

Product Data Sheet

Product Name: Periplogenin

Cat. No.: GC39071

Chemical Properties

Cas. No. 514-39-6

SMILES O[C@@]12[C@@]3([H])[C@@](CC[C@@]1([C@@H](C4=CC(OC4)=O)CC2)C)([H])[C@@]5([C@@](O)(C[C@@H](O)CC5)CC3)C

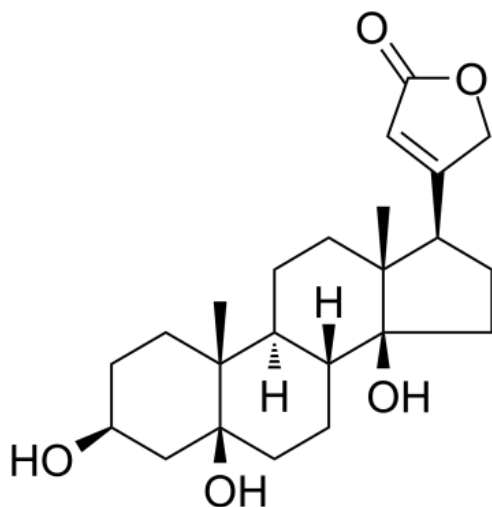
Formula $C_{23}H_{34}O_5$ M.Wt 390.51

Solubility 100 mg/mL in DMSO Storage Store at -20°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

Cell experiment [1]:

Cell lines SHEE cells

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

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The cells (2×10^5) were seeded in 60mm dishes and treated with either Preparation Method Periplogenin or DMSO for 48h before being harvested and washed once with cold PBS.

Reaction
Conditions 1 μ M, 2 μ M, 4 μ M; 48h

Applications Periplogenin inhibits the ESCC cell growth.

Animal experiment [2]:

Animal models DU145 xenograft tumor model

Male BALB/c nude mice (4-6 weeks old). 5×10^6 DU145 cells with T804A point mutation in ATP1A1 (DU145-804MUT group, n = 18) or wild type DU145 cells (DU145 group, n = 18) in a 100 μ L 1:1 mixture of PBS and matrigel were Preparation Method subcutaneously injected in the right axillary region of mouse. When the tumor volume reached 100mm³, each group was randomly divided into the following three subgroups (n = 6 per subgroup): DMSO and Periplogenin (10mg/kg and 20mg/kg). Periplogenin or DMSO were administered via oral gavage daily.

Dosage form 10mg/kg, 20mg/kg; ig; 30d

Applications Periplogenin suppresses tumor growth in DU145 xenograft tumor model.

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References:

- [1]. Hu Y, Liu F, Jia X, et al. Periplogenin suppresses the growth of esophageal squamous cell carcinoma in vitro and in vivo by targeting STAT3. *Oncogene*. 2021 Jun 10; 40(23): 3942-3958.
- [2]. Zhang X, Pang T, Zhang H, et al. The natural compound periplogenin suppresses the growth of prostate carcinoma cells by directly targeting ATP1A1. *Scientific Reports*. 2024 Sep 3; 14(1): 20509.

Background

Periplogenin is a natural cardiotonic steroid compound [1]. Periplogenin inhibits Na⁺/K⁺-ATPase activity, indirectly increases intracellular calcium concentration in cardiomyocytes, and thus enhances myocardial contractility [2-3]. Periplogenin is commonly used to treat psoriasis and cancer [4].

In SHEE cells, Periplogenin (1μM, 2μM, 4μM; 48h) inhibits the ESCC cell growth [5]. In rheumatoid arthritis fibroblast-like synoviocytes (RA-FLS), after administration of Periplogenin (0.1μg/mL, 0.25μg/mL, 0.5μg/mL, 1μg/mL, 2.5μg/mL, 5μg/mL, 7.5μg/mL, 10μg/mL, 12.5μg/mL, 15μg/mL, 20μg/mL; 24h), the proliferation rate of RA-FLS decreased with the increase of Periplogenin dose [6]. In bone marrow macrophages, Periplogenin (20μM, 40μM, 60μM, 80μM, 100μM; 96h) suppressed osteoclast differentiation in a dose-dependent manner [7].

In DU145 xenograft tumor model, Periplogenin (10mg/kg, 20mg/kg; ig; 30d) suppresses tumor growth [8]. In collagen induction-induced mouse model, Periplogenin (1mg/kg, 2mg/kg, 4mg/kg; sc; 33d) inhibits pathologic synovial proliferation and infiltration in rheumatoid arthritis by regulating the JAK2/3-STAT3 pathway [9]. In gastric cancer xenograft mice model, Periplogenin (6mg/kg; ip; 21d) inhibit the growth of tumor in vivo in nude mice [10].

References:

- [1]. Han HS, Jeon H, Kang SC. Phellopterin isolated from *Angelica dahurica* reduces blood glucose level in diabetic mice. *Heliyon*. 2018 Mar 1; 4(3).
- [2]. Ponce A, Flores-Maldonado C, Contreras RG. Cardiac Glycosides: From Natural Defense Molecules to Emerging Therapeutic Agents. *Biomolecules*. 2025 Jun 17;15(6):885.
- [3]. Panda S, Kar A. Periplogenin, isolated from *Lagenaria siceraria*, ameliorates L-T4-induced hyperthyroidism and associated cardiovascular problems. *Hormone and Metabolic Research*. 2011

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Mar; 43(03): 188-193.

[4]. Zhang WJ, Song ZB, Bao YL, et al. Periplogenin induces necroptotic cell death through oxidative stress in HaCaT cells and ameliorates skin lesions in the TPA-and IMQ-induced psoriasis-like mouse models. *Biochemical Pharmacology*. 2016 Apr 1; 105: 66-79.

[5]. Hu Y, Liu F, Jia X, et al. Periplogenin suppresses the growth of esophageal squamous cell carcinoma in vitro and in vivo by targeting STAT3. *Oncogene*. 2021 Jun 10; 40(23): 3942-3958.

[6]. Ma X, Yang Y, Li H, et al. Periplogenin inhibits pyroptosis of fibroblastic synoviocytes in rheumatoid arthritis through the NLRP3/Caspase-1/GSDMD signaling pathway. *International Immunopharmacology*. 2024 May 30; 133: 112041.

[7]. Gan K, Lian H, Yang T, et al. Periplogenin attenuates LPS-mediated inflammatory osteolysis through the suppression of osteoclastogenesis via reducing the NF- κ B and MAPK signaling pathways. *Cell Death Discovery*. 2024 Feb 17; 10(1): 86.

[8]. Zhang X, Pang T, Zhang H, et al. The natural compound periplogenin suppresses the growth of prostate carcinoma cells by directly targeting ATP1A1. *Scientific Reports*. 2024 Sep 3; 14(1): 20509.

[9]. Zhong X, Feng W, Liu L, et al. Periplogenin inhibits pathologic synovial proliferation and infiltration in rheumatoid arthritis by regulating the JAK2/3-STAT3 pathway. *International Immunopharmacology*. 2024 Feb 15; 128: 111487.

[10]. Guo JL, Hu HM, Lee SC, et al. Levistolide A and periplogenin inhibit the growth of gastric cancer cells in vitro and in vivo. *Exploration of Drug Science*. 2023 Mar 30; 1(2): 64-76.

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