1,3-Dicaffeoylquinic acid

Cat. No.: HY-N1412
CAS No.: 19870-46-3
Molecular Formula: C_{25}H_{24}O_{12}
Molecular Weight: 516.45
Target: PI3K, Akt
Pathway: PI3K/Akt/mTOR
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: ≥ 23 mg/mL (44.53 mM)
*“≥” means soluble, but saturation unknown.

Preparing Stock Solutions

<table>
<thead>
<tr>
<th>Solvent Concentration</th>
<th>Mass 1 mg</th>
<th>Mass 5 mg</th>
<th>Mass 10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mM</td>
<td>1.9363 mL</td>
<td>9.6815 mL</td>
<td>19.3630 mL</td>
</tr>
<tr>
<td>5 mM</td>
<td>0.3873 mL</td>
<td>1.9363 mL</td>
<td>3.8726 mL</td>
</tr>
<tr>
<td>10 mM</td>
<td>0.1936 mL</td>
<td>0.9681 mL</td>
<td>1.9363 mL</td>
</tr>
</tbody>
</table>

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

BIOLOGICAL ACTIVITY

Description
1,3-Dicaffeoylquinic acid is a caffeoylquinic acid derivative that exhibits antioxidant activity and radical scavenging activity.

In Vitro 1,3-Dicaffeoylquinic acid shows increased neuronal cell viability against Aβ(42) toxicity in a concentration-dependent manner in neurons. 1,3-Dicaffeoylquinic acid activates both phosphoinositide 3-kinase (PI3K)/Akt and extracellular regulated protein kinase 1/2 (Erk1/2) with stimulating their upstream tyrosine kinase A (Trk A). 1,3-Dicaffeoylquinic acid’s anti-apoptotic potential is related to the enhanced inactivating phosphorylation of glycogen synthase kinase 3β (GSK3β) and the modulation of expression of apoptosis-related protein Bcl-2/Bax. 1,3-Dicaffeoylquinic acid (10 μM, 20 μM, 50 μM, and 100 μM) significantly increases cell viability before OGD/reperfusion, and prevents the depletion of GSH under OGD/reperfusion insult. 1,3-Dicaffeoylquinic acid induces nuclear translocation of Nrf2 in OGD/reperfusion treated astrocytes, and induces increased GCL activity, and the effect is lost in Nrf2 siRNA-transfected cells.
**In Vivo**

1,3-Dicaffeoylquinic acid (32.0 mg/kg, p.o.) and 1-O-ABL are absorbed very quickly in Wistar rats. The maximum plasma concentrations for 1,3-Dicaffeoylquinic acid and 1-O-ABL are 44.5 ± 7.1 and 19.1 ± 6.9 ng/mL, respectively[1].

**PROTOCOL**

**Kinase Assay**[3]

The whole cellular lysate is prepared using a RIPA Lysis Buffer added to a reaction buffer containing 0.1 M Tris (pH 8.2), 0.15 M KCl, 10 mM ATP, 10 mM L-glutamate, 20 mM MgCl₂, and 2 mM EDTA at 37°C for 3 min, and then 5 mM cysteine is added at 37°C for 15 min. The production of glutamylcysteine is immediately quantified for HPLC analysis by O-phthalaldehyde derivatization. GCL activity is presented in units of femtomoles of -GC produced per milligram of protein per minute[3].

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

**Cell Assay**[3]

The viability of astrocytes is measured by the MTT reduction method. Briefly, the cells are rinsed with phosphate-buffered saline, pH 7.2, and incubated with 5 mg/mL MTT reagent for 3 h at 37°C. The medium is removed, and the cells are lysed with 1 mL of dimethyl sulfoxide. The absorbance is measured at 540 nm by a microplate reader[3].

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**Animal Administration**[1]

Six male Wistar rats (200-250 g) are fasted for 12 h with free access to water prior to oral administration of I. britannica extract with an herb dose of 8.0 g/kg (equivalent to 32.0 mg/kg 1,3-Dicaffeoylquinic acid, and 4.01 mg/kg, 1-O-ABL). Blood samples (appr 0.25 mL) are collected from suborbital vein into heparinized tubes at 0, 0.08, 0.16, 0.33, 0.67, 1, 1.5, 2, 4, 6, 9 and 12 h after dosing, and then immediately centrifuged at 3500 rpm for 10 min. Harvested plasma samples are stored at -60°C until analysis. The plasma concentrations of 1,3-Dicaffeoylquinic acid and 1-O-ABL are calculated from the calibration curves obtained daily[1].

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

**REFERENCES**

