Monocrotaline

**Cat. No.:** HY-N0750  
**CAS No.:** 315-22-0  
**Molecular Formula:** C₁₆H₂₃NO₆  
**Molecular Weight:** 325.36  
**Target:** Others  
**Pathway:** Others  
**Storage:** 4°C, sealed storage, away from moisture and light  
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)

### SOLVENT & SOLUBILITY

#### In Vitro

<table>
<thead>
<tr>
<th>Solvent</th>
<th>Mass (mg/mL)</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMSO</td>
<td>37.5 mg/mL</td>
<td>3.0735 mL</td>
<td>15.3676 mL</td>
<td>30.7352 mL</td>
</tr>
<tr>
<td>H₂O</td>
<td>4 mg/mL</td>
<td>0.6147 mL</td>
<td>3.0735 mL</td>
<td>6.1470 mL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Concentration</strong></td>
</tr>
<tr>
<td>1 mM</td>
</tr>
<tr>
<td>5 mM</td>
</tr>
<tr>
<td>10 mM</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 >> 40% PEG300 >> 5% Tween-80 >> 45% saline**  
   Solubility: ≥ 2.5 mg/mL (7.68 mM); Clear solution

2. Add each solvent one by one: **10% DMSO >> 90% (20% SBE-β-CD in saline)**  
   Solubility: ≥ 2.5 mg/mL (7.68 mM); Clear solution

3. Add each solvent one by one: **10% DMSO >> 90% corn oil**  
   Solubility: ≥ 2.5 mg/mL (7.68 mM); Clear solution

### BIOLOGICAL ACTIVITY

**Description**  
Monocrotaline is a pyrrolizidine alkaloid extracted from the seeds of the Crotalaria spectabilis plant to induce pulmonary hypertension in rodents.

**In Vitro**  
Monocrotaline (MCT) is an 11-membered macrocyclic pyrrolizidine alkaloid (PA) derived from the seeds of the Crotalaria spectabilis plant[1]. Monocrotaline as a natural ligand exhibits dose-dependent cytotoxicity with potent antineoplastic activity. The in vitro cytotoxicity of monocrotaline is proved at IC₅₀ 24.966 μg/mL and genotoxicity at 2
In Vivo

MCT causes a pulmonary vascular syndrome in rats characterized by proliferative pulmonary vasculitis, pulmonary hypertension (PH), and cor pulmonale[3]. Among preclinical models of pulmonary arterial hypertension (PAH), monocrotaline animal model offers the advantage of mimic several key aspects of human PAH, including vascular remodeling, proliferation of smooth muscle cells, endothelial dysfunction, upregulation of inflammatory cytokines, and right ventricle failure, requiring a single drug injection[4]. Changes in multiple pathways associated with the development of PH, including activated glycolysis, increased markers of proliferation, disruptions in carnitine homeostasis, increased inflammatory and fibrosis biomarkers, and a reduction in glutathione biosynthesis are observed with the injection of monocrotaline[5].

PROTOCOL

Animal Administration [5]

Rats: A total of 20 male Sprague Dawley rats (SD; 220-270g) are used in this study (n=10 per group). Control group received vehicle for monocrotaline (MCT). Pre-pulmonary hypertension (PH) group received a single injection of MCT (60 mg/kg i.p.) to induce and are sacrificed after 14 days[5].

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

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REFERENCES


