Piperlongumine

Cat. No.: HY-N2329
CAS No.: 20069-09-4
Molecular Formula: C₁₇H₁₉NO₅
Molecular Weight: 317.34
Target: ERK; Reactive Oxygen Species; Autophagy; Apoptosis; Bacterial; Ferroptosis
Pathway: MAPK/ERK Pathway; Stem Cell/Wnt; Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB; Autophagy; Apoptosis; Anti-infection
Storage: Powder -20°C 3 years
4°C 2 years
In solvent -80°C 6 months
-20°C 1 month

**SOLVENT & SOLUBILITY**

**In Vitro**

DMSO : ≥ 100 mg/mL (315.12 mM)
* "≥" means soluble, but saturation unknown.

<table>
<thead>
<tr>
<th>Concentration</th>
<th>Mass</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mM</td>
<td>3.1512 mL</td>
<td>15.7560 mL</td>
<td>31.5119 mL</td>
<td></td>
</tr>
<tr>
<td>5 mM</td>
<td>0.6302 mL</td>
<td>3.1512 mL</td>
<td>6.3024 mL</td>
<td></td>
</tr>
<tr>
<td>10 mM</td>
<td>0.3151 mL</td>
<td>1.5756 mL</td>
<td>3.1512 mL</td>
<td></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: ≥ 2.08 mg/mL (6.55 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (6.55 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (6.55 mM); Clear solution

**BIOLOGICAL ACTIVITY**

**Description**

Piperlongumine is a natural alkaloid isolated from *Piper longum* Linn[1], possesses ant-inflammatory, antibacterial, antiangiogenic, antioxidant, antitumor, and antidiabetic activities[2]. Piperlongumine induces ROS, and induces apoptosis in cancer cell lines[1]. Piperlongumine shows anti-cardiac fibrosis activity, suppresses myofibroblast transformation via suppression of the ERK1/2 signaling pathway[2].
<table>
<thead>
<tr>
<th>IC₅₀ &amp; Target</th>
<th>ERK1</th>
<th>ERK2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In Vitro</strong></td>
<td>Piplartine (5, 10, and 15 μM) significantly decreases cell proliferation of 786-O, SKBR3, Panc1, A549, and L3.6pL cancer cells after treatment for 24 and 48 hours, induces apoptosis and ROS in these cell lines at 5 and 10 μM after 3 or 9 h of treatment[^1]. Piplartine (5 or 10 μM) induces cleaved PARP and downregulates Sp1, Sp3, Sp4, and Sp-regulated genes[^1]. Piplartine (20 μM) decreases the viability of cardiac fibroblasts (CFs). Piplartine (0-10 μM) suppresses myofibroblast transformation via suppression of the ERK1/2 signaling pathway[^2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</td>
<td></td>
</tr>
<tr>
<td><strong>In Vivo</strong></td>
<td>Piperlongumine (30 mg/kg/day, i.p. for 3 weeks) exhibits potent anti-tumor effect in athymic nude mice bearing L3.6pL cells without body weight loss[^1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</td>
<td></td>
</tr>
</tbody>
</table>

**REFERENCES**


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

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