### Aloin

**Cat. No.:** HY-N0123  
**CAS No.:** 1415-73-2  
**Molecular Formula:** $C_{21}H_{22}O_9$  
**Molecular Weight:** 418.39  
**Target:** Others  
**Pathway:** Others  
**Storage:**  
- Powder: -20°C 3 years  
  4°C 2 years  
- In solvent: -80°C 2 years  
  -20°C 1 year

### SOLVENT & SOLUBILITY

#### In Vitro

DMSO: 125 mg/mL (298.76 mM; Need ultrasonic)

<table>
<thead>
<tr>
<th>Solvent</th>
<th>Mass (mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mg</td>
<td></td>
</tr>
<tr>
<td>5 mg</td>
<td></td>
</tr>
<tr>
<td>10 mg</td>
<td></td>
</tr>
</tbody>
</table>

- **Preparating Stock Solutions**

<table>
<thead>
<tr>
<th>Solvent</th>
<th>Concentration</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 mM</td>
<td>2.3901 mL</td>
<td>11.9506 mL</td>
<td>23.9011 mL</td>
</tr>
<tr>
<td></td>
<td>5 mM</td>
<td>0.4780 mL</td>
<td>2.3901 mL</td>
<td>4.7802 mL</td>
</tr>
<tr>
<td></td>
<td>10 mM</td>
<td>0.2390 mL</td>
<td>1.1951 mL</td>
<td>2.3901 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: ≥ 2.08 mg/mL (4.97 mM); Clear solution

2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
   Solubility: ≥ 2.08 mg/mL (4.97 mM); Clear solution

### BIOLOGICAL ACTIVITY

**Description**

Aloin (Aloin-A; Barbaloin-A) is a natural anti-tumor anthraquinone glycoside with iron chelating activity. Aloin induces the differentiation of MC3T3-E1 cells into osteoblasts through MAPK-mediated Wnt and Bmp signaling pathways. Alkaline phosphatase (ALP) is an early marker of osteoblast differentiation, and the activity of ALP is also enhanced by Aloin. Aloin also reduces brain edema, reduces blood-brain barrier disruption and improves cortical impact injuries. Aloin is used in research into osteoporosis and traumatic brain injury (TBI)[1][2][3][4].

**In Vitro**

Aloin (0.01-1 μM; 10 d) enhances the expression of osteoblast differentiation genes, Bmp-2, Runx2, and collagen 1a in a dose-dependent manner[3].

Aloin (0.05 μM; 10 d) induces the differentiation of MC3T3-E1 cells into osteoblasts through MAPK-mediated Wnt and Bmp signaling pathways[3].
Aloin (0.05 μM; 10 d) increases ALP activity in MC3T3-E1 cells\textsuperscript{[3]}.
Aloin (10-80 μg/mL; 4.5 h) increases cell viability after biaxial stretch injury (SI), via attenuates intracellular ROS generation, inhibits changes of mitochondrial membrane potentials in mouse cerebrovascular endothelial cells (ECs)\textsuperscript{[4]}.
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo
Aloin (10-30 mg/kg; single dose; ip 30 min before TBI injury) ameliorates traumatic brain injury (TBI) induced brain edema by controlled cortical impact injury in mice. Aloin exhibits antioxidant stress and anti-apoptotic properties in mouse brain capillary endothelial cells\textsuperscript{[4]}.
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Int Immunopharmacol. 2020 Dec;89(Pt B):107079.
- Stem Cells Int. 06 Jan 2022.

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REFERENCES


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