Cynaropicrin

Cat. No.: HY-N2350

CAS No.: 35730-78-0

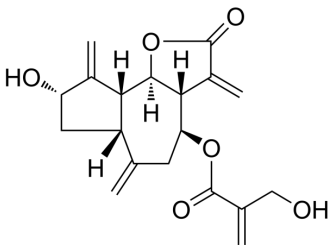
Molecular Formula: $C_{19}H_{22}O_6$

Molecular Weight: 346.37

Target: MMP; NF-κB; TNF Receptor

Pathway: Metabolic Enzyme/Protease; NF-κB; Apoptosis

Storage: -20°C, protect from light
* In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 50 mg/mL (144.35 mM)
* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.8871 mL	14.4354 mL	28.8709 mL
5 mM	0.5774 mL	2.8871 mL	5.7742 mL
10 mM	0.2887 mL	1.4435 mL	2.8871 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: ≥ 2.5 mg/mL (7.22 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (7.22 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (7.22 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Cynaropicrin is a sesquiterpene lactone which can inhibit tumor necrosis factor (TNF-α) release with IC_{50}s of 8.24 and 3.18 μM for murine and human macrophage cells, respectively. Cynaropicrin also inhibits the increase of cartilage degradation factor (MMP13) and suppresses NF-κB signaling.

IC_{50} & Target		
	MMP13	NF-κB

In Vitro

Cynaropicrin strongly inhibits lipopolysaccharide-induced TNF-α release from either murine or human macrophage cells in a dose-dependent manner with the IC_{50} values of 8.24 and 3.18 μM, respectively. Cynaropicrin shows significant inhibitory

effects toward all mitogenic signals with the IC_{50} values of 1.20 (concanavalin A), 1.02 (phytohemagglutinin) and 0.90 μM (lipopolysaccharide), respectively. Cynaropicrin suppresses CTLL-2 cell proliferation in a dose-dependent manner and the 50% inhibitory concentration (IC_{50}) of Cynaropicrin for CTLL-2 cell growth is 0.91 μM[1]. The increased mRNA expression of MMP13 induced by TNF-α is similarly inhibited in a concentration-dependent manner by Cynaropicrin. The increased mRNA expression of HIF-2α induced by IL-1β in SW1353 is inhibited in a concentration-dependent manner by Cynaropicrin[2].

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

PROTOCOL

Cell Assay [1]

Human U937 cells are cultured in RPMI1640 supplemented with 10% fetal bovine serum. To differentiate U937 cells, 2×10^6 cells/mL are treated with phorbol 12-myristate 13-acetate (PMA) of 20 ng/mL for 24 h. The PMA is removed by washing and adherent cells are then allowed to recuperate for 40 h. The recuperated cells are subsequently incubated with lipopolysaccharide of 1 μg/mL for 6 h with Cynaropicrin and positive control drugs. Supernatants are harvested and assayed by ELISA kit for human TNF-α[1].

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

Animal Administration [3]

Male Swiss mice are used in this study. Mice are housed at a maximum of 8 per cage and kept in a conventional room at 20 to 24°C under a 12 h to 12 h light-dark cycle. The animals are provided with sterilized water and chow ad libitum. Infection is performed by i.p. injection of 10^4 or 5×10^3 bloodstream trypomastigotes. The animals (18 to 21 g) are divided into the following groups (at least five mice per group): uninfected (noninfected and untreated), untreated (infected with T. cruzi but treated only with vehicle), and treated (infected and treated i.p. with 0.5 to 50 mg/kg/day compound (including Cynaropicrin) or 100 mg/kg/day benznidazole). Mice receive 0.1 mL (i.p.) at 5 and 8 days postinfection (dpi), or at 11, 12, and 13 dpi for the dose of 25 mg/kg, twice a day (b.i.d.)[3].

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

REFERENCES

[1]. Cho JY, et al. In vitro anti-inflammatory effects of cynaropicrin, a sesquiterpene lactone, from Saussurea lappa. Eur J Pharmacol. 2000 Jun 23;398(3):399-407.

[2]. Masutani T, et al. Cynaropicrin is dual regulator for both degradation factors and synthesis factors in the cartilage metabolism. Life Sci. 2016 Aug 1;158:70-7.

[3]. da Silva CF, et al. Activities of psilostachyin A and cynaropicrin against Trypanosoma cruzi in vitro and in vivo. Antimicrob Agents Chemother. 2013 Nov;57(11):5307-14.

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