FPS-ZM1

Cat. No.: HY-19370  
CAS No.: 945714-67-0  
Molecular Formula: C₂₀H₂₂ClNO  
Molecular Weight: 327.85  
Target: Amyloid-β  
Pathway: Neuronal Signaling  
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 : ≥ 100 mg/mL (305.02 mM)  
H₂O : < 0.1 mg/mL (insoluble)  
* "≥" means soluble, but saturation unknown.

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<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></td>
<td>3.0502 mL</td>
<td>15.2509 mL</td>
<td>30.5018 mL</td>
</tr>
<tr>
<td>5 mM</td>
<td></td>
<td>0.6100 mL</td>
<td>3.0502 mL</td>
<td>6.1004 mL</td>
</tr>
<tr>
<td>10 mM</td>
<td></td>
<td>0.3050 mL</td>
<td>1.5251 mL</td>
<td>3.0502 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 (7.63 mM); Suspended solution; Need ultrasonic

2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
   Solubility: 2.5 mg/mL (7.63 mM); Suspended solution; Need ultrasonic

3. Add each solvent one by one: 10% DMSO >> 90% corn oil  
   Solubility: ≥ 2.5 mg/mL (7.63 mM); Clear solution

BIOLOGICAL ACTIVITY

Description  
FPS-ZM1 is a high-affinity RAGE inhibitor with a Kᵢ of 25 nM.

IC₅₀ & Target  
Kᵢ: 25 nM (RAGE)[¹]
In Vitro
FPS-ZM1 inhibits Aβ/RAGE binding in CHO cells with approximately 2-fold greater affinity than its parent molecule, FPS2. FPS-ZM1 inhibits binding of other known RAGE ligands to sRAGE, including S100 calcium-binding protein B and amphoterin. FPS-ZM1 is more effective than FPS2 in reducing Aβ40-induced increases in BACE1 mRNA and protein levels and the generation of sAPPβ, an APP cleavage product of BACE1 indicative of BACE1 activity[1].

In Vivo
FPS-ZM1 is nontoxic to mice and readily crossed the blood-brain barrier. In aged APPsw/0 mice overexpressing human Aβ-precursor protein, a transgenic mouse model of AD with established Aβ pathology, FPS-ZM1 inhibits RAGE-mediated influx of circulating Aβ40 and Aβ42 into the brain. In brain, FPS-ZM1 binds exclusively to RAGE, which inhibits β-secretase activity and Aβ production and suppresses microglia activation and the neuro-inflammatory response[1]. FPS-ZM1 treatment reduces the level of Aβ1-40 and Aβ1-42 in AGEs Rats. It Inhibits AGEs-mediated increase of Aβ-metabolism-related proteins and downregulates AGEs-mediated increase of pro-inflammatory cytokines in the hippocampus. FPS-ZM1 up-Regulates anti-oxidant defense system and attenuated AGEs induced memory impairment in AGEs rats[2].

PROTOCOL

Kinase Assay [1]
Human sRAGE is immobilized (10 μg/mL) overnight at 4°C in 96-well microtiter plates and blocked with 3% bovine serum albumin. 125I-labeled Aβ40, HMGB1, or S100B at 5 nM in the absence and presence of various concentrations of FPS2 or FPS-ZM1 (10 to 1,000 nM) is added to the wells containing immobilized sRAGE and incubated for 1 hour at room temperature in PBS. Wells are washed with cold PBS to remove unbound radiolabeled ligands, and the radioactivity is analyzed[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Assay [1]
To determine whether FPS2 and FPS-ZM1 are toxic to CHO cells, the cells are treated for 72 hours with different concentrations of inhibitors ranging from 10 nM to 10 μM. The cellular toxicity is determined using the WST-8 Assay Kit[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Administration [1][2]
Rats: Starting from 1 week before intrahippocampal injection, FZM1 and AGEs+FZM1 rats are intraperitoneally injected with FPS-ZM1 (1 mg/kg/d at a volume of 2 mL) for 4 weeks; rats in the AGEs and the control groups are intraperitoneally injected with normal saline with the same volume for 4 weeks. Three weeks after AGEs intrahippocampal injection, the escape latency time of rats is assayed with Morris water maze test, and then all rats are sacrificed[4]. Mice: FPS2 or FPS-ZM1 are administered i.v. (1 mg/kg) via the femoral vein and arterial blood samples (30 μL) collected at 1, 5, 10, 15, and 20 minutes via the cannulated femoral artery. Plasma is separated by centrifugation at 4°C and immediately stored at -80°C until analysis[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Cell Prolif. 2018 Oct;51(5):e12471

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REFERENCES

