Mirtazapine

Cat. No.: HY-B0352
CAS No.: 85650-52-8
Molecular Formula: C₁₇H₁₉N₃
Molecular Weight: 265.35
Target: 5-HT Receptor; Histamine Receptor; Adrenergic Receptor
Pathway: GPCR/G Protein; Neuronal Signaling; Immunology/Inflammation
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 (188.43 mM; Need ultrasonic)
H₂O: 0.67 mg/mL (2.52 mM; Need ultrasonic)

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<th>Solvent</th>
<th>Mass Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 mg</td>
<td>5 mg</td>
</tr>
<tr>
<td>1 mM</td>
<td>3.7686 mL</td>
<td>18.8430 mL</td>
</tr>
<tr>
<td>5 mM</td>
<td>0.7537 mL</td>
<td>3.7686 mL</td>
</tr>
<tr>
<td>10 mM</td>
<td>0.3769 mL</td>
<td>1.8843 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 (9.42 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (9.42 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (9.42 mM); Clear solution

BIOLOGICAL ACTIVITY

Description
Mirtazapine (Org3770) is a potent and orally active noradrenergic and specific serotonergic antidepressant (NaSSA) agent. Mirtazapine is also a 5-HT₂, 5-HT₃, histamine H1 receptor and α2-adrenoceptor antagonist with pKᵢ values of 8.05, 8.1, 9.3 and 6.95, respectively[1][2].

IC₅₀ & Target

<table>
<thead>
<tr>
<th>5-HT₃ Receptor (pKᵢ)</th>
<th>5-HT₂ Receptor (pKᵢ)</th>
<th>H₁ Receptor (pKᵢ)</th>
<th>α2-adrenoceptor (pKᵢ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1</td>
<td>8.05</td>
<td>9.3</td>
<td>6.95</td>
</tr>
</tbody>
</table>
In Vitro

Mirtazapine can antagonize the adrenergic α2-autoreceptors and α2-heteroreceptors as well as block 5-HT₂ and 5-HT₃ receptors. Mirtazapine enhances the release of norepinephrine and 5-HT₁A-mediated serotonergic transmission. The cytochrome (CYP) P450 isoenzymes CYP1A2, CYP2D6, and CYP3A4 are mainly responsible for Mirtazapine’s metabolism.

Mirtazapine (10 μM) significantly reduces activation-induced release of cytokine/chemokine mediators from human CD14⁺ monocytes in vitro. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Mirtazapine (1-20 mg/kg; intraperitoneal injection; once; C57BL/6 mice) treatment strikingly and dose-dependently inhibits Con A-induced liver injury. Mirtazapine treatment inhibits hepatic macrophage/monocyte activation, decreases hepatic macrophage/monocyte-derived pro-inflammatory cytokine (e.g., TNFα) and chemokine (e.g., CXCL1 and CXCL2) production, suppression of Con A-induced increases in the hepatic expression of the neutrophil relevant endothelial cell adhesion molecule ICAM-1, with the resultant significant reduction in neutrophil recruitment into the liver. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model: Male C57BL/6 mice (8-10 week old) treated with concanavalin A (Con A)

Dosage: 1 mg/kg, 10 mg/kg, and 20 mg/kg

Administration: Intraperitoneal injection; once

Result: Strikkiingly and dose-dependently inhibited Con A-induced liver injury.

REFERENCES

