Cinnamic acid

Cat. No.: HY-N0610A  
CAS No.: 621-82-9  
Molecular Formula: C₉H₈O₂  
Molecular Weight: 148.16  
Target: Endogenous Metabolite  
Pathway: Metabolic Enzyme/Protease  
Storage:     
Powder: -20°C 3 years  
4°C 2 years  
In solvent: -80°C 6 months  
-20°C 1 month

SOLVENT & SOLUBILITY

**In Vitro**

Ethanol: ≥ 50 mg/mL (337.47 mM)

* "≥" means soluble, but saturation unknown.

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<th>Solvent Concentration</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 mM</td>
<td>6.7495 mL</td>
<td>33.7473 mL</td>
<td>67.4946 mL</td>
</tr>
<tr>
<td></td>
<td>5 mM</td>
<td>1.3499 mL</td>
<td>6.7495 mL</td>
<td>13.4989 mL</td>
</tr>
<tr>
<td></td>
<td>10 mM</td>
<td>0.6749 mL</td>
<td>3.3747 mL</td>
<td>6.7495 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% EtOH >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
   Solubility: ≥ 2.5 mg/mL (16.87 mM); Clear solution
2. Add each solvent one by one: 10% EtOH >> 90% (20% SBE-β-CD in saline)  
   Solubility: ≥ 2.5 mg/mL (16.87 mM); Clear solution
3. Add each solvent one by one: 10% EtOH >> 90% corn oil  
   Solubility: ≥ 2.5 mg/mL (16.87 mM); Clear solution

BIOLOGICAL ACTIVITY

**Description**

Cinnamic acid has potential use in cancer intervention, with IC₅₀s of 1-4.5 mM in glioblastoma, melanoma, prostate and lung carcinoma cells.

**IC₅₀ & Target**

Human Endogenous Metabolite
Treatment with Cinnamic acid (CINN) of various tumor cells of epithelial and neuroectodermal origin result in dose-dependent growth inhibition following a 3-day exposure. The inhibitory concentrations causing a 50% reduction in tumor-cell proliferation (IC$_{50}$) are between 1.2 to 4.5 mM. It is also showed that 20 mM Cinnamic acid is needed to cause an IC$_{50}$ in FS4 cells, i.e. 5 to 20 times more than for tumor cells. In addition to inhibiting tumor-cell proliferation, Cinnamic acid causes morphological changes consistent with melanocyte differentiation. Within 5 days of treatment with 5 mM Cinnamic acid, melanoma 1011 cells appear enlarged with a markedly increased cytoplasm-to-nuclear ratio and well organized cytoskeleton, developed long dendritic processes and became highly melanotic. The change in the capacity of Cinnamic acid -treated melanoma 1011, A375(M) and SKMEL28 cells to degrade and cross tissue barriers is assessed by an in vitro invasion assay using modified Boyden chambers with matrigel-coated filters. After 3 days of continuous treatment with Cinnamic acid, a dose-dependent loss of invasive capacity in 3 tested tumor lines is observed. Treatment with 5 mM Cinnamic acid results in 75-95% loss of invasiveness[1].

**PROTOCOL**

**Cell Assay**

The cell lines used, established from human malignant tumors, are A549 (lung cancer); PC3(M), Du145, and LNCaP (prostate cancer); A172, U251 (glioblastoma); and SKMEL28, A375(M), 1011 (melanoma). Growth rates are determined by cell counting. Briefly, 5 X10$^4$ cells are plated in each well of a 24-well plate, allowed to attach overnight, and treated with compounds (e.g., Cinnamic acid: 2.5, 5, 10, 20, 30 mM) the following day. Cells are grown for 3 days at 37°C in the presence or absence of the drug, then detached with trypsin/EDTA and counted in a Coulter counter. Viability is determined by Trypan-blue exclusion assay[1].

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

**REFERENCES**