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: $\geq 50$ mg/mL (144.35 mM)  
* "$\geq$" means soluble, but saturation unknown.

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<th>Solvent Concentration</th>
<th>Mass 1 mg</th>
<th>Mass 5 mg</th>
<th>Mass 10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 mM</td>
<td>2.8871 mL</td>
<td>14.4354 mL</td>
<td>28.8709 mL</td>
</tr>
<tr>
<td></td>
<td>5 mM</td>
<td>0.5774 mL</td>
<td>2.8871 mL</td>
<td>5.7742 mL</td>
</tr>
<tr>
<td></td>
<td>10 mM</td>
<td>0.2887 mL</td>
<td>1.4435 mL</td>
<td>2.8871 mL</td>
</tr>
</tbody>
</table>

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

**In Vivo**

1. Add each solvent one by one: 10% DMSO $\gg$ 40% PEG300 $\gg$ 5% Tween-80 $\gg$ 45% saline  
   Solubility: $\geq 2.5$ mg/mL (7.22 mM); Clear solution

2. Add each solvent one by one: 10% DMSO $\gg$ 90% (20% SBE-β-CD in saline)  
   Solubility: $\geq 2.5$ mg/mL (7.22 mM); Clear solution

3. Add each solvent one by one: 10% DMSO $\gg$ 90% corn oil  
   Solubility: $\geq 2.5$ 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**

<table>
<thead>
<tr>
<th>IC$_{50}$ &amp; Target</th>
<th>MMP13</th>
<th>NF-κB</th>
</tr>
</thead>
</table>

**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$^{[1]}$.

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**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$^6$ 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**


Caution: Product has not been fully validated for medical applications. For research use only.