Protocatechuic acid

Cat. No.: HY-N0294
CAS No.: 99-50-3
Molecular Formula: C₇H₆O₄
Molecular Weight: 154.12
Target: Others
Pathway: Others
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 : 50 mg/mL (324.42 mM; Need ultrasonic)
H₂O : 10 mg/mL (64.88 mM; Need ultrasonic)

<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>6.4885 mL</td>
<td>32.4423 mL</td>
<td>64.8845 mL</td>
</tr>
<tr>
<td>5 mM</td>
<td>1.2977 mL</td>
<td>6.4885 mL</td>
<td>12.9769 mL</td>
</tr>
<tr>
<td>10 mM</td>
<td>0.6488 mL</td>
<td>3.2442 mL</td>
<td>6.4885 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 (16.22 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (16.22 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (16.22 mM); Clear solution

BIOLOGICAL ACTIVITY

Description
Protocatechuic acid is a phenolic compound which exhibits neuroprotective effect.

In Vitro
Protocatechuic acid inhibits the aggregation of Aβ and αS and destabilizes their preformed fibrils. Protocatechuic acid prevents the death of PC12 cells triggered by Aβ- and αS-induced toxicity[3].
In Vivo

Protocatechuic acid is able to prevent stress induced immobility time in forced swim test without altering locomotor activity in mice. Further, Protocatechuic acid treatment attenuates the elevation of serum corticosterone, lipid peroxidation and restores enzymatic antioxidants in cerebral cortex and hippocampus in ARS mice\(^1\). Rat administered cadmium and treated with prostigmine and doses of Protocatechuic acid (10–20 mg/kg) has significantly reduced BChE activity. Cadmium and either prostigmine or Protocatechuic acid (10–20 mg/kg) treated rats shows significant reduction in MDA level\(^2\).

**PROTOCOL**

**Kinase Assay\(^2\)**

AChE activity investigation is carried out in a reaction mixture containing 50 μL of tissue homogenate, 50 μL of 5, 5’-dithiobis-(2-nitrobenzoic) acid (DTNB), 1175 μL of 0.1 M phosphate-buffered solution, pH 8.0. After incubation for 20 min at 25°C, 25 μL of acetyltiocholine iodide solution is added as the substrate. The AChE activity is determined as changes in absorbance reading at 412 nm for 3 min at 25°C and using a UV/Visible spectrophotometer.

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

**Cell Assay\(^3\)**

Dilutions of Protocatechuic acid (2, 5, 10, 20, 50, and 100 μM) are prepared from stock solutions, with serum-free culture medium. Equal volumes of each solution are mixed with Aβ1-42 (10 μM), then incubated for 24 h on a thermoblock, with continuous agitation, and then exposed to PC12 cells for 24 h to test whether Protocatechuic acid can prevent cell death triggered by Aβ. Cell viability is determined by MTT reduction assay. Cells are treated with 200 μL per well of MTT solution (final concentration, 0.5 mg/mL in DMEM-Glutamax medium) for 3 h, at 37°C, with 5% CO\(_2\). The dark blue formazan crystals that formed are solubilized with 100 μL per well of DMSO, for 30 min. Absorbance is measured at 540 nm, with a microplate reader. Results are expressed as the percentage of MTT reduction in relation to the absorbance of control cells at 100%.

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**REFERENCES**


