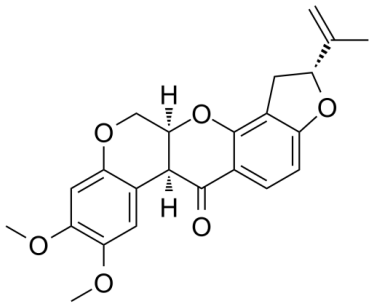
Data Sheet

Product Name:	Rotenone
Cat. No.:	CS-6067
CAS No.:	83-79-4
Molecular Formula:	C23H22O6
Molecular Weight:	394.42
Target:	Apoptosis; Autophagy; Mitochondrial Metabolism
Pathway:	Apoptosis; Autophagy; Metabolic Enzyme/Protease
Solubility:	DMSO : 50 mg/mL (126.77 mM; Need ultrasonic); H2O : < 0.1 mg/mL (insoluble)



BIOLOGICAL ACTIVITY:

Rotenone is an **mitochondrial electron transport chain complex I** inhibitor. Rotenone induces apoptosis through enhancing mitochondrial reactive oxygen species production. **In Vitro:** 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]. Rotenone-induced cell death is reduced by MCE treatment as measured by decline in the levels of pro-apoptotic proteins. Moreover, MCE treatment significantly augments the levels of anti-apoptotic Bcl2 and blocks the release of cytochrome c, thereby alleviating the rotenone-induced dopaminergic neuronal loss, as evidenced by tyrosine hydroxylase (TH) immunostaining in the striatum[3]. **In Vivo:** 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].

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.

CAIndexNames:

[1]Benzopyrano[3,4-b]furo[2,3-h][1]benzopyran-6(6aH)-one, 1,2,12,12a-tetrahydro-8,9-dimethoxy-2-(1-methylethenyl)-, (2R,6aS,12aS)-

SMILES:

O=C1[C@]2([H])[C@](COC3=CC(OC)=C(OC)C=C32)([H])OC4=C5C(O[C@@H](C(C)=C)C5)=CC=C14

Caution: Product has not been fully validated for medical applications. For research use only.

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