# Ramipril

**Cat. No.:** HY-B0279  
**CAS No.:** 87333-19-5  
**Molecular Formula:** C\textsubscript{23}H\textsubscript{32}N\textsubscript{2}O\textsubscript{5}  
**Molecular Weight:** 416.51  
**Target:** Angiotensin-converting Enzyme (ACE)  
**Pathway:** Metabolic Enzyme/Protease  
**Storage:**  
- Powder: -20°C 3 years  
- Powder: 4°C 2 years  
- In solvent: -80°C 6 months  
- In solvent: -20°C 1 month

## SOLVENT & SOLUBILITY

### In Vitro

<table>
<thead>
<tr>
<th>Solvent</th>
<th>Mass (mL)</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMSO</td>
<td>≥ 100 mg/mL (240.09 mM)</td>
<td></td>
</tr>
<tr>
<td>H\textsubscript{2}O</td>
<td>1 mg/mL (2.40 mM); Need ultrasonic</td>
<td></td>
</tr>
</tbody>
</table>

* "≥" means soluble, but saturation unknown.

### Preparing Stock Solutions

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</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 \( IC_{50} \) of 5 nM.

### \( IC_{50} \) & Target

ACE\textsuperscript{[1]}.
In Vitro

Ramipril (HOE-498) is an angiotensin-converting enzyme (ACE) inhibitor with IC\textsubscript{50} of 5 nM\textsuperscript{[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\textsuperscript{[2]}.  

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\textsuperscript{[3]}. Ramipril (HOE-498) inhibits systolic blood pressure (SBP) with IC\textsubscript{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\textsuperscript{[4]}.  

REFERENCES


