Astragalin

Cat. No.: HY-N0015

CAS No.: 480-10-4

Molecular Formula: $C_{21}H_{20}O_{11}$

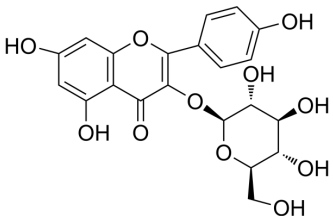
Molecular Weight: 448.38

Target: Apoptosis; NF-κB

Pathway: Apoptosis; NF-κB

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (223.03 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.2303 mL	11.1513 mL	22.3025 mL
	5 mM	0.4461 mL	2.2303 mL	4.4605 mL
	10 mM	0.2230 mL	1.1151 mL	2.2303 mL

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

In Vivo

1. Add each solvent one by one: 1% CMC-Na/saline water
   Solubility: 10 mg/mL (22.30 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (5.58 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (5.58 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (5.58 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Astragalin (Astragaline) a flavonoid with anti-inflammatory, antioxidant, anticancer, bacteriostatic activity. Astragalin inhibits cancer cells proliferation and migration, induces apoptosis. Astragalin is orally active and provides nerve and heart protection, and resistance against and osteoporosis[1].

IC_{50} & Target

p65

In Vitro

Astragalin (0-80 μg/mL; 24 h, 48 h, 72 h) inhibits cancer cells viability and migration at 20, 40, 80 μM, and shows no cytotoxicity to normal human colon epithelial cell lines NCM460[1].
Astragalin (80 μg/mL; 4 h, 8 h) interrupts the NF-κB signaling pathway and inhibits NF-κB P65 transcriptional activity in HCT116 cells stimulated by TNF-α[1].
Astragalin (20, 40, 80 μg/mL; 48 h) induces HCT116 cells apoptosis and arrests cell cycle at G0/G1 phase[1].
Astragalin (20, 40, 80 μg/mL; 48 h) increases the level of apoptin in HCT116 and decreases the level of anti-apoptotic proteins in a dose-dependent manner[1].

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

Cell Viability Assay[1]

Cell Line:	Human colon cancer cell lines (HCT116, LoVo, SW620, SW480, Caco2) and human colon epithelial cell lines NCM460
Concentration:	0, 5, 10, 20, 40, 80 μg/mL
Incubation Time:	24, 48, 72 hours
Result:	Inhibits cancer cells (LoVo, SW620, SW480, Caco2, HCT116) activity at 20, 40, 80 μM. Inhibited HCT116 cells with IC_{50}s of 121.845, 87.908, 18.883 μg/mL at 24, 48, 72 hours, respectively. Showed no cytotoxicity with NCM460 cells.

Cell Cycle Analysis[1]

Cell Line:	Human colon cancer cell HCT116
Concentration:	0, 20, 40, 80 μg/mL
Incubation Time:	48 hours
Result:	Arrested cell cycle at G0/G1.

Western Blot Analysis[1]

Cell Line:	Human colon cancer cell HCT116
Concentration:	80 μg/mL; pre-treated with 20 ng/mL TNF-α
Incubation Time:	4 or 8 hours
Result:	Increased the expression of pro-apoptotic proteins (caspase 3, caspase 6, caspase 7, caspase 8, caspase 9, P53, and Bax) and decreased the expression of anti-apoptotic proteins (cleaved caspase-3 and Bcl-2) in a dose-dependent manner.

Cell Migration Assay [1]

Cell Line:	Human colon cancer cell HCT116
Concentration:	0, 20, 40, 80 μg/mL
Incubation Time:	24, 48, 72 hours
Result:	Reduced release of MMP-2 and MMP-9 enzymes. Inhibited cell migration with mobilities of 14.38, 13.44, and 5.29% with 20, 40, and 80 μg/mL concentrations, respectively.

In Vivo

Astragalin (25, 50, and 75 mg/kg; p.o.; once every two days; 25 d) reduces the tumor volumes, tumor weight and tumor formation rates and decreases expression of p-NFκB and p-ικκα in nude mouse model with human colon cancer[1].

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Animal Model:	Male BALB/c nude mice (4-week-old) with HCT116 cells (s.c.)[1]
Dosage:	0 mg/kg, 25 mg/kg, 50 mg/kg, 75 mg/kg
Administration:	Oral gavage; once every two days; for 25 days
Result:	Resulted tumor inhibition rates of 17.43%, 34.89% ($p < 0.01$), and 67.06% with 25 mg/kg, 50 mg/kg, 75 mg/kg dose administration. Showed no effect on mouse weight.

CUSTOMER VALIDATION

- Phytomedicine. 2022 Jul;101:154113.
- Int Immunopharmacol. November 2022, 109278.
- J Cardiovasc Pharmacol. 2021 Feb 1;77(2):217-227.
- Curr Res Food Sci. 2023 Nov 6.
- SSRN. 2023 Feb 7.

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REFERENCES

[1]. Yang M, et al. Astragalin Inhibits the Proliferation and Migration of Human Colon Cancer HCT116 Cells by Regulating the NF-κB Signaling Pathway. Front Pharmacol. 2021 Apr 19;12:639256.

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

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