Erdosteine

Cat. No.: HY-B0289

CAS No.: 84611-23-4

Molecular Formula: $C_8H_{11}NO_4S_2$

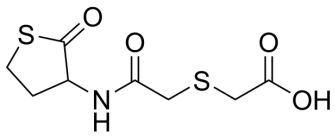
Molecular Weight: 249.31

Target: NF-κB; Bacterial

Pathway: NF-κB; Anti-infection

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : 50 mg/mL (200.55 mM; Need ultrasonic)

H_2O : 6.67 mg/mL (26.75 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	4.0111 mL	20.0554 mL	40.1107 mL
	5 mM	0.8022 mL	4.0111 mL	8.0221 mL
	10 mM	0.4011 mL	2.0055 mL	4.0111 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 6.67 mg/mL (26.75 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 3.25 mg/mL (13.04 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 3.25 mg/mL (13.04 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 3.25 mg/mL (13.04 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Erdosteine inhibits lipopolysaccharide (LPS)-induced NF-κB activation[1][2]. Erdosteine has muco-modulatory, anti-bacterial, anti-inflammatory and anti-oxidant effects[3].

IC_{50} & Target

NF-κB

In Vitro	Erdosteine is an oral mucolytic agent used as an expectorant in various chronic respiratory diseases. Erdosteine exerts anti-inflammatory effects by inhibiting NF-κB activation in LPS-stimulated mouse macrophages. However, Erdosteine does not inhibit LPS induced phosphorylation of the Akt and MAPK pathways. To evaluate the toxic effects of Erdosteine on macrophages, cell viability is analyzed. Treatment with 1, 10, or 100 μg/mL Erdosteine does not produce detectable cytotoxicity. Treatment with LPS (1 μg/mL) induced IκBα degradation in RAW 264.7 cells, and maximal degradation is observed after 10 min. RAW 264.7 cells are pretreated with the indicated concentrations of Erdosteine for 6 h and then stimulated with LPS (1 μg/mL) for 10 min. Pretreatment with Erdosteine does not have any effect on the baseline amount of I κBα. Treatment with DMSO alone at a volume equal to that used for Erdosteine delivery does not have any effect on the baseline amount of IκBα. The amount of IκBα is decreased by treatment with LPS for 10 min, and pretreatment with Erdosteine at the indicated concentration and time effectively inhibits IκBα degradation[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Twenty-six male mice are divided into four groups as follows: group 1, control; group 2, Erdosteine-treated; group 3, Methotrexate (MTX)-treated; and group 4, Methotrexate+Erdosteine treated. On the first day of experiment, a single dose of Methotrexate is intraperitoneally administered to groups 3 and 4, although a daily single dose of Erdosteine is orally administered to group 2 and 4 for 7 days. At the end of the experiment, the testes of the animals are removed and weighed. The levels of total antioxidant capacity and total oxidative stress, and myeloperoxidase activity in the Methotrexate group are higher than the control group ($p<0.05$). Lipid peroxidation levels are not changed in Methotrexate group compared with control group. In conclusion, Erdosteine can effectively protect the testes in Methotrexate-induced toxicity. Erdosteine administration with Methotrexate improves testicular injures, as indicated by appearance of spermatogenesis in seminiferous tubules[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	The murine macrophage/monocyte cell line RAW264.7 are maintained as monolayers in Dulbecco's modified Eagle's medium (DMEM) containing 10 % fetal bovine serum, 60 U/mL Penicillin, and 100 μg/mL Streptomycin at 37.8°C in 5 % CO_2. The cell viability is quantified using a colorimetric tetrazolium compound MTS assay. Briefly, 1×10^4 cells incubated with various concentrations of Erdosteine (1, 10, or 100 μg/mL) for 24 h are treated with 10 μL of MTS solution (5 mg/mL) for 45 min. The cells are then lysed with isopropyl alcohol, and the absorbance is read at the wavelength of 540 nm[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [2]	Mice[2] Twenty-six male C57BL/6 mice (8 weeks, 20-30 g) are randomly divided into four groups. In control group (n=6); mice are treated the 0.5 mL of saline as a placebo intraperitoneally (i.p.). In Erdosteine group (n=6), mice are treated with Erdosteine orally (gavage; 10 mg/kg) for 7 days. In this study, low-dose MTX are used because high-dose (20-40 mg/kg) MTX has anti-inflammatory and immunosuppressive activity. Mice in MTX group (n=7) are injected with single dose of i.p. MTX (10 mg/kg). In MTX+Erdosteine group (n=7), mice are injected with single dose of i.p. MTX (10 mg/kg) the first day and Erdosteine is given orally (10 mg/kg) to the animals starting the first day for 7 days. After the last administration of the drug, all rats fasted about 12 hours, but have free access to water. And then, the animals are sacrificed by cervical dislocation at the end of the experiment. Following sacrifice, the testes are quickly removed from the mice. Right testes specimens are fixed in 10% neutral-buffered formaldehyde solution for histological assessment[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Brain Behav Immun. 2020 Nov;90:108-137.

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REFERENCES

[1]. Park JS, et al. Anti-inflammatory Effect of Erdosteine in Lipopolysaccharide-Stimulated RAW 264.7 Cells. Inflammation. 2016 Aug;39(4):1573-81.

[2]. Oktar S, et al. Beneficial effect of erdosteine on methotrexate-induced testicular toxicity in mice. Toxicol Ind Health. 2010 Aug;26(7):433-8.

[3]. Recipharm's proprietary molecule Erdosteine recognised as COPD treatment

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