Kartogenin

**Cat. No.:** HY-16268  
**CAS No.:** 4727-31-5  
**Molecular Formula:** C₂₀H₁₅NO₃  
**Molecular Weight:** 317.34  
**Target:** TGF-beta/Smad  
**Pathway:** Stem Cell/Wnt; TGF-beta/Smad  
**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: ≥ 42 mg/mL (132.35 mM)  
*"≥" means soluble, but saturation unknown.*

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<th>Solvent Mass</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Concentration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 mM</td>
<td></td>
<td>3.1512 mL</td>
<td>15.7560 mL</td>
<td>31.5119 mL</td>
</tr>
<tr>
<td>5 mM</td>
<td></td>
<td>0.6302 mL</td>
<td>3.1512 mL</td>
<td>6.3024 mL</td>
</tr>
<tr>
<td>10 mM</td>
<td></td>
<td>0.3151 mL</td>
<td>1.5756 mL</td>
<td>3.1512 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 (7.88 mM); Clear solution  
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
   Solubility: ≥ 2.5 mg/mL (7.88 mM); Clear solution  
3. Add each solvent one by one: 10% DMSO >> 90% corn oil  
   Solubility: ≥ 2.5 mg/mL (7.88 mM); Clear solution

**BIOLOGICAL ACTIVITY**

**Description**  
Kartogenin is an inducer of differentiation of human mesenchymal stem cells into chondrocytes.

**In Vitro**  
Kartogenin enhances cell proliferation in both cell types in a concentration-dependent manner and induces chondrogenic differentiation of stem cells, as demonstrated by high expression levels of chondrogenic markers aggrecan, collagen II and Sox-9. Besides, kartogenin induces the formation of cartilage-like tissues in cell cultures, as...
observed through the staining of abundant proteoglycans, collagen II and osteocalcin[1]. Kartogenin stimulates type-I collagen synthesis of fibroblasts at the mRNA and protein levels in a time-dependent manner without obvious influence on fibroblasts’ apoptosis and viability. Smad4/smad5 of the TGF-β signaling pathway is activated by kartogenin while MAPK signaling pathway remains unchanged[2]. Kartogenin treatment enhances chondrocyte pericellular matrix assembly and retention in the presence of IL-1β. Kartogenin partially blocks the IL-1β-induced increased expression of ADAMTS-5. Additionally, kartogenin-treated articular chondrocytes exhibits a decrease in CD44 proteolytic fragmentation[3].

**In Vivo**

When injected into intact rat patellar tendons, kartogenin induces cartilage-like tissue formation in the injected area. When injected into experimentally injured rat Achilles TBJs, wound healing in the TBJs is enhanced, as evidenced by the formation of extensive cartilage-like tissues[1]. Kartogenin stimulates collagen synthesis in the mouse dermis. Dermis in the kartogenin (100 nM)-treated group exhibits increased dermal thickness and intense blue staining, which represents more collagen composition in the dermis[2].

**PROTOCOL**

**Cell Assay**[1]

Rabbit BMSCs or PTSCs are treated with various concentrations (1 nM to 5 μM) of kartogenin. The medium is changed every 3 days and after 2 weeks, cell proliferation is measured by population doubling time[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

**Animal Administration**[1]

Rats: Then rats are divided into two groups based on the injections received: six rats are given 10 µL saline injections in each wound (wound-only group) and six rats receive 10 µL of 100 µM kartogenin solution each in the wounded areas (wound+kartogenin group). The injections are given immediately after wounding and repeated on days 2, 4, 7 and 12[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

**CUSTOMER VALIDATION**

- Colloid Surface B. 2020 Apr.

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**REFERENCES**


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

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