Sinomenine

Cat. No.: HY-15122

CAS No.: 115-53-7

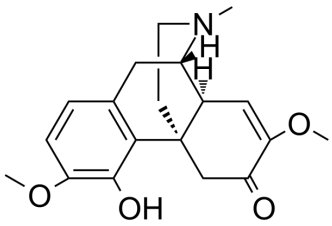
Molecular Formula: $C_{19}H_{23}NO_4$

Molecular Weight: 329.39

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

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

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



SOLVENT & SOLUBILITY

In Vitro

DMSO : 50 mg/mL (151.80 mM; Need ultrasonic)
1M HCl : 25 mg/mL (75.90 mM; ultrasonic and adjust pH to 1 with HCl)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.0359 mL	15.1796 mL	30.3591 mL
5 mM	0.6072 mL	3.0359 mL	6.0718 mL
10 mM	0.3036 mL	1.5180 mL	3.0359 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: ≥ 2.5 mg/mL (7.59 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (7.59 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (7.59 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Sinomenine, 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[1], μ-opioid receptor[2]

In Vitro

Cell viability gradually decreased with increasing Sinomenine concentration. The migration ability of MDA-MB-231 cells is significantly weakened by 0.25, 0.5, and 1 mM of Sinomenine treatment. The wound-healing assay reveals that 0.25 and 0.5 mM Sinomenine significantly suppress the healing of the wound. When the MDA-MB-231 cells are treated with 0.5 mM

	Sinomenine, the healing progress is about 50%, but in the group treated with 0.25 mM Sinomenine and the untreated control, the healing is about 80% and nearly 95%, respectively. The IB assay following inhibitor of NF-κB (IκB) antibody IP shows that the binding of NF-κB to IκB is inhibited by Sinomenine treatment in a dose-dependent manne[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Sinomenine (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 does not produce any observable side effect such as sedation, allergy or motor impairments. Antinociception is also seen mice at 60 min following 80 mg/kg i.p. Sinomenine, but not at lower doses (20 or 40 mg/kg), in the tail flick test. Sinomenine at 80 mg/kg i.p. does not produce any observable side effects in mice. I.p or p.o. Sinomenine at 40 or 80 mg/kg dose-dependently reduces mechanical hypersensitivity in nerve injured mice. I.p. Sinomenine 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 dose-dependently increases the paw withdrawal threshold. In non-chronic constriction injury (CCI) healthy rats, Sinomenine 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/well. Following incubation for 24 or 48 h in medium containing different concentrations of Sinomenine, 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 study, different doses of Sinomenine (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 treatment, mechanical hyperalgesia measure is performed 3 h after daily drug treatment. For antagonist studies, antagonists were given 10 min prior to 40 mg/kg Sinomenine administration[3]. 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.
- J Inflamm Res. 2023 Oct 20:16:4777-4791.
- Chem Biol Drug Des. 2022 Oct 27.

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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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