

XJB-5-131

## Chemical Properties

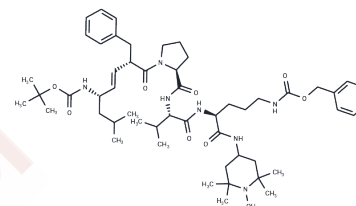
CAS No. : 866404-31-1

Formula: C53H80N7O9

Molecular Weight: 959.263

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	XJB-5-131 is a synthetic, bi-functional antioxidant specifically designed to target mitochondria for the scavenging of reactive oxygen species (ROS) and electrons, thereby acting as a radical scavenger. Additionally, it serves as an effective protector and mitigator against ionizing irradiation for cord blood mononuclear cells (CB MNCs).
Targets(IC50)	Others, Reactive Oxygen Species
In vitro	XJB-5-131 mitigates hemorrhagic shock (HS)-induced activation of caspases 3 and 7, key pro-apoptotic enzymes, in the ileal mucosa, thereby reducing apoptosis and enhancing cell survival, as evidenced in mouse embryonic cells in vitro. Additionally, it serves as an effective radiation shield, particularly for colony-forming unit-granulocyte macrophage (CFU-GM), displaying significant protective and mitigative effects when administered before or after irradiation. This is demonstrated by its capacity to increase the D0 to 1.93 ±0.13 for CFU-GM when provided as a treatment, highlighting its potential as a versatile agent in cellular protection and survival enhancement mechanisms.
In vivo	XJB-5-131 mitigates peroxidation of cardiolipin, a key mitochondrial phospholipid, in rat ileal mucosal samples following hemorrhagic shock (HS)[1], and intravenous administration at 2 µmol/kg notably extends survival in rats experiencing severe blood loss (33.5 mL/kg), with minimal crystalloid solution volume (2.8 mL/kg) and no blood transfusion[1]. It also diminishes oxidative harm to mitochondrial DNA, upholds mitochondrial DNA quantity, halts motor function degradation and weight loss, augments neuronal preservation, and boosts mitochondrial efficiency. In a Huntington's disease (HD) mouse model, XJB-5-131 significantly curtails disease phenotypes and enhances mitochondrial performance[2], and at a dosage of 1 mg/kg, given intraperitoneally three times weekly for up to 57 weeks, it counters weight and motor function decline[2]. Study specifics include utilization of male Sprague-Dawley rats (150 to 250 g)[1] with outcomes showing marked survival improvement (P < 0.01), and HD150KI mice for HD research[2], where chronic treatment inhibited weight reduction and elevated average body mass by 22%.

### Preparing Stock Solutions

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	1mg	5mg	10mg
1 mM	1.0425 mL	5.2124 mL	10.4247 mL
5 mM	0.2085 mL	1.0425 mL	2.0849 mL
10 mM	0.1042 mL	0.5212 mL	1.0425 mL
50 mM	0.0208 mL	0.1042 mL	0.2085 mL

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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

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.

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.

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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