Citocline

Cat. No.: HY-B0739
CAS No.: 987-78-0
Molecular Formula: C_{14}H_{26}N_{4}O_{11}P_{2}
Molecular Weight: 488.32
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

H_{2}O: ≥ 103.33 mg/mL (211.60 mM)
*“≥” means soluble, but saturation unknown.

Preparing Stock Solutions

<table>
<thead>
<tr>
<th>Solvent Concentration</th>
<th>Mass of 1 mg</th>
<th>Mass of 5 mg</th>
<th>Mass of 10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mM</td>
<td>2.0478 mL</td>
<td>10.2392 mL</td>
<td>20.4784 mL</td>
</tr>
<tr>
<td>5 mM</td>
<td>0.4096 mL</td>
<td>2.0478 mL</td>
<td>4.0957 mL</td>
</tr>
<tr>
<td>10 mM</td>
<td>0.2048 mL</td>
<td>1.0239 mL</td>
<td>2.0478 mL</td>
</tr>
</tbody>
</table>

Please refer to the solubility information to select the appropriate solvent.

BIOLOGICAL ACTIVITY

Description

Citocline is an intermediate in the synthesis of phosphatidylcholine, a component of cell membranes. Citocline exerts neuroprotective effects.

In Vitro

To determine the potential neuroprotective activity of Citocline and Homotaurine, treated retinal cells are treated with increasing concentrations of Citocline or Homotaurine for 24 hours. 1 μM, 10 μM and 100 μM of Citocline or Homotaurine are used to investigate whether may contribute to a reduced cell viability in retinal cells. Retinal cells are well preserved in Citocline- or Homotaurine-treated cultures, with no evidence of toxicity or significant loss of viability after treatments. 100 μM of Citocline is not harmful to retinal neuroglial cells in vitro and 100 μM of Homotaurine is an effective concentration to enhance neuroprotection in a model of experimental glaucoma. Therefore, this concentration of Citocline and Homotaurine is used for all subsequent experiments. To evaluate whether cotreatment with Citocline and Homotaurine is able to induce a synergistic neuroprotective effect against glutamate excitotoxicity, retinal cell cultures are exposed to Citocline 100 μM, Homotaurine 100 μM, and Citocline+Homotaurine 100 μM, 24 hours before glutamate treatment. In the presence of 100 μM Citocline, a
significant increase in cell viability is observed\cite{1}.

**In Vivo**

Administration of Citicoline in a dose of 1000 mg/kg produces more pronounced increase in the threshold of clonic seizures and tonic phase of seizures with lethal outcome (by 18.54 and 50.08% respectively, in comparison with the control). The anticonvulsant effect is most pronounced after injection of Citicoline in a dose of 1000 mg/kg\cite{2}.

**PROTOCOL**

**Cell Assay** \cite{1}

The assay used to assess cell viability in retinal cells was the MTT reduction assay. To evaluate the effect of Citicoline and Homotaurine on cell survival, the cells are subdivided into three groups and treated for 24 hours with 1 \(\mu\)M, 10 \(\mu\)M, and 100 \(\mu\)M of Citicoline and with 1 \(\mu\)M, 10 \(\mu\)M and 100 \(\mu\)M of Homotaurine. To evaluate the neuroprotective effects of Citicoline and Homotaurine, cells are treated with Citicoline 100 \(\mu\)M, Homotaurine 100 \(\mu\)M, or Citicoline+Homotaurine 100 \(\mu\)M, 24 hours before glutamate treatment and 30 min before high glucose (HG) treatment. MTT is added to wells at a final concentration of 0.5 mg/mL for 1 hour at 37°C. After this time, the medium is removed and reduced MTT (blue formazan product) is solubilized by adding 100 \(\mu\)L DMSO to each well. After agitation of plates for 15 min, the optical density of the solubilized formazan product in each well is measured using an automatic microplate reader with a 570 nm test wavelength and a 690 nm reference wavelength\cite{1}.

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

**Animal Administration** \cite{1}

Mice\cite{1}

Experiments are performed on male C57Bl/6 mice (n=69) weighing 23-27 g. The study is performed in two series. In series I, the dose-dependent effect of Citicoline on the seizure threshold in mice is evaluated. The measurements are performed 1 h after Citicoline administration. Citicoline in doses of 500 and 1000 mg/kg (0.04 mL per 20 g body weight) is injected intraperitoneally. The control animals receive an equivalent volume of physiological saline under similar conditions. In series II, the duration of Citicoline effect is estimated in 3 and 6 h after single intraperitoneal injection of Citicoline.

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

**REFERENCES**
