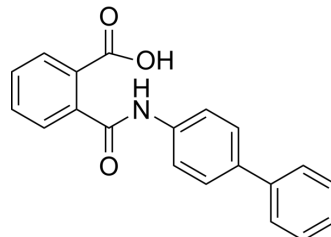


Kartogenin

Cat. No.:	HY-16268		
CAS No.:	4727-31-5		
Molecular Formula:	C ₂₀ H ₁₅ NO ₃		
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)
 H₂O : 1 mg/mL (3.15 mM); ultrasonic and warming and heat to 60°C
 * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent		Mass		
	Concentration		1 mg	5 mg	10 mg
	1 mM		3.1512 mL	15.7560 mL	31.5119 mL
	5 mM		0.6302 mL	3.1512 mL	6.3024 mL
	10 mM		0.3151 mL	1.5756 mL	3.1512 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

- 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
- 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
- Add each solvent one by one: 10% DMSO >> 90% corn oil
 Solubility: ≥ 2.08 mg/mL (6.55 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Kartogenin (KGN) is an inducer of chondrogenic tissue formation (EC₅₀: 100 nM). Kartogenin induces chondrogenesis by binding to fibrin A, disrupting its interaction with the transcription factor core binding factor beta subunit (CBFβ), and by modulating the CBFβ-RUNX1 transcriptional program. Kartogenin also promotes tendon-bone junction (TBJ) wound healing by stimulating collagen synthesis. Kartogenin is widely used in cell-free therapy in the field of regeneration for cartilage regeneration and protection, tendon-bone healing, wound healing and limb development. Kartogenin promotes cartilage

	repair, coordinates limb development, and is also used in osteoarthritis (OA) research ^{[1][2][3][4]} .
In Vitro	<p>Kartogenin (100 nM; 72 h) induces chondrocyte nodule formation in primary hMSCs^[1].</p> <p>Kartogenin (10 nM-10 μM; 72 h) increases chondrocyte-specific gene expression in hMSCs^[1].</p> <p>Kartogenin (0.12-10 μM; 48 h) inhibits nitric oxide (NO) and glycosaminoglycan (GAG) release induced by cytokines in primary bovine articular chondrocytes^[1].</p> <p>Kartogenin (50-5000 nM; 2 weeks) induces the chondrogenetic differentiation of the BMSCs in a concentration-dependent manner^[2].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
In Vivo	<p>Kartogenin (10 μM in 4 μL of saline; i.a. on days 7 and 21) promotes cartilage repair in collagenase VII-induced OA models in mice^[1].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

PROTOCOL

Cell Assay ^[1]	<p>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].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
Animal Administration ^[1]	<p>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].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

CUSTOMER VALIDATION

- Sci Bull. 2023 Aug 1.
- Chem Eng J. 1 March 2022, 133861.
- Chem Eng J. 400 (2020) 126004.
- Biomaterials. 2022 Jun;285:121530.
- Biomaterials. December 2021, 121216.

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REFERENCES

- [1]. Johnson K, et, al. A stem cell-based approach to cartilage repair. Science. 2012 May 11;336(6082):717-21.
- [2]. Liu F, et, al. A novel kartogenin-platelet-rich plasma gel enhances chondrogenesis of bone marrow mesenchymal stem cells in vitro and promotes wounded meniscus healing in vivo. Stem Cell Res Ther. 2019 Jul 8;10(1):201.
- [3]. Cai J, Zhang L, Chen J, et al. Kartogenin and its application in regenerative medicine[J]. Current medical science, 2019, 39(1): 16-20.
- [4]. Zhang J, Wang J H C. Kartogenin induces cartilage-like tissue formation in tendon–bone junction[J]. Bone research, 2014, 2(1): 1-10.

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

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