

Product Data Sheet

Product Name: Farrerol
Cat. No.: GC38222

Chemical Properties

Cas. No. 24211-30-1

SMILES O=C1C[C@@H](C2=CC=C(O)C=C2)OC3=C(C)C(O)=C(C)C(O)=C13

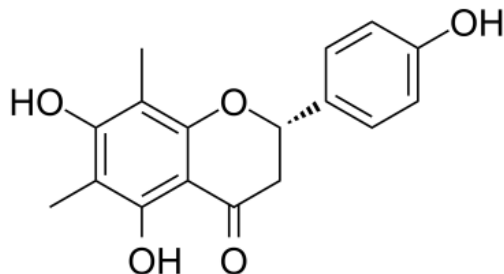
Formula $C_{17}H_{16}O_5$ M.Wt 300.31

Solubility DMSO: 250 mg/mL (832.47 mM) 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 sizes: 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 [1]:

Cell lines Human ovarian epithelial cancer SKOV3 cells

Preparation Method SKOV3 cells were seeded (2×10^5 cells/mL) for 24h then treated with Farrerol (0, 40, 80, and 160 μ M) for 24 or 48h. After incubation, cell viability and cell cycle were analyzed.

Reaction
Conditions 0, 40, 80, and 160 μ M; 24 or 48h

Applications Farrerol reduced G0/G1-phase populations in SKOV3 cells and induced G2/M phase arrest, which suggested a possible mechanism by which the inhibitory effect of Farrerol on cancer cell growth occurred. Farrerol caused DNA fragmentation and SKOV3 cell apoptosis by mediating ERK MAPK signaling.

Animal experiment [2]:

Animal models Female B6 mice

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Preparation Method Mice were randomly divided into the following four groups : vehicle control group (0.5% DMSO), Farrerol only group (40mg/kg, dissolved in 0.5% DMSO), APAP only group (900mg/kg or 400mg/kg) and APAP (900mg/kg or 400mg/kg) + Farrerol (40mg/kg, dissolved in 0.5% DMSO) group. The mice were administered Farrerol (40mg/kg) i.p. injections two times, 12h and 1h before the injection of APAP (900mg/kg). The survival rates of the animals were monitored every 8h for 2 days. In addition, the mice were administered Farrerol (40mg/kg) i.p. injections two times, 12h and 1h before the injection of APAP (400mg/kg). After treatment with APAP (400mg/kg) for 6h, the mice were euthanized, their livers were harvested and serum was collected.

Dosage form 40mg/kg; i.p.; two times

Applications Farrerol pretreatment alleviated acute liver failure and maintained the survival rate of mice via activation of both Nrf2-mediated antioxidative cascades and mitochondrial autophagy.

References:

- [1] Chae J B, Kim J S, Choi S T, et al. Farrerol Induces Cancer Cell Death via ERK Activation in SKOV3 Cells and Attenuates TNF- α -Mediated Lipolysis. *Int J Mol Sci.* 2021 Aug 30;22(17):9400.
[2] Wang L D, Wei W, Xiao Q F, et al. Farrerol Ameliorates APAP-induced Hepatotoxicity via Activation of Nrf2 and Autophagy. *Int J Biol Sci.* 2019 Jan 29;15(4):788-799.

Background

Farrerol is a typical natural flavanone isolated from the traditional Chinese herb *Rhododendron dauricum* L. *Ericaceae* with IC₅₀ values of 57 μ M and 2.7 μ M for estrogen receptors ER α and ER β , respectively^[1]. Farrerol, possessing anti-inflammatory, antioxidant, vasoactive, antitumor, and antimicrobial properties, is capable of preventing and treating diseases associated with oxidative stress, cancer, cardiovascular diseases, and bacterial infections^{[2][3][4][6]}.

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In vitro, murine macrophage RAW 264.7 cells treated with different concentrations of Farrerol (0-20mg/L) for 18h or 24h induced the expression of antioxidant enzymes and increased the expression of HO-1 by activating Nrf2 and reducing the expression of Keap1^[2]. Primary bovine mammary epithelial cells (bMEC) were incubated with Farrerol (4-16µg/ml) for 24h before infecting with *S. aureus* at a multiplicity of infection of 30 (MOI 30:1 bacteria per cell). All concentrations of Farrerol significantly inhibited *S. aureus* internalization into bMEC in a dose-dependent manner by downregulating the mRNA expression of tracheal antimicrobial peptide (TAP) and bovine neutrophil β-defensin 5 (BNBD5), and also suppressing *S. aureus* induced NF-kB activation in bMEC^[3]. Farrerol (0, 40, 80, and 160µM) incubated human ovarian epithelial cancer SKOV3 cells for 24h or 48h decreased the viability of SKOV3 cells in a dose and time-dependent manner. Farrerol induced G2/M cell cycle arrest and apoptosis in cancer cells^[4].

In vivo, hepatic injury mice models were administered Farrerol (40mg/kg) i.p. injections two times, 12h and 1h before the injection of Acetaminophen (APAP). Farrerol pretreatment alleviated acute liver failure and maintained the survival rate of mice by activation of both Nrf2-mediated antioxidative cascades and mitochondrial autophagy^[5]. Farrerol (10mg/kg/day) injected intraperitoneally into Angiotensin II (Ang II)-treated mice model of myocardial remodeling for 2 days inhibited Ang II-induced cardiac hypertrophy and reduce heart weight/tibia ratio (HW/TL), inflammation, fibrosis, oxidative stress, the volume of cardiomyocytes and the proliferation and migration of fibroblast^[6]. Mice received intraperitoneal injections of Farrerol (20mg/kg) daily for 8 consecutive days, starting 1 day before the unilateral ureteral obstruction (UUO) operation. Farrerol ameliorated renal injury and fibrosis in the UUO model by inhibiting oxidative stress, apoptosis, and inflammation^[7].

References:

- [1] Li Q Y, Chen L, Zhu YH, et al. Involvement of estrogen receptor-β in farrerol inhibition of rat thoracic aorta vascular smooth muscle cell proliferation. Acta Pharmacol Sin. 2011 Apr;32(4):433-40.
- [2] Ci X X, Lv H M, Wang L D, et al. The antioxidative potential of Farrerolrrerol occurs via the activation of Nrf2 mediated HO-1 signaling in RAW 264.7 cells. Chem Biol Interact. 2015 Sep 5:239:192-9
- [3] Yang Z T, Fu Y H, Liu B, et al. Farrerol regulates antimicrobial peptide expression and reduces Staphylococcus aureus internalization into bovine mammary epithelial cells. Microb Pathog. 2013 Dec:65:1-6.
- [4] Chae J B, Kim J S, Choi S T, et al. Farrerol Induces Cancer Cell Death via ERK Activation in

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[5] Wang L D, Wei W, Xiao Q F, et al. Farrerol Ameliorates APAP-induced Hepatotoxicity via Activation of Nrf2 and Autophagy. Int J Biol Sci. 2019 Jan 29;15(4):788-799.
[6] He J, Xu D Y, Wang L, Yu X H. Farrerol prevents Angiotensin II-induced cardiac remodeling in vivo and in vitro. Front Pharmacol. 2023 Jan 4;13:1079251.
[7] Kim J Y, Leem J C, Park K K. Antioxidant, Anti-Apoptotic, and Anti-Inflammatory Effects of Farrerol in a Mouse Model of Obstructive Uropathy. Curr Issues Mol Biol. 2023 Jan 1;45(1):337-352.

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