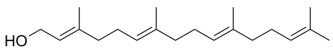
Geranylgeraniol

Cat. No.:	HY-W011474
CAS No.:	24034-73-9
Molecular Formula:	$C_{20}H_{34}O$
Molecular Weight:	290.48
Target:	NF-κB
Pathway:	NF-κB
Storage:	Pure form -20°C 3 years 4°C 2 years In solvent -80°C 6 months -20°C 1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (344.26 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.4426 mL	17.2129 mL	34.4258 mL
5 mM	0.6885 mL	3.4426 mL	6.8852 mL
10 mM	0.3443 mL	1.7213 mL	3.4426 mL

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 (8.61 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (8.61 mM); Suspended solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (8.61 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Geranylgeraniol is an orally acitve vitamin K_2 sub-type, an intermediate of the mevalonate pathway. Geranylgeraniol targets NF-kB signaling pathway and could alleviate LPS-induced microglial inflammation in animal model[1][2][3][4].

IC_{50} & Target

NF-kB[1]

In Vitro

Geranylgeraniol (0-10 μM; 24 h) dose-dependently suppresses the LPS-induced increase in the mRNA levels of Il-1β, Tnf-α, Il-6, and Cox-2[1].

Geranylgeraniol (10 μM; 24 h) inhibits the phosphorylation of TAK1, IKKα/β, and NF-κB p65 proteins as well as NF-κB nuclear translocation induced by LPS while maintaining IκBα expression[1].
Geranylgeraniol, (50 μM; 24 h) eliminates cell damage caused by Simvastatin (HY-17502) (10 μM) and Mevalonat (10 mM), and reduces the inflammatory marker and the damage of the mitochondria, maintaining its shape and component[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis[1]

Cell Line:	MG6 cell
Concentration:	0, 1, 10 μM
Incubation Time:	24 hours
Result:	Suppressed by TAK1, IKKα/β, and NF-κB p65 proteins level at 10 μM.

RT-PCR[1]

Cell Line:	MG6 cell
Concentration:	10 μM
Incubation Time:	0, 6, 12, 24 hours
Result:	Significantly inhibited pro-inflammatory cytokine Il-1β, Tnf-α, Il-6, and Cox-2 mRNA level.

In Vivo

Geranylgeraniol (725 mg/kg/d; p.o.; 90 d) is not toxicologically significant with a dose below 725 mg/kg/d in rats[3].
Geranylgeraniol (483 mg/kg/d; p.o.; 10 d) suppresses lipopolysaccharide-induced inflammation via inhibition of nuclear factor-κB activation in rats[4].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Han Wistar rats (169-192 g for male; 116-152 g for female)[3]
Dosage:	0, 725, 1450, and 2900 mg/kg
Administration:	Oral gavage; once daily; 90 days
Result:	Showed the lowest observed adverse effect level (LOAEL) for local effects and the no observed adverse effect level (NOAEL) for systemic effects as 725 mg/kg/d. Reduced body weights by 12.9 and 21.6% in the intermediate- and high-dose group males, respectively, compared to controls.

Animal Model:	Wistar rats (male, 8-week-old, 130-150 g)[4]
Dosage:	0, 48.3, 483, 4830 mg/kg
Administration:	Oral gavage; once daily; 10 days; with or not LPS challenge (i.p.; 0.5 mg/kg)
Result:	Suppressed LPS-induced inflammatory cytokines and mRNA expression of LPS-induced inflammatory genes in liver with doses of 483 mg/kg and 4830 mg/kg. Suppressed protein levels of IRAK1, TRAF6, and TAK1, originating from transcriptional down-regulation with doses of 483 mg/kg and 4830 mg/kg.

REFERENCES

[1]. Saputra WD, et al. 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.

[2]. Marcuzzi A, et al. Geranylgeraniol and Neurological Impairment: Involvement of Apoptosis and Mitochondrial Morphology. Int J Mol Sci. 2016 Mar 11;17(3):365.

[3]. Preece K, et al. A toxicological evaluation of geranylgeraniol. Regul Toxicol Pharmacol. 2021 Aug;124:104975.

[4]. Giriwono PE, et al. Dietary supplementation with geranylgeraniol suppresses lipopolysaccharide-induced inflammation via inhibition of nuclear factor-κB activation in rats. Eur J Nutr. 2013 Apr;52(3):1191-9.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA