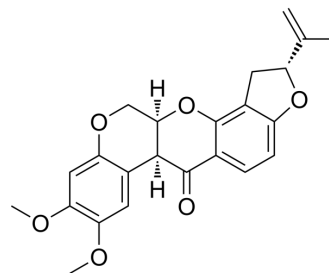


Rotenone

Cat. No.:	HY-B1756
CAS No.:	83-79-4
Molecular Formula:	C ₂₃ H ₂₂ O ₆
Molecular Weight:	394.42
Target:	Mitochondrial Metabolism; Autophagy; Apoptosis
Pathway:	Metabolic Enzyme/Protease; Autophagy; Apoptosis
Storage:	4°C, stored under nitrogen * In solvent : -80°C, 1 year; -20°C, 6 months (stored under nitrogen)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 50 mg/mL (126.77 mM; Need ultrasonic)
H₂O : < 0.1 mg/mL (ultrasonic) (insoluble)

Preparing Stock Solutions	Solvent Concentration	Mass	1 mg	5 mg	10 mg
	1 mM		2.5354 mL	12.6768 mL	25.3537 mL
	5 mM		0.5071 mL	2.5354 mL	5.0707 mL
	10 mM		0.2535 mL	1.2677 mL	2.5354 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

- Add each solvent one by one: 0.5% CMC-Na/saline water
Solubility: 25 mg/mL (63.38 mM); Suspended solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 2.5 mg/mL (6.34 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: 2.5 mg/mL (6.34 mM); Suspended solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 2.5 mg/mL (6.34 mM); Clear solution
- Add each solvent one by one: 5% DMSO >> 95% (20% SBE-β-CD in saline)
Solubility: 2.5 mg/mL (6.34 mM); Suspended solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Rotenone is a mitochondrial electron transport chain complex I inhibitor. Rotenone induces apoptosis through enhancing mitochondrial reactive oxygen species production.

In Vitro	<p>Mitogen Activated Protein Kinase (MAPK), Toll-like receptor, Wnt, and Ras signaling pathways are intensively involved in the effect of rotenone on the ENS^[2].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
In Vivo	<p>Rotenone can be used in animal modeling to construct Parkinson's syndrome models. Rotenone causes a significant increase in the excitatory amino acid neurotransmitters; glutamate and aspartate together with a significant decrease in the inhibitory amino acids, GABA, glycine and taurine are observed in the cerebellum of rat model of PD^[1]. Rotenone (1.5, 2, or 2.5 mg/kg) causes a dose-dependent increase in α-synuclein in the substantia nigra. Furthermore, at 2 and 2.5 mg/kg, rotenone causes a significant decrease in the number of tyrosine hydroxylase-immunoreactive neurons in the substantia nigra, and dopamine in the striatum in rats^[4].</p> <p>Induction of Parkinson's model^[6]</p> <ul style="list-style-type: none"> Background <p>Cell loss of dopaminergic (DA) neurons in the substantia nigra is a common feature of Parkinson's disease. Rotenone induces DA neuronal cytotoxicity, leading to motor deficits in the substantia nigra and loss of DA neuronal cells in mice.</p> Specific Modeling Methods <p>Mice: male • C57BL/6J mice • 8 weeks old • 20-25 g Administration: 30 mg/kg in 12 mL/kg • po • once daily for 28 days • while control group treated with 0.5% Carboxymethylcellulose (CMC)</p> Modeling Indicators <p>Mouse dyskinesia: slow movement/inadequate movement ability.</p> Opposite Product(s): <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

CUSTOMER VALIDATION

- Nature. 2023 Sep;621(7977):188-195.
- Cell Stem Cell. 2023 Apr 6;30(4):450-459.e9.
- Nat Cancer. 2022 Aug;3(8):945-960.
- Nat Metab. 2022 Sep;4(9):1119-1137.
- Natl Sci Rev. 2021 Feb 10;8(7):nwab024.

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REFERENCES

- [1]. Khadrawy YA, et al. Cerebellar neurochemical and histopathological changes in rat model of Parkinson's disease induced by intrastriatal injection of rotenone. *Gen Physiol Biophys*. 2016 Nov 30.
- [2]. Guan Q, et al. RNA-Seq Expression Analysis of Enteric Neuron Cells with Rotenone Treatment and Prediction of Regulated Pathways. *Neurochem Res*. 2016 Nov 30.
- [3]. Kishore Kumar SN, et al. *Morinda citrifolia* mitigates rotenone-induced striatal neuronal loss in male Sprague-Dawley rats by preventing mitochondrial pathway of intrinsic apoptosis. *Redox Rep*. 2016 Nov 24:1-12.
- [4]. Zhang ZN, et al. Subcutaneous rotenone rat model of Parkinson's disease: dose exploration study. *Brain Res*. 2016 Nov 19. pii: S0006-8993(16)30776-4.
- [5]. Li N, et al. Mitochondrial complex I inhibitor rotenone induces apoptosis through enhancing mitochondrial reactive oxygen species production. *J Biol Chem*. 2003 Mar 7;278(10):8516-25.
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Caution: Product has not been fully validated for medical applications. For research use only.

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA