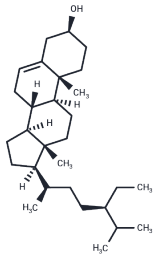
Data Sheet (Cat.No.T2966)

TargetMol

Beta-Sitosterol

Chemical Properties



CAS No. : 83-46-5

Formula: C29H50O

Molecular Weight: 414.71

Appearance: no data available

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Biological Description

Description	Beta-Sitosterol (SKF 14463) has recently been shown to induce G2/M arrest, endoreduplication, and apoptosis through the Bcl-2 and PI3K/Akt signaling pathways. Beta-Sitosterol (SKF 14463) , a main dietary phytosterol found in plants, may have the potential for prevention and therapy for human cancer. Although the exact mechanism of action of Beta-Sitosterol (SKF 14463) is unknown, it may be related to cholesterol metabolism or anti-inflammatory effects (via interference with prostaglandin metabolism). Beta-Sitosterol (SKF 14463) induces apoptosis and activates key caspases in MDA-MB-231 human breast cancer cells.
Targets(IC50)	Apoptosis,Endogenous Metabolite,Lipase
In vitro	Bioactivity-guided isolation from the hexane fraction of E. indica yielded Beta-Sitosterol (β-sitosterol), Stigmasterol, and Lutein. Beta-Sitosterol and Stigmasterol displayed minimal PPL inhibition, with 2.99±0.80% and 2.68±0.38% at 100 μg/mL (242-243 μM) respectively, compared to higher inhibition by Curcumin (IC50=4.92±0.21 μg/mL) and Quercetin (IC50=18.60±0.86 μg/mL). These compounds showed weaker inhibition than literature values (50% PPL inhibition at 100 μg/mL). Beta-Sitosterol, also extracted from Aloe vera, inhibits the growth of L. donovani promastigotes, implicated in visceral leishmaniasis.
In vivo	Beta-sitosterol (β-sitosterol) treatment significantly reduced immobility times in mice across all doses tested (10, 20, and 30 mg/kg) in both the Forced Swim Test (FST) and Tail Suspension Test (TST), indicating a notable antidepressant effect. At 30 mg/kg, β-sitosterol's efficacy was comparable to fluoxetine (20 mg/kg) with the most robust effect against the control group ($P < 0.001$). The percentage decreases in immobility (DID) for FST were 39.27%, 51.23%, and 57.48% for 10, 20, and 30 mg/kg respectively, and for TST were 31.63%, 43.95%, and 53.38% for the same doses, confirming the dose-dependent antidepressant activity of Beta-sitosterol in animal models.

Solubility Information

Solubility	Ethanol: 3.32 mg/mL (8 mM),Sonication is recommended. DMSO: Insoluble (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.4113 mL	12.0566 mL	24.1132 mL
5 mM	0.4823 mL	2.4113 mL	4.8226 mL
10 mM	0.2411 mL	1.2057 mL	2.4113 mL
50 mM	0.0482 mL	0.2411 mL	0.4823 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Reference

Fan Y, et al. β-Sitosterol Suppresses Lipopolysaccharide-Induced Inflammation and Lipogenesis Disorder in Bovine Mammary Epithelial Cells. Int J Mol Sci. 2023 Sep 27;24(19):14644.
Rajavel T, et al. β-Sitosterol targets Trx/Trx1 reductase to induce apoptosis in A549 cells via ROS mediated mitochondrial dysregulation and p53 activation. Sci Rep. 2018 Feb 1;8(1):2071.
Liu R, et al. β-Sitosterol modulates macrophage polarization and attenuates rheumatoid inflammation in mice. Pharm Biol. 2019 Dec;57(1):161-168.
Li S, Fang Y. Research on the Mechanism of Pulsatilla Potentially Useful for the Treatment of Triple Negative Breast Cancer Based on Network Pharmacology[J]. 2021

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