**Timosaponin AIII**

**Cat. No.:** HY-N0810  
**CAS No.:** 41059-79-4  
**Molecular Formula:** C₃₉H₆₄O₁₃  
**Molecular Weight:** 740.92  
**Target:** AChE  
**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: 50 mg/mL (67.48 mM; Need ultrasonic)

<table>
<thead>
<tr>
<th>Solvent</th>
<th>Mass Concentration</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mM</td>
<td>1.3497 mL</td>
<td>6.7484 mL</td>
<td>13.4967 mL</td>
<td></td>
</tr>
<tr>
<td>5 mM</td>
<td>0.2699 mL</td>
<td>1.3497 mL</td>
<td>2.6993 mL</td>
<td></td>
</tr>
<tr>
<td>10 mM</td>
<td>0.1350 mL</td>
<td>0.6748 mL</td>
<td>1.3497 mL</td>
<td></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 >> 90% (20% SBE-β-CD in saline)  
   Solubility: ≥ 2.5 mg/mL (3.37 mM); Clear solution  
2. Add each solvent one by one: 10% DMSO >> 90% corn oil  
   Solubility: ≥ 2.5 mg/mL (3.37 mM); Clear solution

### BIOLOGICAL ACTIVITY

**Description**  
Timosaponin AIII could inhibit acetylcholinesterase (AChE) activity, with an IC₅₀ of 35.4 μM.

**IC₅₀ & Target**  
IC₅₀: 35.4 μM (AChE)[¹].

**In Vitro**  
Timosaponin AIII could inhibit acetylcholinesterase (AChE) activity, with an IC₅₀ of 35.4 μM[¹]. Timosaponin AIII is identified as a major selective cytotoxic activity in BN108, and its selective cytotoxic activity involves inhibition of mTOR, induction of ER stress and protective autophagy[²].

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

Of the tested steroidal saponins, Timosaponin AIII (TA3) most potently improves memory deficits. Timosaponin AIII increases the scopolamine-induced reduction in step-through latency by 17% (10 mg/kg), 28% (20 mg/kg), and 43% (40 mg/kg). During the acquisition trial, no differences in latent time are observed. Timosaponin AIII (20, 40 mg/kg, p.o.) potently inhibits this reduction of acetylcholine in scopolamine-treated mouse brain. The inhibitory effect of Timosaponin AIII is comparable to that of tacrine, which is used as a positive control[1].

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**PROTOCOL**

**Animal Administration** [1]

Male ICR mice weighing 28-30 g are used. For the acquisition trial, mice are initially placed in the illuminated compartment and the door between the two compartments is opened 10 s later. Each group contains ten mice. One hour or 5 h before the acquisition trial, mice receive each test agent (e.g., Timosaponin AIII 10, 20 or 40 mg/kg, p.o.). One hour before the acquisition trial, mice receive tacrine (10 mg/kg, p.o.) as a positive control. Memory impairment is induced by scopolamine treatment (1 mg/kg, i.p.) 0.5 h or 4.5 h after the administration of test agents, tacrine, or 10% Tween 80 solution. Control animals are administered 10% Tween 80 solution alone. Twenty-four hours after the acquisition trial, the mice are again placed in the illuminated compartment for retention trials. The time taken for a mouse to enter the dark compartment after the door opened is measured as the latency time in both acquisition and retention trials, with a maximum of 300 s[1].

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

**REFERENCES**
