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**Product Data Sheet**

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Product Name: Ergosterol

Cat. No.: GN10349

**Chemical Properties**

Cas. No. 57-87-4

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

SMILES CC(C)C(C)C=CC(C)C1CCC2C1(CCC3C2=CC=C4C3(CCC(C4)O)C)CFormula C<sub>28</sub>H<sub>44</sub>O M.Wt 396.66

Solubility &lt;2.95mg/mL in DMSO Storage 4°C, protect from light

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**

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

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### Cell experiment:

RBL-2H3 cells are seeded into 24-well plates containing gelatin-coated cover glasses at  $0.75 \times 10^5$  cells/well and sensitized with anti-DNP IgE. After culture for 24 hours, the cells cultured on cover glasses are pretreated with or without 50  $\mu$ M Ergosterol or 1 mM methyl beta cyclodextrin (M $\beta$ CD) in PIPES buffer for 20 minutes. The cells are then challenged with DNP-HSA (50 ng/mL) for 20 minutes. After washing with ice-cold PBS immediately, the cells are fixed with 3.7% formaldehyde in PBS for 20 minutes and blocked with 1% BSA in PBS. The IgE/ $\alpha$ -chain of Fc $\epsilon$ RI complexes on cell surfaces are detected using goat anti-mouse IgE antiserum, and Alexa Fluor 488-conjugated anti-goat IgG. Fluorescence images are acquired using a laser scanning confocal microscope with Zen software. The data are quantified by counting the aggregation number of Fc $\epsilon$ RI positive cells and presented as aggregation positive cells/total cells. The cells are counted in six independent micrographs for each sample[1].

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### Animal experiment:

Rats[2] Experimental myocardial injury in rats is performed by LPS injection (15 mg/kg). Dexmedetomidine (Dex) is used as a positive control. The experimental animals are randomly divided into five groups (n = 10) as follows: Control group, rats receive 2% gum acacia suspension orally at a dose of 2 mL/kg for 5 days, followed by normal saline injected intraperitoneally on day 5; LPS group, rats receive 2% gum acacia suspension at dose of 2 mL/kg for 5 days with LPS simultaneously injected intraperitoneally day 5; LPS+ Dex group, rats are treated with 2 mg/kg Dex suspension followed by LPS injection on day 5; LPS + Ergosterol (25 mg/kg, 50 mg/kg) groups, 25 or 50 mg/kg Ergosterol are given to rats orally for 5 consecutive days, and LPS is injected on day 5. Twelve hours after LPS treatment, blood samples are collected through the retro-orbital plexus. The serum specimens are centrifugated at 4, 000 × g for 15 min and stored at -80°C until needed. Thereafter, rats are anesthetized and sacrificed. Heart tissues are removed and homogenized in ice-cold phosphate buffered saline (50 mM, pH 7.4). Heart tissue homogenates from different groups are centrifuged at 12, 000 × g for 45 min at 4°C and the supernatants retained for further biochemical evaluations[2].

### References:

[1]. Kawai J, et al. Ergosterol and its derivatives from *Grifola frondosa* inhibit antigen-induced degranulation of RBL-2H3 cells by suppressing the aggregation of high affinity

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IgE receptors.  
Biosci  
Biotechnol  
Biochem. 2018  
Jul 2:1-9.  
[2]. Xu J, et al.  
Ergosterol  
Attenuates LPS-  
Induced  
Myocardial  
Injury by  
Modulating  
Oxidative  
Stress and  
Apoptosis in  
Rats. Cell  
Physiol  
Biochem.  
2018;48(2):583-  
592.

### Background

Ergosterol is the primary sterol found in fungi, with antioxidative, anti-proliferative, and anti-inflammatory effects.

Ergosterol is a sterol isolated from *Grifola frondosa*, which can be used in the research of mast cell-dependent allergic diseases. Ergosterol (10, 20, 50  $\mu\text{M}$ ) inhibits the antigen-induced release of  $\beta$ -hexosaminidase and histamine in antigen-stimulated RBL-2H3 cells. Ergosterol (20 and 50  $\mu\text{M}$ ) significantly reduces the mRNA levels of IL-4 and TNF- $\alpha$ . Ergosterol (50  $\mu\text{M}$ ) inhibits the antigen-induced aggregation of Fc $\epsilon$ RI[1].

Ergosterol (25, 50 mg/kg, p.o.) significantly mitigates the reduced cardiac performance in rats induced by LPS, increases SOD activity and decreases the formation of MDA, CK-MB, and LDH in LPS-induced sepsis rats[2].

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- [1]. Kawai J, et al. Ergosterol and its derivatives from *Grifola frondosa* inhibit antigen-induced degranulation of RBL-2H3 cells by suppressing the aggregation of high affinity IgE receptors. *Biosci Biotechnol Biochem*. 2018 Jul 2:1-9.
- [2]. Xu J, et al. Ergosterol Attenuates LPS-Induced Myocardial Injury by Modulating Oxidative Stress and Apoptosis in Rats. *Cell Physiol Biochem*. 2018;48(2):583-592.

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