

Product data sheet



MedKoo Cat#: 540157 Name: Geranylgeraniol CAS: 24034-73-9 Chemical Formula: C ₂₀ H ₃₄ O Exact Mass: 290.261 Molecular Weight: 290.491		
Product supplied as:	Powder	
Purity (by HPLC):	≥ 98%	
Shipping conditions	Ambient temperature	
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years. In solvent: -80°C 3 months; -20°C 2 weeks.	

1. Product description:

Geranylgeraniol is a geranylgeranyl pyrophosphate analog used in synthesis of vitamins E and K. It induces apoptosis and inhibits growth of various tumor cells, suppresses growth of Mycobacterium, and protects monocytes against statin-induced cytotoxicity.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under “QC And Documents” section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
TBD	TBD	TBD

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.44 mL	17.21 mL	34.42 mL
5 mM	0.69 mL	3.44 mL	6.88 mL
10 mM	0.34 mL	1.72 mL	3.44 mL
50 mM	0.07 mL	0.34 mL	0.69 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of “Calculator”

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Rattanawonsakul K, Bullock G, Bolt R, Claeysens F, Atkins S, Hearnden V. In vitro Effect of Geranylgeraniol (GGOH) on Bisphosphonate-Induced Cytotoxicity of Oral Mucosa Cells. Front Oral Health. 2022 Jun 20;3:892615. doi: 10.3389/froh.2022.892615. PMID: 35795156; PMCID: PMC9251184.
2. Saputra WD, Shono H, Ohsaki Y, Sultana H, Komai M, Shirakawa H. Geranylgeraniol Inhibits Lipopolysaccharide-Induced Inflammation in Mouse-Derived MG6 Microglial Cells via NF-κB Signaling Modulation. Int J Mol Sci. 2021 Sep 29;22(19):10543. doi: 10.3390/ijms221910543. PMID: 34638882; PMCID: PMC8508820.

In vivo study

1. Chen X, Zhu W, Xu R, Shen X, Fu Y, Cheng J, Liu L, Jiang H. Geranylgeraniol Restores Zoledronic Acid-Induced Efferocytosis Inhibition in Bisphosphonate-Related Osteonecrosis of the Jaw. Front Cell Dev Biol. 2021 Nov 3;9:770899. doi: 10.3389/fcell.2021.770899. PMID: 34805177; PMCID: PMC8595285.
2. Chung E, Elmassry MM, Cao JJ, Kaur G, Dufour JM, Hamood AN, Shen CL. Beneficial effect of dietary geranylgeraniol on glucose homeostasis and bone microstructure in obese mice is associated with suppression of proinflammation and modification of gut microbiome. Nutr Res. 2021 Sep;93:27-37. doi: 10.1016/j.nutres.2021.07.001. Epub 2021 Jul 9. PMID: 34352722; PMCID: PMC8464510.

7. Bioactivity

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Biological target:

Geranylgeraniol is an orally active vitamin K₂ sub-type, an intermediate of the mevalonate pathway. Geranylgeraniol targets NF- κ B signaling pathway and could alleviate LPS-induced microglial inflammation in animal model.

In vitro activity

At 48 and 72 h, the addition of GGOH (geranylgeraniol) doses from 0.5 to 25 μ M was able to increase the viability of ZA (zoledronic acid)-treated fibroblasts in a dose-dependent manner compared to fibroblasts treated with ZA without GGOH. Three GGOH doses (5, 10, and 25 μ M) significantly increased the metabolic activity of cells compared to control levels after 72 h ($p < 0.05$) (Figure 5A). The increased confluence of fibroblasts in the presence of ZA and GGOH 10 μ M is shown in Figure 3D.

Reference: Front Oral Health. 2022 Jun 20;3:892615. <https://pubmed.ncbi.nlm.nih.gov/35795156/>

In vivo activity

The ZA (zoledronic acid) + GGOH (geranylgeraniol) mouse group demonstrated filling with woven bone with few scattered empty osteocyte lacunae. The percentage of osteonecrotic area was significantly decreased in the ZA + GGOH group compared with that in the ZA group (Figure 4E). Apoptosis could hardly be captured in vehicle sockets (Figure 4F). The prominent ACs concentrated on alveolar crest were observed in extraction sockets after ZA treatment. In contrast, simultaneous injection with GGOH could reduce ACs to a normal level (Figure 4F). All these findings suggest that GGOH rescues the ZA-impaired socket healing and represses osteocytic apoptosis.

Reference: Front Cell Dev Biol. 2021 Nov 3;9:770899. <https://pubmed.ncbi.nlm.nih.gov/34805177/>

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.