

Product Data Sheet

Product Name: Vicenin 2

Cat. No.: GC37902

Chemical Properties

Cas. No. 23666-13-9

SMILES OC1=C([C@@H]([C@@H]([C@@H](O)[C@@H]2O)O)[C@@H]2CO)C(O)=C3C(OC(C4=CC=C(O)C=C4)=CC3=O)=C1[C@@H]([C@@H]([C@@H](O)[C@@H]5O)O)[C@@H]5CO

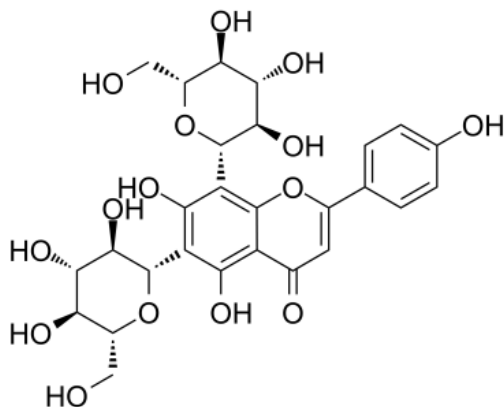
Formula $C_{27}H_{30}O_{15}$ M.Wt 594.52

Solubility DMSO : 33.33 mg/mL (56.06 mM; Storage 4°C, protect from light
Need ultrasonic); H_2O : < 0.1 mg/mL
(insoluble)

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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Cell lines Non-small cell lung cancer cell line NCI-H23

Preparation Method NCI-H23 cells were treated with 10–100 μ M of Vicenin 2 for 24h.

Reaction
Conditions 10-100 μ M; 24h

Applications Between the doses of 10–50 μ M, there was no corresponding decrease in cell survival with increase in Vicenin 2 dose. However, from 60 μ M onwards to 100 μ M, there was a gradual reduction in the percent surviving cells. The results suggest that Vicenin 2 is cytotoxic to cancer cells.

Animal experiment [2]:

Animal models female Wistar rats

Preparation Method Rats underwent either bilateral laparotomy alone or bilateral ovariectomy (OVX group) via midline dorsal incision. After 4 weeks of recovery period all the OVX rats were divided into 3 groups as OVX alone, OVX rats orally administrated (by oral gavage) with 5mg/kg/day of Vicenin 2 or 10mg/kg/day of Vicenin 2 for 12 successive weeks.

Dosage form 5 and 10mg/kg; orally administrated; daily for 12 weeks

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Applications Vicenin 2 mitigated osteoporosis in ovariectomized rats by improving body mass, uterus index, lipid profiles, inflammatory markers, bone turnover markers and amplifying the presence of calcium in the OVX rat serum.

References:

- [1] TsBaruah T J, Sharan R N, Kma L. Vicenin-2: a potential radiosensitizer of non-small cell lung cancer cells. Mol Biol Rep. 2018 Oct;45(5):1219-1225.
- [2] Zhang Z P, Zhao Q P, Liu T J, et al. Effect of Vicenin-2 on ovariectomy-induced osteoporosis in rats. Biomed Pharmacother. 2020 Sep;129:110474.

Background

Vicenin 2 is an orally active angiotensin-converting enzyme (ACE) inhibitor with the IC₅₀ value of $43.83 \pm 3.01 \mu\text{M}$ ^[1]. Vicenin 2 has anti-inflammatory and antioxidant properties which make it potential applications in various fields, including skin health and cancer therapy.

