Sinomenine hydrochloride

Cat. No.: HY-15122A

CAS No.: 6080-33-7

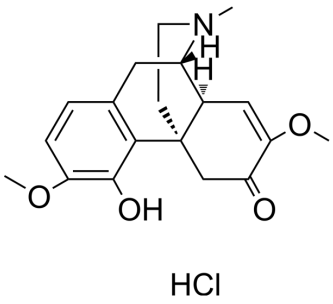
Molecular Formula: $C_{19}H_{24}ClNO_4$

Molecular Weight: 365.85

Target: NF-κB; Opioid Receptor; Autophagy; Apoptosis

Pathway: NF-κB; GPCR/G Protein; Neuronal Signaling; Autophagy; Apoptosis

Storage: 4°C, sealed storage, away from moisture
* In solvent : -80°C, 1 years; -20°C, 6 months (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (273.34 mM; Need ultrasonic and warming)
H_2O : 16.67 mg/mL (45.57 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.7334 mL	13.6668 mL	27.3336 mL
5 mM	0.5467 mL	2.7334 mL	5.4667 mL
10 mM	0.2733 mL	1.3667 mL	2.7334 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 25 mg/mL (68.33 mM); Clear solution; Need ultrasonic and warming and heat to 60°C
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (5.69 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (5.69 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (5.69 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Sinomenine hydrochloride (Cucoline hydrochloride), an alkaloid extracted from Sinomenium acutum, is a blocker of the NF-κB activation[1]. Sinomenine also is an activator of μ-opioid receptor[2].

IC_{50} & Target	NF-κB	μ Opioid Receptor/MOR

In Vitro

Cell viability is gradually decreased with increasing Sinomenine hydrochloride concentration. The migration ability of MDA-

	MB-231 cells is significantly weakened by 0.25, 0.5, and 1 mM of Sinomenine hydrochloride treatment. The wound-healing assay reveals that 0.25 and 0.5 mM Sinomenine hydrochloride significantly suppress the healing of the wound. When the MDA-MB-231 cells are treated with 0.5 mM Sinomenine hydrochloride, the healing progress is about 50%, but in the group treated with 0.25 mM Sinomenine hydrochloride and the untreated control, the healing is about 80% and nearly 95%, respectively[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Sinomenine hydrochloride (i.p.) produces antinociception in the hot plate and tail flick tests in male rats at 40 mg/kg, but not at lower doses (10 or 20 mg/kg). At 10 to 40 mg/kg Sinomenine hydrochloride does not produce any observable side effect such as sedation, allergy or motor impairments. Sinomenine hydrochloride at 80 mg/kg i.p. does not produce any observable side effects in mice. I.p or p.o. Sinomenine hydrochloride at 40 or 80 mg/kg dose-dependently reduces mechanical hypersensitivity in nerve injured mice. I.p. Sinomenine hydrochloride at 40 mg/kg, but not lower doses or vehicle, significantly decreases mechanical and cold allodynia for up to 240 min without producing motor deficits or sedation[3]. At doses of 10 to 40 mg/kg, Sinomenine hydrochloride dose-dependently increases the paw withdrawal threshold. In non-chronic constriction injury (CCI) healthy rats, Sinomenine hydrochloride at the dose range of 10 to 40 mg/kg does not change the immobility behavior in the forced swimming test[4]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	The MDA-MB-231 human triple negative and 4T1 mouse breast cancer cell lines are used in this study. For the experiments, the cells are grown in 24-well plates at 3.5×10^4 cells/well. Following incubation for 24 or 48 h in medium containing different concentrations of Sinomenine hydrochloride, proliferation of the cells are detected with Cell Counting Kit-8 solution according to the manufacturer's instructions[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [4]	Male Sprague-Dawley rats weighing of 250 to 300 g are used in this experiment. For the duration of action of acute Sinomenine hydrochloride study, different doses of Sinomenine hydrochloride (10 to 40 mg/kg) are administered 1 day after surgery and then paw withdrawal threshold is measured every 30 min for 4 hours. For the study involving daily Sinomenine hydrochloride treatment, mechanical hyperalgesia measure is performed 3 h after daily drug treatment. For antagonist studies, antagonists are given 10 min prior to 40 mg/kg Sinomenine hydrochloride administration[4]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Acta Pharm Sin B. 2021 Nov;11(11):3465-3480.
- Free Radic Biol Med. 2018 Jun 2;124:205-213.
- Phytother Res. 2023 Apr 10.
- Chem Biol Drug Des. 2022 Oct 27.
- Exp Ther Med. 2021 Apr 18.

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REFERENCES

[1]. Song L, et al. Sinomenine inhibits breast cancer cell invasion and migration by suppressing NF-κB activation mediated by IL-4/miR-324-5p/CUEDC2 axis. Biochem Biophys Res Commun. 2015 Aug 28;464(3):705-10.

[2]. Gao T, et al. Analgesic effect of sinomenine in rodents after inflammation and nerve injury. Eur J Pharmacol. 2013 Dec 5;721(1-3):5-11.

[3]. Zhu Q, et al. Antinociceptive effects of sinomenine in a rat model of neuropathic pain. Sci Rep. 2014 Dec 1;4:7270.

[4]. Wang MH, et al. Activation of opioid mu-receptor by sinomenine in cell and mice.Neurosci Lett. 2008 Oct 10;443(3):209-12.

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