

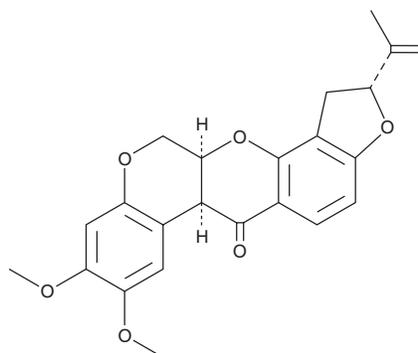
PRODUCT INFORMATION



Rotenone

Item No. 13995

CAS Registry No.: 83-79-4
Formal Name: (2R,6aS,12aS)-1,2,12,12a-tetrahydro-8,9-dimethoxy-2-(1-methylethenyl)-[1]benzopyrano[3,4-b]furo[2,3-h][1]benzopyran-6(6aH)-one
Synonyms: Nicouline, NSC 8505, NSC 26258, Tubatoxin
MF: C₂₃H₂₂O₆
FW: 394.4
Purity: ≥95%
UV/Vis.: λ_{max}: 236, 294 nm
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Rotenone is supplied as a crystalline solid. A stock solution may be made by dissolving the rotenone in the solvent of choice, which should be purged with an inert gas. Rotenone is soluble in organic solvents such as ethanol, DMSO, and chloroform. The solubility of rotenone in ethanol is approximately 5 mg/ml and approximately 50 mg/ml in DMSO and chloroform.

Description

Rotenone is a classical inhibitor of complex I of the mitochondrial electron transport chain, inhibiting NADH/DB oxidoreductase and NADH oxidase with IC₅₀ values of 28.8 and 5.1 nM, respectively.¹ In substantia nigra pars compacta neurons, it activates ATP-sensitive potassium channels and increases the production of reactive oxygen species (ROS) in the mitochondria, effects that are decreased by the antioxidant Trolox (Item No. 10011659).² In rodents, rotenone induces dopaminergic cell death in the substantia nigra, formation of cytoplasmic inclusions similar to Lewy bodies, oxidative damage to proteins, and parkinsonian symptoms of bradykinesia and rigidity.³ In a rat model of Parkinson's disease, chronic rotenone administration of 1.5 and 2.5 mg/kg per day for two months reduces tyrosine hydroxylase levels in the posterior striatum and prefrontal cortex, induces catalepsy, and decreases spontaneous locomotion and exploration in the open field test.⁴ Formulations containing rotenone have been used as insecticides and piscicides.⁵

References

1. Tormo, J.R., Gallardo, T., Peris, E., *et al.* Inhibitory effects on mitochondrial complex I of semisynthetic mono-tetrahydrofuran acetogenin derivatives. *Bioorg. Med. Chem. Lett.* **13(22)**, 4101-4105 (2003).
2. Freestone, P.S., Chung, K.K., Guatteo, E., *et al.* Acute action of rotenone on nigral dopaminergic neurons-involvement of reactive oxygen species and disruption of Ca²⁺ homeostasis. *Eur. J. Neurosci.* **30(10)**, 1849-1859 (2009).
3. Uversky, V.N. Neurotoxicant-induced animal models of Parkinson's disease: Understanding the role of rotenone, maneb and paraquat in neurodegeneration. *Cell Tissue Res.* **318(1)**, 225-241 (2004).
4. Alam, M. and Schmidt, W.J. Rotenone destroys dopaminergic neurons and induces parkinsonian symptoms in rats. *Behav. Brain Res.* **136(1)**, 317-324 (2002).
5. Soloway, S.B. Naturally occurring insecticides. *Environ. Health Perspect.* **14**, 109-117 (1976).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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