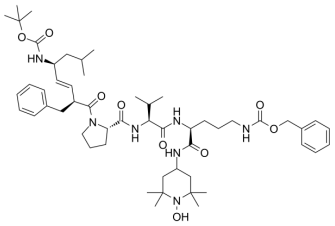
XJB-5-131

Cat. No.:	HY-129460
CAS No.:	866404-31-1
Molecular Formula:	$C_{53}H_{81}N_7O_9$
Molecular Weight:	960.25
Target:	Reactive Oxygen Species
Pathway:	Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 6 months -20°C 1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 125 mg/mL (130.17 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	1.0414 mL	5.2070 mL	10.4140 mL
	5 mM	0.2083 mL	1.0414 mL	2.0828 mL
	10 mM	0.1041 mL	0.5207 mL	1.0414 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: ≥ 2.08 mg/mL (2.17 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (2.17 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

XJB-5-131 is a mitochondria-targeted ROS and electron scavenger[1]. XJB-5-131 is a bi-functional antioxidant that comprises a radical scavenger. XJB-5-131 is a synthetic antioxidant that targets mitochondria[2]. XJB-5-131 is an effective ionizing irradiation protector and mitigator of cord blood mononuclear cells (CB MNCs)[3].

In Vitro

XJB-5-131 also ameliorates hemorrhagic shock (HS)-induced activation of the pro-apoptotic enzymes, caspases 3 and 7, in ileal mucosa[1].

XJB-5-131 reduces apoptosis and enhances cell survival in mouse embryonic cells in vitro[2].

XJB-5-131 is a radiation protector for colony-forming unit-granulocyte macrophage (CFU-GM). XJB-5-131 is an effective mitigator when added after irradiation[3].

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

Cell Viability Assay[3]

Cell Line:	Low density mononuclear cells (MNC)
Concentration:	10 μM
Incubation Time:	Added to cells one hour before irradiation or immediately after irradiation
Result:	Was a protector when given before irradiation as shown by an increase in the D0 to 1.93±0.13 for CFU-GM with XJB-5-131.

In Vivo

XJB-5-131 ameliorates peroxidation of the mitochondrial phospholipid, cardiolipin, in ileal mucosal samples from rats subjected to hemorrhagic shock (HS) [1].

Intravenous treatment with XJB-5-131 (2 μmol/kg) significantly prolongs the survival of rats subjected to profound blood loss (33.5 mL/kg) despite administration of only a minimal volume of crystalloid solution (2.8 mL/kg) and the absence of blood transfusion[1].

XJB-5-131 reduces oxidative damage to mitochondrial DNA, maintains mitochondrial DNA copy number, suppresses motor decline and weight loss, enhances neuronal survival, and improves mitochondrial function. XJB-5-131 significantly suppresses the disease phenotypes and improves mitochondrial function in a mouse model of Huntington's disease (HD) [2].

XJB-5-131 (1 mg/kg; intraperitoneally injected; three times a week up to 57 weeks) suppresses decline of weight loss and motor function in a mouse model of HD[2].

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

Animal Model:	Male specific pathogen-free Sprague-Dawley rats, weighing 150 to 250 g[1]
Dosage:	2 μmol/kg
Administration:	Administered intravenously using a syringe pump
Result:	The rats treated with XJB-5-131 survived significantly longer ($P < 0.01$). Three of six survived for longer than 3 hours after completion of the hemorrhage protocol and one rat survived for the whole 6 hours postbleeding observation period.

Animal Model:	HD150KI mice[2]
Dosage:	1 mg/kg
Administration:	Intraperitoneally injected; three times a week up to 57 weeks
Result:	Chronic treatment suppressed weight loss. Increased the average body mass by 22%.

CUSTOMER VALIDATION

- Cell Prolif. 2023 Jun 21;e13521.
- Discov Oncol. 2023 Jun 23;14(1):107.

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REFERENCES

[1]. Carlos A Macias, et al. Treatment with a novel hemigramicidin-TEMPO conjugate prolongs survival in a rat model of lethal hemorrhagic shock. Ann Surg. 2007

Feb;245(2):305-14.

[2]. Zhiyin Xun, et al. Targeting of XJB-5-131 to mitochondria suppresses oxidative DNA damage and motor decline in a mouse model of Huntington's disease. Cell Rep. 2012 Nov 29;2(5):1137-42.

[3]. Julie P Goff, et al. Evaluation of potential ionizing irradiation protectors and mitigators using clonogenic survival of human umbilical cord blood hematopoietic progenitor cells. Exp Hematol. 2013 Nov;41(11):957-66.

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