Ruscogenin

Cat. No.: HY-N0496

CAS No.: 472-11-7

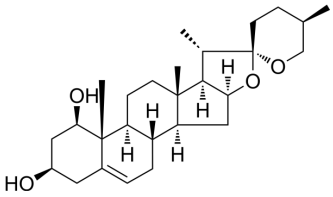
Molecular Formula: $C_{27}H_{42}O_4$

Molecular Weight: 430.62

Target: NOD-like Receptor (NLR)

Pathway: Immunology/Inflammation

Storage: 4°C, protect from light
* In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 4.31 mg/mL (10.01 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.3222 mL	11.6112 mL	23.2223 mL
	5 mM	0.4644 mL	2.3222 mL	4.6445 mL
	10 mM	0.2322 mL	1.1611 mL	2.3222 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 (4.83 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (4.83 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (4.83 mM); Clear solution
4. Add each solvent one by one: 50% PEG300 >> 50% saline
   Solubility: 1.67 mg/mL (3.88 mM); Suspended solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Ruscogenin, an important steroid sapogenin derived from Ophiopogon japonicus, attenuates cerebral ischemia-induced blood-brain barrier dysfunction by suppressing TXNIP/NLRP3 inflammasome activation and the MAPK pathway. Ruscogenin exerts significant anti-inflammatory and anti-thrombotic activities. Ruscogenin has orally bioactivity[1][2].

IC_{50} & Target

NLRP3

In Vitro

Ruscogenin (0.01-40 μM; 24 h) increases the cell viability in bEnd.3 cells subjected to OGD/R[1].

Ruscogenin (0.01-10 μM; 24 h) reverts the endothelial barrier leakage, inhibits the expression of IL-Iβ and Caspase-1, and modulats the TXNIP/NLRP3 pathway in bEnd.3 cells subjected to OGD/R[1].
Ruscogenin (0.01-10 μM; 4 h) inhibits the production of ROS, and regulated the MAPK Pathway in bEnd.3 Cells subjected to OGD/R[1].

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

Cell Viability Assay[1]

Cell Line:	bEnd.3 cell
Concentration:	0.01 μM, 0.1 μM, 1 μM, 10 μM, 20 μM, 40 μM
Incubation Time:	24 h
Result:	Showed that the cell viability reduction in OGD/R-induced bEnd.3 cell was significantly recovered.

Immunofluorescence[1]

Cell Line:	bEnd.3 cell
Concentration:	0.1 μM, 1 μM, 10 μM
Incubation Time:	24 h
Result:	Demonstrated increase in the TEER value and inhibition the sodium fluorescein permeability.

Western Blot Analysis[1]

Cell Line:	bEnd.3 cell
Concentration:	0.01 μM, 0.1 μM, 1 μM, 10 μM, 20 μM, 40 μM
Incubation Time:	24 h
Result:	Demonstrated downregulation of the expression of IL-1β and Caspase-1 proteins, and inhibition in the expressions of NLRP3 and TXNIP.

Immunofluorescence[1]

Cell Line:	bEnd.3 cell
Concentration:	0.01 μM, 0.1 μM, 1 μM, 10 μM, 20 μM, 40 μM
Incubation Time:	4 h
Result:	Demonstrated reduction in the production of ROS.

In Vivo

Ruscogenin (10 mg/kg; i.g.; 1 time) improves the MCAO/R-induced brain tissue injury and inhibits the expression of IL-1β and Caspase-1 and modulats the TXNIP/NLRP3[1].

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

Animal Model:	MCAO/R Mice[1]
Dosage:	10mg/kg
Administration:	Oral Gavage (i.g.)

Result:	Showed smaller infarct size, ameliorating histopathological damage by decreasing the cell loss, and significant increase in CBF (cerebral blood flow) compared to the model group. Resulted inhibiting the expression of IL-1β and Caspase-1, NLRP3 and TXNIP compared to the model group.

CUSTOMER VALIDATION

- Ecotoxicol Environ Saf. 2022 Dec 1;247:114263.
- Ecotoxicol Environ Saf. 2022, 247: 114263.

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REFERENCES

[1]. Cao G, et al. Ruscogenin Attenuates Cerebral Ischemia-Induced Blood-Brain Barrier Dysfunction by Suppressing TXNIP/NLRP3 Inflammasome Activation and the MAPK Pathway. Int J Mol Sci. 2016 Aug 29;17(9). pii: E1418.

[2]. Huang YL, et al. Possible mechanism of the anti-inflammatory activity of ruscogenin: role of intercellular adhesion molecule-1 and nuclear factor-kappaB. J Pharmacol Sci. 2008 Oct;108(2):198-205.

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