Berberine chloride

Cat. No.: HY-18258

CAS No.: 633-65-8

Molecular Formula: $C_{20}H_{18}ClNO_4$

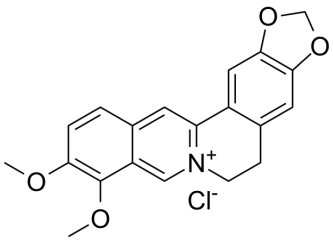
Molecular Weight: 371.81

Target: Topoisomerase; Autophagy; Bacterial; Reactive Oxygen Species; Antibiotic; Endogenous Metabolite; Parasite

Pathway: Cell Cycle/DNA Damage; Autophagy; Anti-infection; Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB

Storage: 4°C, sealed storage, away from moisture

* In solvent : -80°C, 1 year; -20°C, 6 months (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 8.33 mg/mL (22.40 mM; Need ultrasonic)

H_2O : < 0.1 mg/mL (ultrasonic) (insoluble)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.6895 mL	13.4477 mL	26.8955 mL
5 mM	0.5379 mL	2.6895 mL	5.3791 mL
10 mM	0.2690 mL	1.3448 mL	2.6895 mL

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

In Vivo

1. Add each solvent one by one: 0.5% CMC-Na/saline water
   Solubility: 11 mg/mL (29.59 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: PBS
   Solubility: 10 mg/mL (26.90 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 1.25 mg/mL (3.36 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 1.25 mg/mL (3.36 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Berberine chloride is an alkaloid that acts as an antibiotic. Berberine chloride induces reactive oxygen species (ROS) generation and inhibits DNA topoisomerase. Antineoplastic properties[1].

IC_{50} & Target

ROS[1]

	DNA topoisomerase[1]

In Vitro

Berberine (1.25-160 μM; 72 hours) has potential inhibitory effects on the proliferation of four colorectal carcinoma cell lines LoVo, HCT116, SW480, and HT-29[1].
Berberine (1.25-160 μM; 24-72 hours) induces a time- and dose-dependent inhibition of LoVo cell growth[1].
LoVo cells are exposure to Berberine (10-80 μM) for 24 h. Cell cycle analysis of 40 μM Berberine-treated LoVo cells by flow cytometry shows accumulation of cells in the G2/M phase[1].
Berberine (10-80 μM) suppresses cyclin B1, cdc2 and cdc25c protein expression after 24 h, especially at the dose of 80.0 μM[1].

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

Cell Proliferation Assay[1]

Cell Line:	Four colorectal carcinoma cell lines LoVo, HCT116, SW480, and HT-29
Concentration:	1.25, 2.5, 5, 10, 20, 40, 80, and 160 μM
Incubation Time:	72 hours
Result:	Inhibited the proliferation of four cell lines. The IC_{50} ranged from 40.8±4.1 μM (LoVo) to 98.6±2.9 μM (HCT116).

Cell Proliferation Assay[1]

Cell Line:	Colorectal carcinoma cell lines LoVo
Concentration:	1.25, 2.5, 5, 10, 20, 40, 80, and 160 μM
Incubation Time:	24, 48, 72 hours
Result:	Induced a time- and dose-dependent inhibition of cell growth. By 72 h, 160.0 μM induced 71.1±1.9 % growth inhibitions in LoVo cells.

Cell Cycle Analysis[1]

Cell Line:	LoVo cells
Concentration:	0, 10, 20, 40, or 80 μM
Incubation Time:	24 hours
Result:	Exposure to 40.0 μM induced G2/M-phase cell cycle arrest, an increase in the G2/M-phase population and a progressive decline in the G1 population.

Western Blot Analysis[1]

Cell Line:	LoVo cells
Concentration:	10, 20, 40, or 80 μM
Incubation Time:	24 hours
Result:	Suppressed cyclin B1, cdc2 and cdc25c protein expression.

In Vivo

Berberine (10, 30, or 50 mg/kg/day; gastrointestinal gavage; for 10 consecutive days) inhibits the growth of human colorectal adenocarcinoma in vivo. Berberine at doses of 30 and 50 mg/kg/day taken by gastrointestinal gavage shows inhibitory rates of 33.1% and 45.3% on the human colorectal adenocarcinoma xenograft growth in nude mice[1].

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

Animal Model:	5-week-old BALB/c nu/nu mice with human colorectal adenocarcinoma LoVo xenografts[1]
Dosage:	10, 30, or 50 mg/kg/day
Administration:	Gastrointestinal gavage; for 10 consecutive days
Result:	Showed inhibitory rates of 33.1 % and 45.3 % at doses of 30 and 50 mg/kg/day.

CUSTOMER VALIDATION

- Acta Pharmacol Sin. 2022 Aug 10.
- Int J Nanomedicine. 2023 Jul 31.
- JCI Insight. 2023 Jul 24;8(14):e166306.
- Phytomedicine. 2023 Dec 2, 155247.
- Phytomedicine. 2023 Jul 17, 154962.

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REFERENCES

[1]. Cai Y, et al. Berberine inhibits the growth of human colorectal adenocarcinoma in vitro and in vivo. J Nat Med. 2014 Jan;68(1):53-62.

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