Cutamesine dihydrochloride

Cat. No.: HY-13510
CAS No.: 165377-44-6
Molecular Formula: C₂₃H₃₄Cl₂N₂O₂
Molecular Weight: 441.43
Target: Sigma Receptor
Pathway: GPCR/G Protein
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: 30 mg/mL (67.96 mM; Need ultrasonic and warming)

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<th>Solvent Concentration</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></td>
<td></td>
<td>2.2654 mL</td>
<td>11.3268 mL</td>
<td>22.6536 mL</td>
</tr>
<tr>
<td>5 mM</td>
<td></td>
<td></td>
<td>0.4531 mL</td>
<td>2.2654 mL</td>
<td>4.5307 mL</td>
</tr>
<tr>
<td>10 mM</td>
<td></td>
<td></td>
<td>0.2265 mL</td>
<td>1.1327 mL</td>
<td>2.2654 mL</td>
</tr>
</tbody>
</table>

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

**BIOLOGICAL ACTIVITY**

**Description**
Cutamesine dihydrochloride (SA4503 dihydrochloride) is a potent Sigma 1 receptor agonist with an IC₅₀ of 17.4 nM in guinea pig brain membranes.

**IC₅₀ & Target**
IC₅₀: 17.4 nM (σ1 receptor, guinea pig brain membranes)[1]

**In Vitro**
The sigma receptor might be involved in several diseases in the central nervous system. Cutamesine, a potent σ1 receptor agonist, has 103-fold higher affinity for σ1 (IC₅₀=17.4 nM) than σ2 (IC₅₀=1,784 nM) sites in guinea pig brain membranes. Cutamesine is 14-fold selective for σ1 (Kᵢ=4.6 nM) over σ2 (Kᵢ=63.1 nM) sites in guinea pig brain homogenates[2]. Cutamesine protects motor neuron NSC34 cells against superoxide dismutase 1 and serum free neurotoxicity. It upregulates the phosphorylation levels of Akt and extracellular signal-regulated kinase (ERK) 1/2[2].
Cutamesine reduces the activation of the MAPK/ERK pathway and down-regulated the ionotropic glutamate receptor, GluR1[3].

**In Vivo**
Cutamesine extends the survival time in the SOD1G93A mice[2].
## PROTOCOL

### Cell Assay [2]

The NSC34 cells are seeded at a density of 7000 cells per well into 96-well plates with D-MEM and transfected using Lipofectamine 2000 mixed with 2 μg/mL of plasmid vector in D-MEM for 6 h. After 6 h, the cell-culture medium is replaced with fresh D-MEM and culture and allowed to proceed for a further 42 h. The cells are then transferred to serum-free D-MEM and immediately treated with Cutamesine at a final concentration of 1, 3, or 10 nM [2].

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

### Animal Administration [2]

Mice: Transgenic female mice overexpressing mutated human SOD1\textsuperscript{G93A} are used in the study. Cutamesine is dissolved in saline and subcutaneously administered at a dose of 1 mg/kg once daily to 5-week-old SOD1\textsuperscript{G93A} mice to the time of death. In a control group, vehicle (saline) is subcutaneously administered at 10 ml/kg [2].

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

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## REFERENCES


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**Caution:** Product has not been fully validated for medical applications. For research use only.

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