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Cinchonine

Cat. No.: HY-Y0152

CAS No.: 118-10-5

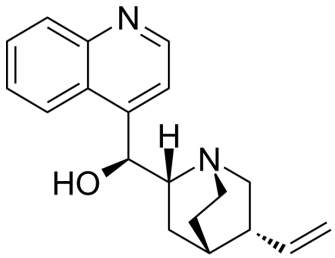
Molecular Formula: $C_{19}H_{22}N_2O$

Molecular Weight: 294.39

Target: Apoptosis; Parasite; Autophagy; Caspase; Calcium Channel

Pathway: Apoptosis; Anti-infection; Autophagy; Membrane Transporter/Ion Channel; Neuronal Signaling

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



SOLVENT & SOLUBILITY

In Vitro

DMSO : 4.76 mg/mL (16.17 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	3.3969 mL	16.9843 mL	33.9685 mL
	5 mM	0.6794 mL	3.3969 mL	6.7937 mL
	10 mM	0.3397 mL	1.6984 mL	3.3969 mL

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

BIOLOGICAL ACTIVITY

Description

Cinchonine is a natural compound present in Cinchona bark with antimalarial, antitumor, anti-inflammatory, anti platelet-aggregation and anti-obesity properties. Cinchonine inhibits cells proliferation and autophagy and induces apoptosis through activation of Caspase-3. Cinchonine activates endoplasmic reticulum stress-induced apoptosis in human liver cancer cells[1].

In Vitro

Cinchonine induces apoptosis and inhibits cell proliferations in HepG2 and SMCC7721 (180 μM, 24 h), as well as in cells HeLa and A549 (180 μM, 48-96 h) [2][3].
Cinchonine (50-100 μM, 24 h) inihibits tumor growth in lungen cancer cells A549 and H1975, with IC_{50} values of 76.67 and 87.44 μM, respectively[4].
Cinchonine (0-20 μM, 24 h) blocks autophagy flux through the inhibition of a maturation of lysosomal hydrolases[4].
Cinchonine (20 μM) induces osteoclast differentiation and osteogenesis[6].
Cinchonine inhibits platelet aggregation through inhibition of Ca^{2+} flux (IC_{50}: 300 μM) and protein kinase C (IC_{50}: 20 μM)[7].
Cinchonine inhibits proliferation (0-100 μM, 72 h) of T. evansi , with IC_{50} of 16.96 μM in 24 h [8].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis[2][3][4]

Cell Line:	HeLa, A549, HepG2, SMCC7721, H1975
Concentration:	180 μM (HeLa, A549, HepG2, SMCC7721), 200 μM (A549 and H1975)
Incubation Time:	24 h-96 h (HeLa and A549), 48 h (HepG2 and SMCC7721), 24 h (A549 and H1975)
Result:	Inhibited cell proliferation in cells HeLa, A549, HepG2 and SMCC7721. Cinchonine inhibited phosphorylation of AKT and TAK1. Cinchonine activated Casapase-3, promoted GRP78 and phosphorylation of PERK and sIF2-α. Cinchonine reduced mature cathepsin levels and increased immature cathespin levels.

In Vivo

Cinchonine (0.265-0.530 mg/kg, intratumorally injection, LLC cells for 14 days) induces cell apoptosis, suppresses tumor growth in BALB/c nude mice[2].

Cinchonine exhibits anti-metastatic activity in lung cancer cells with low toxicity[4].

Cinchonine(50mg/kg, i.p.) exhibits antiobesity activity in C57BL/6B mice[5].

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

Animal Model:	BALB/c nude mice [4]
Dosage:	4 mg/kg/day
Administration:	Intraperitoneal injection, for 19 days
Result:	Inhibited metastatic activity

Animal Model:	BALB/c nude mice [2]
Dosage:	0.265 and 0.530 mg/kg
Administration:	Intratumorally injection, for 14 days
Result:	Inhibited tumor growth with more TUNEL positive cells (DNA fragmentation indicator).

Animal Model:	High-fat-diet (HFD) induced obesity in C57BL/6B mice[5]
Dosage:	50 mg/kg
Administration:	Intraperitoneal injection
Result:	Reduced body weight gain (−38%), visceral fat-pad weights (−26%).

CUSTOMER VALIDATION

- Biomed Pharmacother. 2023 Jun 8;164:114980.
- Front Cell Infect Microbiol. 14 June 2022.

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REFERENCES

[1]. Qi Y, et al., Cinchonine induces apoptosis of HeLa and A549 cells through targeting TRAF6. J Exp Clin Cancer Res. 2017 Feb 23;36(1):35.

[2]. Jin ZL, et al., Cinchonine activates endoplasmic reticulum stress-induced apoptosis in human liver cancer cells. Exp Ther Med. 2018 Jun;15(6):5046-5050.

[3]. Wang H, et al., Cinchonine exerts anti-tumor and immunotherapy sensitizing effects in lung cancer by impairing autophagic-lysosomal degradation. Biomed Pharmacother. 2023 Aug;164:114980.

[4]. Jung SA, et al., Cinchonine Prevents High-Fat-Diet-Induced Obesity through Downregulation of Adipogenesis and Adipose Inflammation. PPAR Res. 2012;2012:541204.

[5]. Jo YJ, et al., Cinchonine inhibits osteoclast differentiation by regulating TAK1 and AKT, and promotes osteogenesis. J Cell Physiol. 2021 Mar;236(3):1854-1865.

[6]. Shah BH, et al., The inhibitory effect of cinchonine on human platelet aggregation due to blockade of calcium influx. Biochem Pharmacol. 1998 Oct 15;56(8):955-60.

[7]. Rani R, et al., Intracellular ROS production and apoptotic effect of quinoline and isoquinoline alkaloids on the growth of Trypanosoma evansi. Acta Trop. 2023 Sep;245:106980.

[8]. Jin ZL, et al. Cinchonine activates endoplasmic reticulum stress-induced apoptosis in human liver cancer cells. Exp Ther Med. 2018 Jun;15(6):5046-5050.

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