Resveratrol

Cat. No.: HY-16561
CAS No.: 501-36-0
Molecular Formula: C₁₄H₁₂O₃
Molecular Weight: 228.24
Target: IKK; Autophagy; Mitophagy; Sirtuin; Apoptosis; Bacterial; Fungal; Antibiotic; Keap1-Nrf2
Pathway: NF-κB; Autophagy; Cell Cycle/DNA Damage; Epigenetics; 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 (438.14 mM; Need ultrasonic)

Preparing Stock Solutions

<table>
<thead>
<tr>
<th>Solvent</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>4.3814 mL</td>
<td>21.9068 mL</td>
<td>43.8135 mL</td>
<td></td>
</tr>
<tr>
<td>5 mM</td>
<td>0.8763 mL</td>
<td>4.3814 mL</td>
<td>8.7627 mL</td>
<td></td>
</tr>
<tr>
<td>10 mM</td>
<td>0.4381 mL</td>
<td>2.1907 mL</td>
<td>4.3814 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: ≥ 2.5 mg/mL (10.95 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (10.95 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (10.95 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Resveratrol (trans-Resveratrol; SRT501), a natural polyphenolic phytoalexin that possesses anti-oxidant, anti-inflammatory, cardioprotective, and anti-cancer properties. Resveratrol (SRT 501) has a wide spectrum of targets including mTOR, JAK, β-amyloid, Adenyl cyclase, IKKβ, DNA polymerase. Resveratrol also is a specific SIRT1 activator[1][2][3][4]. Resveratrol is a potent pregnane X receptor (PXR) inhibitor[5]. Resveratrol is an Nrf2 activator, ameliorates aging-related progressive renal injury in mice model[6].
IC₅₀ & Target

<table>
<thead>
<tr>
<th>IC₅₀</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8 nM (IC₅₀)</td>
<td>Adenylyl cyclase</td>
</tr>
<tr>
<td>1 μM (IC₅₀)</td>
<td>IKKβ</td>
</tr>
<tr>
<td>3.3 μM (IC₅₀)</td>
<td>DNA polymerase α</td>
</tr>
<tr>
<td>5 μM (IC₅₀)</td>
<td>DNA polymerase δ</td>
</tr>
</tbody>
</table>

**Autophagy**

**Mitophagy**

**Sirtuin**

**In Vitro**

Resveratrol (trans-Resveratrol; SRT501) is one of the numerous polyphenolic compounds found in several vegetable sources. In the vast majority of cases, resveratrol displays inhibitory/activatory effects in the micromolar range, which is potentially attainable pharmacologically, although targets with affinities in the nanomolar range have also been reported.[1]

MCF-7 cells are plated in DME-F12 medium supplemented with 5% FBS in the presence of increasing concentrations of resveratrol. Control cells are treated with the same volume of vehicle only (0.1% ethanol). Resveratrol inhibits the growth of MCF-7 cells in a dose-dependent fashion. Addition of 10 μM resveratrol results in an 82% inhibition of MCF-7 cell growth after 6 days while at 1 μM, only a 10% inhibition is observed. The cells treated with 10 μM resveratrol have a doubling time of 60 hr whereas control cells doubled every 30 hr. Trypan blue exclusion assay shows that at concentrations of 10 μM or lower, resveratrol does not affect cell viability (90% viable cells) whereas at 100 μM, only 50% of the cells are viable after 6 days of resveratrol treatment. Moreover, MCF-7 cells do not undergo apoptosis after incubation with resveratrol at concentration of 10 μM as determined by ApoAlert Annexin V Apoptosis kit.[2]

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

**In Vivo**

The average tumor volume is reduced by treatment with resveratrol (trans-Resveratrol; SRT501) at a dose of 50 mg/kg body weight (195.5±124.8 mm³; P<0.05) or 100 mg/kg body weight (81.7±70.5 mm³; P<0.001) compared with the vehicle-treated animals (315±94 mm³). There is a good correlation between the tumor volume and the tumor mass.[3]

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

**PROTOCOL**

**Cell Assay**[2]

To determine the effect of resveratrol on cell growth, MCF-7 cells are plated in 6-well plates at 10⁵ cells per well in 2 mL of DME-F12 medium supplemented with 5% FBS in the presence or absence of increasing concentrations of resveratrol. The cell number is measured every 2 days till day 6 with a hemocytometer after detaching the cells with trypsin-EDTA.[2]

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**Animal Administration**[3]

Female BALB/c (nu/nu) mice, 6 weeks old, are used. PA-1 cells (1×10⁷ in 200 μL PBS) are injected s.c. on the right hind flank. Tumor volume (length×width×depth×0.52) is measured three times a week. After 10 days of implantation, two groups (n=10) are given resveratrol (dissolved in 5% ethanol and 25% polyethyleneglycol 400 in distilled water) i.p. at a daily dose of 50 or 100 mg/kg body weight for consecutive 4 weeks, whereas the other group receives the vehicle only. Body weights are recorded everyday. Animals are given bromodeoxyuridine (BrdUrd; 10 mg/kg body weight, i.p.) 2 h before sacrifice. Xenograft tumors are weighed and frozen in liquid nitrogen or fixed in 10% formalin and embedded in paraffin. The BrdUrd-labeled cells in paraffin-embedded tissues are detected employing a monoclonal anti-BrdUrd antibody.

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