In vitro, Vicenin 2 (6.25–400 μM) incubated human dermal fibroblast (HDF) cell for 24h. Vicenin 2 treatment on HDF cells enhanced cell proliferation in a dose-dependent up to 50 μM , but the higher concentrations inhibited proliferation. Low concentrations of Vicenin 2 (12.5 and 25 μM) have significantly induced the cell migration and wound closure, while higher concentrations (50 and 100 μM) reduced these effects. In addition, treatment with 100 μM of Vicenin 2 on HDF significantly increased the expression of inflammatory cytokines and higher expression for inflammatory mediators (NF- κB , iNOS, and COX-2) and healing growth factors (VEGF and TGF- β) proteins^[2]. Vicenin 2 (40 μM) incubation for 24 hours can restore the antioxidant defense of human gastric epithelial cells (GES-1) by modulating key signaling pathways (PI3K/AKT and MAPK) and upregulating Nrf2 expression, effectively protecting them from cytotoxicity, oxidative stress, DNA damage, and inflammation induced by Helicobacter pylori. These findings suggest that Vicenin 2 could serve as a potential therapeutic agent for preventing H. pylori-induced gastric carcinogenesis^[3]. NCI-H23 cells were treated with 10–100 μM of Vicenin 2 for 24h. There was a gradual reduction in the percent surviving cells from 60 μM to 100 μM . NCI-H23 cells treated with radiation exposure with and without 80 μM Vicenin 2 suggested that there was greater reduction in percent cell survival with Vicenin 2 treatment. Vicenin 2 showed a potent radiosensitizing property

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while also showing chemotherapeutic property against Non-small cell lung cancer (NSCLC) cell line NCI-H23^[4].

In vivo, Vicenin 2 (50mg/kg/day) administered orally via oral gavage tube into dextran sulfate sodium-induced colitis mice model for 7 days exerted therapeutic effects by the inhibition of pro-inflammatory mediators (iNOS and COX-2) and suppression of specific inflammatory markers expression^[5]. In a study on ovariectomy (OVX)-induced osteoporosis rat models, Vicenin 2 orally administered at doses of 5mg/kg/day or 10mg/kg/day for 12 consecutive weeks significantly improved body mass, uterus index, lipid profiles, and inflammatory markers. Vicenin 2 also reduced bone turnover markers and increased serum calcium levels in the OVX rats. These results suggested that Vicenin 2 could be an excellent candidate to treat and manage bone related disease or disorders^[6]. The administration of Vicenin 2 (23.8µg/mouse) into LPS-induced lethal endotoxemia model given twice at 12 and 50 hours post-LPS injection, significantly increased survival rates, reduced endothelial cell protein C receptor shedding, decreased pro-inflammatory cytokine expression, protected vascular barrier integrity, and inhibited leukocyte migration. These findings suggest that Vicenin 2 could serve as a potential therapeutic agent for treating severe vascular inflammatory diseases ^[7].

References:

- [1] Zhang YQ, et al. Bioassay-guided preparative separation of angiotensin-converting enzyme inhibitory C-flavone glycosides from *Desmodium styracifolium* by recycling complexation high-speed counter-current chromatography. *J Pharm Biomed Anal.* 2015 Jan;102:276-81.
- [2] Tan W S, Arulselvan P, Ng S F, et al. Healing Effect of Vicenin-2 (Vicenin-2) on Human Dermal Fibroblast (HDF) and Development Vicenin-2 Hydrocolloid Film Based on Alginate as Potential Wound Dressing. *Biomed Res Int.* 2020 Apr 23;2020:4730858.
- [3] Zhang Y F, Sun J, Dong Y, et al. Vicenin-2 inhibits the *Helicobacterium pylori* infection associated gastric carcinogenic events through modulation of PI3K/AKT and Nrf2 signaling in GES-1 cells. *J Biochem Mol Toxicol.* 2021 Mar;35(3):e22680.
- [4] Baruah T J, Sharan R N, Kma L. Vicenin-2: a potential radiosensitizer of non-small cell lung cancer cells. *Mol Biol Rep.* 2018 Oct;45(5):1219-1225.
- [5] Yin Y T, Ye L, Niu Z B, Fang W H. Anti-inflammatory effects of Vicenin-2 on dextran sulfate sodium-induced colitis in mice. *Drug Dev Res.* 2019 Aug;80(5):546-555.
- [6] Zhang Z P, Zhao Q P, Liu T J, et al. Effect of Vicenin-2 on ovariectomy-induced osteoporosis in rats. *Biomed Pharmacother.* 2020 Sep;129:110474.
- [7] Kang H J, Ku S K, Jung B K, Bae J S. Anti-inflammatory effects of vicenin-2 and scolymoside in

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vitro and in vivo. Inflamm Res. 2015 Dec;64(12):1005-21.

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