

Product Data Sheet

Product Name: Sinomenine Hydrochloride

Cat. No.: GN10213

Chemical Properties

Cas. No. 6080-33-7

SMILES CN1CCC23CC(=O)C(=CC2C1CC4=C3C(=C(C=C4)OC)O)OC.Cl

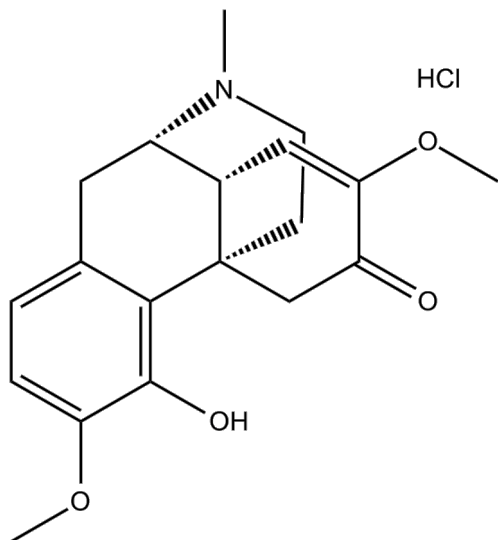
Formula $C_{19}H_{24}ClNO_4$ M.Wt 365.85

Solubility 100mg/mL in DMSO; 16mg/mL in Water Storage Store at 2-8°C

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice. All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

Cell experiment [1]:

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Cell lines HepG2 cells

Preparation Method Exponentially growing cells were trypsinized, seeded at an initial density of 8×10^3 per well in 96-well plates and incubated in standard growth medium for 24h prior to being subjected to different treatments for the indicated periods of time. Cells were subsequently incubated in medium containing MTT (0.5mg/mL) for an additional 4h. The supernatant was removed and 150 μ L DMSO were added to each well to dissolve the intracellular formazan compound. The absorbance was measured with an ELISA reader at 490nm. The relative cell viability (%) was calculated as the percentage between Sinomenine Hydrochloride-treated cells and the untreated controls.

Reaction
Conditions 0.5-2 μ M; 24-72h

Applications Sinomenine Hydrochloride significantly inhibits cell growth in a concentration- and time-dependent manner.

Animal experiment [2]:

Animal models Dextran sodium sulfate (DSS) induced colitis mice model

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Twenty-four mice (weight, 20–22g) were randomly divided into four groups: the normal control group (treatment with water) (Normal, n = 6), the model group (Model, n = 6), the Sinomenine Hydrochloride low dose treatment group (SH-20, n = 6), and the Sinomenine Hydrochloride high dose treatment group (SH-60, n = 6). In this experiment, by referring to the previous experimental results and the study of GAO T, two concentration gradients of low dose (20mg/kg) and high dose (60mg/kg) were finally selected to study SH treatment of DSS induced colitis in mice. Except for the normal control group, the remaining three groups Preparation Method of mice drank 4% DSS freely every day for 7 days and replaced the 4% DSS solution every two days. At the same time, the normal control group and the model group were administered 0.2mL of water by oral gavage every day, and the SH low dose and high dose groups were administered with 20mg/kg and 60mg/kg of drugs dissolved in 0.2mL of pure water by oral gavage, respectively. The mice were given intragastric administration once a day for 7 consecutive days. After the end of intragastric administration on the 7th day, all mice were killed on the 8th day, and corresponding blood samples and colon samples were collected.

Dosage form 20mg/kg, 60mg/kg; ig; 7d

Applications Sinomenine Hydrochloride can downregulate the expression levels of Notch1, NICD1, Jagged1, and Hes1 proteins in the colon tissues of colitis mice.

References:

- [1]. Lu X L, Zeng J, Chen Y L, et al. Sinomenine hydrochloride inhibits human hepatocellular carcinoma cell growth in vitro and in vivo: Involvement of cell cycle arrest and apoptosis induction[J]. International journal of oncology, 2013, 42(1): 229-238.
- [2]. Xu L, Liu W, Huang X, et al. Sinomenine hydrochloride improves DSS-induced colitis in mice through inhibition of the Notch signaling pathway[J]. BMC gastroenterology, 2024, 24(1): 451.

