Esomeprazole sodium

Cat. No.: HY-17023

CAS No.: 161796-78-7

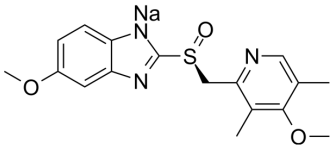
Molecular Formula: $C_{17}H_{18}N_3NaO_3S$

Molecular Weight: 367.4

Target: Proton Pump; Bacterial

Pathway: Membrane Transporter/Ion Channel; Anti-infection

Storage: 4°C, sealed storage, away from moisture and light
* The compound is unstable in solutions, freshly prepared is recommended.



SOLVENT & SOLUBILITY

In Vitro

H_2O : 100 mg/mL (272.18 mM; Need ultrasonic)
DMSO : 100 mg/mL (272.18 mM; Need ultrasonic)
Ethanol : 50 mg/mL (136.09 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.7218 mL	13.6091 mL	27.2183 mL
5 mM	0.5444 mL	2.7218 mL	5.4437 mL
10 mM	0.2722 mL	1.3609 mL	2.7218 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: ≥ 2.08 mg/mL (5.66 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (5.66 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (5.66 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Esomeprazole sodium ((S)-Omeprazole sodium) is a potent and orally active proton pump inhibitor. Esomeprazole reduces acid secretion through inhibition of the H^+, K^+-ATPase in gastric parietal cells. Esomeprazole acts as an exosome inhibitor by blocking the exosome release via the inhibition of V-H^+-ATPases[4]. Esomeprazole has the potential for symptomatic gastroesophageal reflux disease research[1][2][3].

IC_{50} & Target

H^+, K^+-ATPase[1][2]

In Vitro

Esomeprazole (25-100 μM; 20 hours; MDA-MB-468 cells) treatment suppresses growth of triple-negative breast cancer cell in vitro in a dose-dependent manner through increase in their intracellular acidification[1].

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

Cell Viability Assay[1]

Cell Line:	MDA-MB-468 cells
Concentration:	25 μM, 50 μM, 75 μM, 100 μM
Incubation Time:	20 hours
Result:	Suppressed growth of triple-negative breast cancer cell in vitro in a dose-dependent manner.

In Vivo

Esomeprazole (30-300 mg/kg; oral gavage; daily; for 19 or 11 days; C57BL/6J mice) treatment significantly inhibits the progression of fibrosis throughout the lungs of the animals. Esomeprazole also reduces circulating markers of inflammation and fibrosis[2].

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

Animal Model:	C57BL/6J mice (8-weeks old, 25-30 g) treated with cotton smoke-induced lung injury[2]
Dosage:	30 mg/kg, 300 mg/kg
Administration:	Oral gavage; daily; for 19 or 11 days
Result:	Significantly inhibited the progression of fibrosis throughout the lungs of the animals.

REFERENCES

[1]. Wayne Goh, et al. Use of proton pump inhibitors as adjunct treatment for triple-negative breast cancers. An introductory study. J Pharm Pharm Sci. 2014;17(3):439-46.

[2]. Christina Nelson, et al. Therapeutic Efficacy of Esomeprazole in Cotton Smoke-Induced Lung Injury Model. Front Pharmacol. 2017 Jan 26;8:16.

[3]. Thomas J Johnson, et al. Esomeprazole: a clinical review. Am J Health Syst Pharm. 2002 Jul 15;59(14):1333-9.

[4]. Huarui Zhang, et al. Advances in the discovery of exosome inhibitors in cancer. J Enzyme Inhib Med Chem. 2020 Dec;35(1):1322-1330.

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