
Product Data Sheet

Product Name: Stigmasterol

Cat. No.: GN10359

Chemical Properties

Cas. No. 83-48-7

Chemical Name (3S,8S,9S,10R,13R,14S,17R)-17-[(E,2R,5S)-5-ethyl-6-methylhept-3-en-2-yl]-10,13-dimethyl-2,3,4,7,8,9,11,12,14,15,16,17-dodecahydro-1H-cyclopenta[a]phenanthren-3-ol

SMILES CCC(C=CC(C)C1CCC2C1(CCC3C2CC=C4C3(CCC(C4)O)C)C)C(C)CFormula C₂₉H₄₈O

M.Wt 412.69

Solubility 5mg/mL in Ethanol (Need ultrasonic)

Storage Store at 2-8°C

General tips For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.

Structure **Protocol****Cell experiment [1]:**

Cell lines

Murine BV2 microglia cells

Preparation method

Cells were treated with Aβ₄₂ oligomers for 24 h, followed by treatment of stigmasterol (dissolved in ethanol) for 4 h.

Reaction Conditions

0-20μM; 4 h

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

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Applications	Stigmasterol alleviated A β 42 oligomers induced inflammatory response in BV2 cells.
Animal experiment [2]:	
Animal models	Male C57bl/6J mice (ovalbumin (OVA)-induced asthma model)
Preparation method	Asthma mice were divided into OVA group, Stigmasterol group, and Stigmasterol + rh-NK1R protein (Stig-NK1R) group. In corresponding groups, 100 mg/kg stigmasterol, and 100 μ g rh-NK1R were intraperitoneally injected into mice on days 21, 22, 23, 24, 25, 26, 27 before the challenge with OVA.
Dosage form	100 mg/kg;i.p;21-27days
Applications	Stigmasterol inhibited inflammation and oxidative stress in a mouse model of asthma by NK1-R.

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References:

[1]. Jie F, Yang X, et, al. Stigmasterol attenuates inflammatory response of microglia via NF- κ B and NLRP3 signaling by AMPK activation. Biomed Pharmacother. 2022 Sep;153:113317. doi: 10.1016/j.biopha.2022.113317. Epub 2022 Jun 27. PMID: 35772378.

[2]. Zhang J, Zhang C, et, al. Stigmasterol alleviates allergic airway inflammation and airway hyperresponsiveness in asthma mice through inhibiting substance-P receptor. Pharm Biol. 2023 Dec;61(1):449-458. doi: 10.1080/13880209.2023.2173252. PMID: 36788676; PMCID: PMC9930798.

Background

Stigmasterol is a naturally available sterol. stigmasterol has significant anti-arthritis and anti-inflammatory effects^[1-3].

Stigmasterol(0-100 μ M;14 h) inhibited glutamate-induced neuronal cell death in the HT-22 cells^[4].Stigmasterol(0-20 μ M;4 h) alleviated A β 42 oligomers induced inflammatory response in BV2 cells^[5].

Stigmasterol(400 mg/kg/d; i. g; 10 days) treatment attenuates DSS-induced colitis in mice^[6].Stigmasterol(100 mg/kg;i.p;21-27days) inhibited inflammation and oxidative stress in a mouse model of asthma by NK1-R^[7].In the hippocampus of APP/PS1 mice, stigmasterol suppressed the microglia activation^[8], and stigmasterol also decreased the TNF- α levels in the cortex of Swiss albino mice^[9].

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- [1]. Antwi AO, Obiri DD, et.al. Stigmasterol Alleviates Cutaneous Allergic Responses in Rodents. *Biomed Res Int.* 2018 Jul 24;2018:3984068. doi: 10.1155/2018/3984068. PMID: 30140696; PMCID: PMC6081592.
- [2]. Gabay O, Sanchez C, et.al. Stigmasterol: a phytosterol with potential anti-osteoarthritic properties. *Osteoarthritis Cartilage.* 2010 Jan;18(1):106-16. doi: 10.1016/j.joca.2009.08.019. Epub 2009 Sep 15. PMID: 19786147.
- [3]. Chen WP, Yu C, et.al. Stigmasterol blocks cartilage degradation in rabbit model of osteoarthritis. *Acta Biochim Pol.* 2012;59(4):537-41. Epub 2012 Oct 16. PMID: 23074702.
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- [6]. Wen S, He L, et.al. Stigmasterol Restores the Balance of Treg/Th17 Cells by Activating the Butyrate-PPAR γ Axis in Colitis. *Front Immunol.* 2021 Oct 6;12:741934. doi: 10.3389/fimmu.2021.741934. PMID: 34691046; PMCID: PMC8526899.
- [7]. Zhang J, Zhang C, et.al. Stigmasterol alleviates allergic airway inflammation and airway hyperresponsiveness in asthma mice through inhibiting substance-P receptor. *Pharm Biol.* 2023 Dec;61(1):449-458. doi: 10.1080/13880209.2023.2173252. PMID: 36788676; PMCID: PMC9930798.
- [8]. Koivisto H, Grimm MO, et.al. Special lipid-based diets alleviate cognitive deficits in the APP^{swe}/PS1^{dE9} transgenic mouse model of Alzheimer's disease independent of brain amyloid deposition. *J Nutr Biochem.* 2014 Feb;25(2):157-69. doi: 10.1016/j.jnutbio.2013.09.015. Epub 2013 Nov 6. PMID: 24445040.

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[9]. Yadav M, Parle M, et,al. Protective effects of stigmasterol against ketamine-induced psychotic symptoms: Possible behavioral, biochemical and histopathological changes in mice. Pharmacol Rep. 2018 Jun;70(3):591-599. doi: 10.1016/j.pharep.2018.01.001. Epub 2018 Jan 11. PMID: 29679883.

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