Background

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Sinomenine Hydrochloride is an inhibitor of NF- κ B activation [1]. Sinomenine Hydrochloride inhibits the production of inflammatory mediators, blocks sodium channels, and regulates immune cell activity, exerting anti-inflammatory, immunosuppressive, and analgesic effects [2-3]. Sinomenine Hydrochloride is primarily used to treat autoimmune and inflammatory diseases such as rheumatoid arthritis and osteoarthritis [4].

In HepG2 cells, Sinomenine Hydrochloride (0.5-2 μ M; 24-72h) significantly inhibits cell growth in a concentration- and time-dependent manner [5]. In MDA-MB-231 cells, Sinomenine Hydrochloride (0-5 μ M; 48h) inhibits the viability of human breast cancer cells [6]. In ACHN and 786-O cells, Sinomenine Hydrochloride (0-100 μ M; 24-72h) treatment suppresses the proliferation of ccRCC cells in a dose- and time-dependent manner [7].

In dextran sodium sulfate (DSS) induced colitis mice model, Sinomenine Hydrochloride (20mg/kg, 60mg/kg; ig; 7d) can downregulate the expression levels of Notch1, NICD1, Jagged1, and Hes1 proteins in the colon tissues of colitis mice [8]. In Pb-treated mice model, Sinomenine Hydrochloride (100mg/kg; po; 8 weeks) treatment reduced the levels of liver alanine aminotransferase, aspartate aminotransferase (AST), lactate dehydrogenase (LDH), and MDA [9].

References:

- [1]. Jiang S, Li S, Pang S, et al. A systematic review: Sinomenine[J]. Heliyon, 2024, 10(9).
- [2]. Jiang W, Fan W, Gao T, et al. Analgesic mechanism of sinomenine against chronic pain[J]. Pain Research and Management, 2020, 2020(1): 1876862.
- [3]. Hou W, Huang L, Huang H, et al. Bioactivities and mechanisms of action of sinomenine and its derivatives: a comprehensive review[J]. Molecules, 2024, 29(2): 540.
- [4]. Li J, Cao J, Chen Q, et al. Investigating the therapeutic potential of sinomenine in rheumatoid arthritis: anti-inflammatory, antioxidant, and immunomodulatory mechanisms[J]. Naunyn-Schmiedeberg's Archives of Pharmacology, 2024, 397(6): 3945-3958.
- [5]. Lu X L, Zeng J, Chen Y L, et al. Sinomenine hydrochloride inhibits human hepatocellular carcinoma cell growth in vitro and in vivo: Involvement of cell cycle arrest and apoptosis induction[J]. International journal of oncology, 2013, 42(1): 229-238.
- [6]. Li X, Wang K, Ren Y, et al. MAPK signaling mediates sinomenine hydrochloride-induced human breast cancer cell death via both reactive oxygen species-dependent and-independent pathways: an in vitro and in vivo study[J]. Cell death & disease, 2014, 5(7): e1356-e1356.

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- [7]. Zhao B, Liu L, Mao J, et al. Sinomenine hydrochloride attenuates the proliferation, migration, invasiveness, angiogenesis and epithelial-mesenchymal transition of clear-cell renal cell carcinoma cells via targeting Smad in vitro[J]. Biomedicine & Pharmacotherapy, 2017, 96: 1036-1044.
- [8]. Xu L, Liu W, Huang X, et al. Sinomenine hydrochloride improves DSS-induced colitis in mice through inhibition of the Notch signaling pathway[J]. BMC gastroenterology, 2024, 24(1): 451.
- [9]. Li Y, Cai W, Ai Z, et al. Protective effects of sinomenine hydrochloride on lead-induced oxidative stress, inflammation, and apoptosis in mouse liver[J]. Environmental Science and Pollution Research, 2023, 30(3): 7510-7521.

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