Indomethacin sodium hydrate

Cat. No.: HY-14397A

CAS No.: 74252-25-8

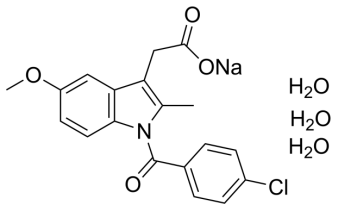
Molecular Formula: $C_{19}H_{21}ClNNaO_7$

Molecular Weight: 433.82

Target: COX; Bacterial; Influenza Virus; Antibiotic

Pathway: Immunology/Inflammation; Anti-infection

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

H_2O : 25 mg/mL (57.63 mM; Need ultrasonic)
DMSO : 12.5 mg/mL (28.81 mM; ultrasonic and warming and heat to 60°C)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	2.3051 mL	11.5255 mL	23.0510 mL
	5 mM	0.4610 mL	2.3051 mL	4.6102 mL
	10 mM	0.2305 mL	1.1526 mL	2.3051 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 5 mg/mL (11.53 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 (4.79 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (4.79 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Indomethacin (Indometacin) sodium hydrateis a potent, orally active COX1/2 inhibitor with IC_{50} values of 18 nM and 26 nM for COX-1 and COX-2, respectively. Indomethacin sodium hydrateis has anticancer activity and anti-infective activity. Indomethacin sodium hydrateis can be used for cancer, inflammation and viral infection research[1][2][3].

In Vitro

Indomethacin (Indometacin) sodium hydrateis (0-150 μM; 24 hours; 3LL-D122 cells) has anticancer activity in vitro[2].
?Indomethacin (Indometacin) sodium hydrateis (0-1000 μM) protects the host cells from damage caused by the virus through activates PKR, resulting in elF2α phosphorylation, and in turn shutting of translation of viral protein and inhibiting

replication of the virus (IC_{50}=2 μM)[3].

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

Cell Viability Assay[2]

Cell Line:	3LL-D122 cells (highly metastatic variant of mouse LLcarcinoma cells)
Concentration:	0, 20, 50, 100 and 150μM
Incubation Time:	24 hours
Result:	Inhibited cell viability at 20 mM, with 50% inhibition at 60 mM.

Cell Cycle Analysis[2]

Cell Line:	3LL-D122 cells (highly metastatic variant of mouse LLcarcinoma cells)
Concentration:	0, 30 and 80μM
Incubation Time:	24 hours
Result:	Decreased in the percentage of cells at the G2/M phase and increased in the percentage of cells at G1 phase.

In Vivo

Indomethacin (Indometacin) sodium hydrateis (0.01-10 mg/kg; p.o.; for 3 hours; male Sprague-Dawley rats) induces paw oedema and hyperalgesmeasurement dose-dependently reversed carrageenan-induced hyperalgesia[1].

?Indomethacin (Indometacin) sodium hydrateis (10 mg/mL; p.o.; daily, for 29 days; male C57BL/6J mice) inhibits tumor growth in vivo[2].Following oral administration of Indomethacin, the absorption of the drug is rapid and complete, but with important inter-and intraindividual variations. In general, peak plasma concentrations of 2 to 3 microgram/ml are achieved with 1 to 2 hours, but concomitant ingestion of food reduces and delays the peak concentrations without reducing the amount absorbed. In plasma at 90% of indomethacin is bound to albumin at therapeutic plasma concentrations[4].

Indomethacin can be used in animal modeling to construct models of gastric ulceration.

Induction of gastric ulceration[5][6]

- Background

  Indomethacin can cause gastric ulceration by various mechanisms, including injury through inhibition of prostaglandin (PG) synthesis, reduction in local blood flow, regional irritation, and inhibition of tissue regeneration.

- Specific Mmodeling Methods

  Rats: albino Sprague-Dawley • male • adult (period: 2 weeks)

  Administration: 100 mg/kg • p.o. • single dose

Note

(1) All animals fasted 24 h before drug administration.

(2) Indomethacin were dissolved in saline with 5% NaOH.

- Modeling Indicators

Gastric tissue macroscopic alterations: Showed prominent mucosal folds and severe erosion, pronounced ulceration and bleeding foci in the gastric mucosa.

Histopathological changes: Showed severe erosion of the mucosa, reaching down to the lamina muscularis; observed hemorrhagic infiltration, edema in the submucosa, and severe hyperemia of the vessels.

Molecular changes: Showed intense Tnf-α expression.

Biochemical changes: Increased MDA, TOS levels, reduced TAS levels, CAT and GPx activities and GSH levels.

- Correlated Product(s): Indomethacin sodium hydrate (HY-14397A)
- Opposite Product(s): Carnosic acid (HY-N0644)

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

Animal Model:	Male Sprague-Dawley rats[1]
Dosage:	0.01-10 mg/kg
Administration:	Oral administration; for 3 hours
Result:	Inhibited the carrageenan-induced rat paw oedema (ED_{50}=2.0 mg/kg) and hyperalgesia (ED_{50}=1.5 mg/kg) in a dose-dependent manner.

Animal Model:	Male C57BL/6J mice[2]
Dosage:	10 mg/mL
Administration:	Oral administration; daily, for 29 days
Result:	Delayed the onset of tumor growth and the initial growth rate of the footpad tumors.

CUSTOMER VALIDATION

- Biomaterials. 16 September 2022.
- Hepatology. 2023 Feb 1;77(2):456-465.
- Clin Transl Med. 2021 Oct;11(10):e548.
- Chem Mater. 2017, 29(19):8221-8238.
- Appl Mater Today. 2023 Apr.

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REFERENCES

[1]. Riendeau D, et, al. Biochemical and pharmacological profile of a tetrasubstituted furanone as a highly selective COX-2 inhibitor. Br J Pharmacol. 1997 May;121(1):105-17.

[2]. Eli Y, et, al. Comparative effects of indomethacin on cell proliferation and cell cycle progression in tumor cells grown in vitro and in vivo. Biochem Pharmacol. 2001 Mar 1;61(5):565-71.

[3]. Amici C, et, al. Inhibition of viral protein translation by indomethacin in vesicular stomatitis virus infection: role of eIF2α kinase PKR. Cell Microbiol. 2015 Sep;17(9):1391-404.

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