Ramipril

Cat. No.: HY-B0279
CAS No.: 87333-19-5
Molecular Formula: C₂₃H₃₂N₂O₅
Molecular Weight: 416.51
Target: Angiotensin-converting Enzyme (ACE); Apoptosis
Pathway: Metabolic Enzyme/Protease; Apoptosis
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 (240.09 mM)
H₂O: 1 mg/mL (2.40 mM; Need ultrasonic)
* "≥" means soluble, but saturation unknown.

Preparing
Stock Solutions

<table>
<thead>
<tr>
<th>Solvent Concentration</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mM</td>
<td>2.4009 mL</td>
<td>12.0045 mL</td>
<td>24.0090 mL</td>
</tr>
<tr>
<td>5 mM</td>
<td>0.4802 mL</td>
<td>2.4009 mL</td>
<td>4.8018 mL</td>
</tr>
<tr>
<td>10 mM</td>
<td>0.2401 mL</td>
<td>1.2005 mL</td>
<td>2.4009 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 >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 3.25 mg/mL (7.80 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 3.25 mg/mL (7.80 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 3.25 mg/mL (7.80 mM); Clear solution

BIOLOGICAL ACTIVITY

Description
Ramipril (HOE-498) is an angiotensin-converting enzyme (ACE) inhibitor with IC₅₀ of 5 nM.

IC₅₀ & Target
ACE[1].
**In Vitro**

Ramipril (HOE-498) is an angiotensin-converting enzyme (ACE) inhibitor with IC$_{50}$ of 5 nM$^{[1]}$. Ramipril (HOE-498) enhances the activity of ACE-associated CK2 and the phosphorylation of ACE Ser1270 in cultured endothelial cells, but is unable to activate JNK or stimulate the nuclear accumulation of c-Jun in endothelial cells expressing a S1270A ACE mutant or in ACE-deficient cells. Prolonged Ramipril treatment increases ACE expression in primary cultures of human endothelial cells and in vivo (mouse lung), which can be prevented by pretreatment with the JNK inhibitor SP600125$^{[2]}$.

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

**In Vivo**

Chronic in vivo administration of Ramipril (HOE-498) to rats at a dosage that has similar hypotensive effects in vitro HUVECs significantly reduces the rate of LPS-induced apoptosis compared to the other ACE inhibitors, which contrasts with the apoptosis effect in vitro$^{[3]}$. Ramipril (HOE-498) inhibits systolic blood pressure (SBP) with IC$_{50}$ of 1.97 mg/kg in spontaneously hypertensive rats (SHR). When in combination with AT1-receptor blockade by candesartan-cilexetil increases SBP reduction synergistically rather than additively$^{[4]}$.

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**REFERENCES**


