

Product Data Sheet

Product Name: Ganoderic Acid A

Cat. No.: GN10109

Chemical Properties

Cas. No. 81907-62-2

Chemical Name (2R,6R)-6-[(5R,7S,10S,13R,14R,15S,17R)-7,15-dihydroxy-4,4,10,13,14-pentamethyl-3,11-dioxo-2,5,6,7,12,15,16,17-octahydro-1H-cyclopenta[a]phenanthren-17-yl]-2-methyl-4-oxoheptanoic acid

SMILES CC(CC(=O)CC(C)C(=O)O)C1CC(C2(C1(CC(=O)C3=C2C(CC4C3(CCC(=O)C4(C)C)C)O)C)C)O

Formula C₃₀H₄₂O₇

M.Wt 514.65

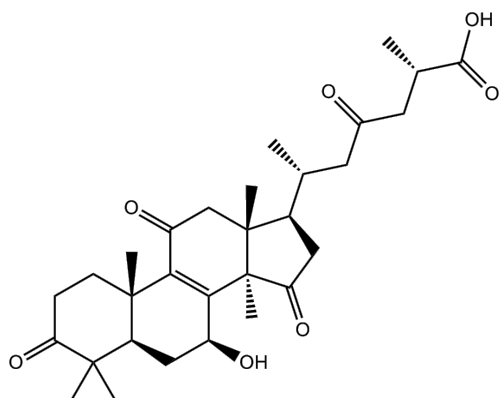
Solubility DMF: 5mg/mL, DMSO: 1 mg/mL, Ethanol: 3 mg/mL

Storage 4°C, away from moisture and 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

Cell experiment [1]:

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Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

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Cell lines BV2 microglial cells (murine microglial cell line)

Preparation Method BV2 cells were cultured in DMEM high glucose medium supplemented with 10% fetal bovine serum (FBS) and 1% penicillin-streptomycin at 37°C under 5% CO₂. Cells were treated with Ganoderic Acid A at 50µg/mL concurrently with LPS (0.5µg/mL) for 24 hours.

Reaction
Conditions 50µg/mL; 24h

Applications Ganoderic Acid A significantly suppressed LPS-induced BV2 microglial proliferation and activation. Ganoderic Acid A promoted the polarization of microglia from pro-inflammatory M1 to anti-inflammatory M2 phenotype.

Animal experiment [2]:

Animal models Female BALB/c mice

Preparation Method Mice were sensitized by intraperitoneal injection of 10mg Ovalbumin (OVA) + 1mg aluminum hydroxide in saline on days 1, 7, and 14. From day 21, they received daily OVA aerosol challenges (0.1g OVA in 10ml saline, 30min) for 7 days. Ganoderic Acid A (20 or 40mg/kg) was administered intraperitoneally 1 hour before each OVA challenge. Lung tissues and serum were collected after the final challenge for analysis.

Dosage form 20 or 40mg/kg; i.p.; Daily for 7 days.

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Applications

Ganoderic Acid A significantly attenuated OVA-induced airway hyperreactivity (AHR), reduced inflammatory cell infiltration (eosinophils, lymphocytes, neutrophils) in serum and lung tissue, and decreased levels of Th2 cytokines (IL-4, IL-5, IL-13) and IgE in serum. Ganoderic Acid A also suppressed TLR4/NF- κ B signaling pathway activation, as evidenced by reduced expression of TLR4, MyD88, p-NF- κ B, and p-I κ B α in lung tissues.

References:

- [1] Jia Y, Zhang D, Yin H, et al. Ganoderic Acid A Attenuates LPS-Induced Neuroinflammation in BV2 Microglia by Activating Farnesoid X Receptor. *Neurochem Res.* 2021 Jul;46(7):1725-1736.
- [2] Zhao J, Fan Y, Li H, et al. Ganoderic Acid A Prevented Osteoporosis by Modulating the PIK3CA/p-Akt/TWIST1 Signaling Pathway. *Food Sci Nutr.* 2025 Apr 14;13(4):e70177.

Background

Ganoderic Acid A is a triterpenoid compound derived from *Ganoderma lucidum* and exhibits multiple biological activities^[1-2]. Ganoderic Acid A possesses inhibitory effects against cancer, oxidation, and aging, among others^[3-4].

In vitro, concurrent treatment of BV2 microglial cells with Ganoderic Acid A (50 μ g/ml) and LPS (0.5 μ g/ml) for 24 hours significantly suppressed LPS-induced proliferation and activation of BV2 microglia, and promoted the polarization of microglia from the pro-inflammatory M1 phenotype to the anti-inflammatory M2 phenotype^[5]. Treatment of MC3T3-E1 cells (induced with 1mM H₂O₂) and primary osteoblasts (induced with 250 μ M H₂O₂) with Ganoderic Acid A (5–80 μ M) for 24 hours significantly promoted osteogenic differentiation and mineralization nodule formation, and upregulated the protein expression of osteogenesis-related markers RUNX2, OPN, and β -catenin^[6].

In vivo, intraperitoneal administration of Ganoderic Acid A (20–40mg/kg) 1 hour before Ovalbumin (0.1g) challenge in OVA-sensitized BALB/c mice significantly alleviated airway hyperresponsiveness and reduced the total number of inflammatory cells in bronchoalveolar lavage fluid^[7]. Daily administration of Ganoderic Acid A (20mg/kg/d) via intraperitoneal injection or topical application for 6 days in Imiquimod (62.5mg per mouse)-induced psoriasiform dermatitis BALB/c mice significantly

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ameliorated skin erythema, thickening, and scaling, and lowered the Psoriasis Area and Severity Index (PASI) score^[8].

References:

- [1] Sui Q, Zhu C, Shi S, et al. Ganoderic acid A: an in-depth review of pharmacological effects and molecular docking analysis. J Ethnopharmacol. 2025 Jun 12;349:119868.
- [2] Ma F, Wang J, Jiang W, et al. Ganoderic Acid A: A Potential Natural Neuroprotective Agent for Neurological Disorders: A Review. Int J Med Mushrooms. 2024;26(2):11-23.
- [3] Zhang X, Huang S, Xu H, et al. Research progress on plant-derived natural compounds regulating the MAPK signaling pathway for the prevention and therapy of Alzheimer's disease. Front Pharmacol. 2025 Sep 19;16:1666082.
- [4] Song Z, Wang C, Ding F, et al. Ganoderic Acid A Enhances Tumor Suppression Function of Oxaliplatin via Inducing the Cytotoxicity of T Cells. Anticancer Agents Med Chem. 2023;23(7):832-838.
- [5] Jia Y, Zhang D, Yin H, et al. Ganoderic Acid A Attenuates LPS-Induced Neuroinflammation in BV2 Microglia by Activating Farnesoid X Receptor. Neurochem Res. 2021 Jul;46(7):1725-1736.
- [6] Zhao J, Fan Y, Li H, et al. Ganoderic Acid A Prevented Osteoporosis by Modulating the PIK3CA/p-Akt/TWIST1 Signaling Pathway. Food Sci Nutr. 2025 Apr 14;13(4):e70177.
- [7] Lu X, Xu C, Yang R, et al. Ganoderic Acid A Alleviates OVA-Induced Asthma in Mice. Inflammation. 2021 Oct;44(5):1908-1915.
- [8] Xiao C, Chen J, Zhou X, et al. Ganoderic acid A alleviate psoriasis by inhibiting GSDMD-mediated pyroptosis. Tissue Cell. 2025 Dec;97:103078.

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