产品名称：厄多司坦
产品别名：Erdosteine；RV 144

生物活性：

Description	Erdosteine inhibits lipopolysaccharide (LPS)-induced NF-κB activation.
IC_{50} & Target	NF-κB[1]
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 IκBα. 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].
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].
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

*请根据产品在不同溶剂中的溶解度选择合适的溶剂配制储备液；一旦配成溶液，请分装保存，避免反复冻融造成的产品失效。

储备液的保存方式和期限：-80°C, 6 months; -20°C, 1 month。-80°C 储存时，请在 6 个月内使用，-20°C 储存时，请在 1 个月内使用。

In Vivo:

请根据您的实验动物和给药方式选择适当的溶解方案。以下溶解方案都请先按照 **In Vitro** 方式配制澄清的储备液，再依次添加助溶剂：

——为保证实验结果的可靠性，澄清的储备液可以根据储存条件，适当保存；体内实验的工作液，建议您现

	用现配，当天使用； 以下溶剂前显示的百分比是指该溶剂在您配制终溶液中的体积占比；如在配制过程中出现沉淀、析出现象，可以通过加热和/或超声的方式助溶 1.请依序添加每种溶剂： 10% DMSO→40% PEG300 →5% Tween-80 → 45% saline Solubility: ≥ 3.25 mg/mL (13.04 mM); Clear solution 此方案可获得 ≥ 3.25 mg/mL (13.04 mM，饱和度未知) 的澄清溶液。 以 1 mL 工作液为例，取 100 μL 32.5 mg/mL 的澄清 DMSO 储备液加到 400 μL PEG300 中，混合均匀；向上述体系中加入 50 μL Tween-80，混合均匀；然后继续加入 450 μL 生理盐水定容至 1 mL。 2.请依序添加每种溶剂： 10% DMSO→ 90% (20% SBE-β-CD in saline) Solubility: ≥ 3.25 mg/mL (13.04 mM); Clear solution 此方案可获得 ≥ 3.25 mg/mL (13.04 mM，饱和度未知) 的澄清溶液。 以 1 mL 工作液为例，取 100 μL 32.5 mg/mL 的澄清 DMSO 储备液加到 900 μL 20% 的 SBE-β-CD 生理盐水水溶液中，混合均匀。 3.请依序添加每种溶剂： 10% DMSO →90% corn oil Solubility: ≥ 3.25 mg/mL (13.04 mM); Clear solution 此方案可获得 ≥ 3.25 mg/mL (13.04 mM，饱和度未知) 的澄清溶液，此方案不适用于实验周期在半个月以上的实验。 以 1 mL 工作液为例，取 100 μL 32.5 mg/mL 的澄清 DMSO 储备液加到 900 μL 玉米油中，混合均匀。
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.

实验参考：

Cell Assay	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].
Animal Administration	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].

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.