followed by sequential injection of 1 μM oligomycin A to inhibit ATP synthase, 0.5 μM carbonyl cyanide-4-phenylhydrazone to uncouple oxidative phosphorylation, and 1 μM antimycin A/rotenone to inhibit mitochondrial complex III and I. For each condition, 12 wells were tested, comprising 4 independent experiments.
Animal Research	n vivo pharmacokinetic profiling was performed in female CD-1 mice, using 3 animals per time point.?First, 30% w/v Kleptose as excipient was dissolved in water and vortexed gently for several min. Next, 30 mg of DMX-5084?was dissolved into 0.6 mL of DMSO, for a concentration of 50 mg ml-1, and 4.5 mL of the Kleptose solution was added to 0.5 mL of the test compound solution.?A precipitate forms, which re-dissolves over 2-5 min, leaving a clear or slightly hazy solution with a final concentration of 5 mg/ml.?The dosing solution is used as soon as practicable, vortexing immediately prior to use.?This amount was sufficient formulation for 25 doses of 200 μL (20 g mouse).?Compounds were administered orally at 50 mg/kg, with terminal blood (plasma) sampling at 10 min, 30 min, 1 h, 2.5 h, 5 h, 10 h, and 20 h[1].

Solubility Information

Solubility	DMSO: 125 mg/mL (345.89 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: 5 mg/mL (13.84 mM),Solution. 10% DMSO+90% Saline: < 5 mg/mL (13.84 mM),Lower concentrations may be soluble, but exact solubility limit is unknown. *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	2.7671 mL	13.8355 mL	27.6709 mL
5 mM	0.5534 mL	2.7671 mL	5.5342 mL
10 mM	0.2767 mL	1.3835 mL	2.7671 mL
50 mM	0.0553 mL	0.2767 mL	0.5534 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

Fiedler LR, et al. MAP4K4 Inhibition Promotes Survival of Human Stem Cell-Derived Cardiomyocytes and Reduces Infarct Size In Vivo. Cell Stem Cell. 2019 Mar 1. pii: S1934-5909(19)30013-X.
Zhang Z, Zhou H, Gu W, et al.CGI1746 targets σ1R to modulate ferroptosis through mitochondria-associated membranes.Nature Chemical Biology.2024: 1-11.