Bafilomycin A1

Cat. No.: HY-100558
CAS No.: 88899-55-2
Molecular Formula: C₃₅H₅₈O₉
Molecular Weight: 622.83
Target: Proton Pump; Autophagy; Apoptosis
Pathway: Membrane Transporter/Ion Channel; Autophagy; Apoptosis
Storage: Powder -20°C 3 years
In solvent -80°C 6 months
-20°C 1 month

SOLVENT & SOLUBILITY

In Vitro
DMSO : 100 mg/mL (160.56 mM; Need ultrasonic)
H₂O : < 0.1 mg/mL (insoluble)

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>1.6056 mL</td>
<td>8.0279 mL</td>
<td>16.0557 mL</td>
</tr>
<tr>
<td>5 mM</td>
<td>0.3211 mL</td>
<td>1.6056 mL</td>
<td>3.2111 mL</td>
</tr>
<tr>
<td>10 mM</td>
<td>0.1606 mL</td>
<td>0.8028 mL</td>
<td>1.6056 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: ≥ 2.5 mg/mL (4.01 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.5 mg/mL (4.01 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (4.01 mM); Clear solution

BIOLOGICAL ACTIVITY

Description
Bafilomycin A1, a macrolide antibiotic isolated from the Streptomyces species, is a specific inhibitor of vacuolar-type H⁺ ATPase (V-ATPase). Bafilomycin A1 inhibits autophagy and induces apoptosis[1].

IC₅₀ & Target
V-ATPase[1]

In Vitro
Bafilomycin A1 at a low concentration (1 nM) effectively and specifically inhibits and kills pediatric B-cell acute
lymphoblastic leukemia cells. It targets both early and late stages of the autophagy pathway, mitochondria and induces caspase-independent apoptosis. Bafilomycin A1 induces the binding of Beclin 1 to Bcl-2, which further inhibits autophagy and promotes apoptotic cell death[1]. The growth of the BEL-7402 hepatocellular carcinoma and HO-8910 ovarian cancer cell lines are retarded and the metastatic potential is inhibited by Bafilomycin A1. Transmission electron microscopy and assays of capsase-3 and -9 suggest that Bafilomycin A1 induces apoptosis[2]. Bafilomycin A1 inhibits the growth of a variety of cultured cells dose-dependently, including golden hamster embryo and NIH-3T3 fibroblasts, whether or not they are transformed, and PC12 and HeLa cells. The IC_{50} of Bafilomycin A1 for inhibition of cell growth ranges from 10 to 50 nM[3].

### In Vivo
Chronic treatment with low-dose Bafilomycin A1 (0.1 mg/kg) slightly inhibits the tumor volume, but the final tumor volume does not differ significantly from the control. However, chronic treatment with high dose Bafilomycin A1 (1 mg/kg) inhibits the tumor growth significantly, compared with controls, after 21 days[4].

### PROTOCOL

#### Cell Assay [2]
Cells are harvested using 0.05% trypsin and suspended in culture medium containing 10% FCS, and 200 µL suspension is added to each well of a 96-well plate. Cells are cultured for 20 h for adhesion. Bafilomycin A1 is added to the wells at the final concentrations of 200, 400 and 800 nM, in triplicate. At 24, 48 and 72 h, 20 µl WST-1 is added to the cells. Following incubation at 37°C for 4 h, the plates are read to determine the optical density (OD) at 435 nm with 675 nm reference using a spectrophotometer[2].

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

#### Animal Administration [4]
Mice: Tumor-bearing mice are divided randomly into three experimental groups: a low-dose Bafilomycin A1 (0.1 mg/kg per day)-treated group (n=5), a high-dose Bafilomycin A1 (1 mg/kg per day)-treated group (n=5), and a control group (n=5). Tumor size is measured and tumor volume doubling time is calculated[4].

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

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### REFERENCES

