

Product Data Sheet

Product Name: Corilagin

Cat. No.: GN10346

Chemical Properties

Cas. No. 23094-69-1

SMILES C1C2C(C(C(C(O2)OC(=O)C3=CC(=C(C(=C3)O)O)O)O)OC(=O)C4=CC(=C(C(=C4C5=C(C(=C(C=C5C(=O)O1)O)O)O)O)O)O

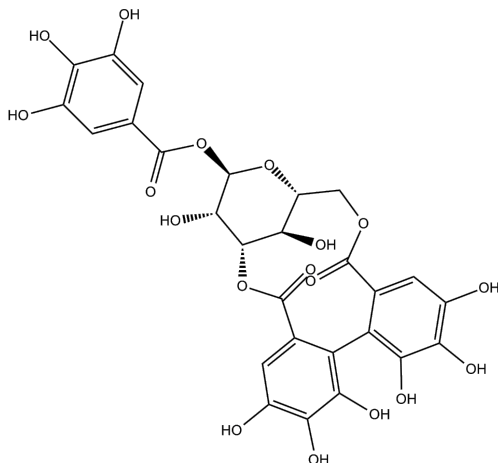
Formula $C_{27}H_{22}O_{18}$ M.Wt 634.45

Solubility DMF: 20 mg/ml, DMSO: 25 mg/ml, Ethanol: 25 mg/ml, PBS (pH 7.2): 5 mg/ml
Storage Store at 2-8°C

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 MCF-7 cells

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Preparation Method

The MCF-7 cells were cultured in DMEM medium supplemented with 10% fetal bovine serum and 100U/mL penicillin/streptomycin, under a 5% CO₂ and 95% air environment at 37°C. The cells were seeded at a density of 5×10^3 cells per well in a 96-well plate, then treated with Corilagin (0, 20, 40, 60, 80, 100μM) for 48 hours, followed by the addition of 20μL MTT (5mg/mL) for 4 hours, and finally 150μL DMSO was added. The absorbance was measured at 490nm using an enzyme reader. The cell proliferation status was detected using the EdU cell proliferation detection kit, and the number of cells incorporating EdU was determined by fluorescence microscopy.

Reaction Conditions

0, 20, 40, 60, 80, 100μM; 48h

Applications

Corilagin significantly inhibited MCF-7 cells in a dose-dependent manner.

Animal experiment [2]:

Animal models

Athymic nude mice

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200μL of 1×10^7 Hep-2 cells were injected subcutaneously into the right side of each 4-5-week-old athymic nude mouse to establish a laryngeal cancer transplantation model. When the tumor volume reached 100mm³, the tumor-bearing mice were randomly divided into 3 groups, with 5 mice in each group. All mice were intraperitoneally injected with 30mg/kg Corilagin once every 3 days. The tumor volume was measured every 4 days for a total of 28 days. The Preparation Method length and width of the subcutaneous transplanted tumors were measured using a vernier caliper. The formula for calculating tumor volume (V) is: $V = 0.5 \times \text{width}^2 \times \text{length}$. After treatment (28 days), the mice were anesthetized with isoflurane and euthanized, the xenograft tumor samples of the nude mice were embedded in paraffin, rinsed with cold saline, and cut into 5μm sections. Then, the samples were fixed in 10% formaldehyde neutral buffer solution and stained with hematoxylin-eosin.

Dosage form 30mg/kg, once every 3 days for 28 days; i.p.

Applications Corilagin treatment inhibited growth of transplanted tumors and resulted in tumor chromatin condensation and structure loosening in the xenograft tumor mouse models.

References:

- [1] Tong Y, Zhang G, Li Y, et al. Corilagin inhibits breast cancer growth via reactive oxygen species-dependent apoptosis and autophagy[J]. Journal of cellular and molecular medicine, 2018, 22(8): 3795-3807.
- [2] Liu C, Liu H, Huang H, et al. Corilagin induces laryngeal cancer antiproliferation and inhibits growth factor and cytokine signaling pathways in vitro and in vivo[J]. Journal of Functional Foods, 2020, 69: 103947.

Background

Corilagin, a natural plant polyphenol tannic acid, is a potent inhibitor of the binding of SARS CoV-2 spike protein RBD to host receptor angiotensin-converting enzyme 2 (ACE2), with an IC₅₀ value of

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5.5 μ M^[1]. Corilagin, as a non-nucleoside inhibitor of SARS-CoV-2 RNA-dependent RNA polymerase (RdRp), directly binds to RdRp and effectively inhibits the SARS-CoV-2 replication, with an EC₅₀ value of 0.13 μ M^[2]. Corilagin possesses potential anti-inflammatory and anti-virus properties, and has been widely applied in various anti-cancer researches^[3].

In vitro, Corilagin inhibited the viability of ovarian cancer cells and the IC₅₀ values for 24 hours and 48 hours of treatment with Corilagin on A2780 cells were 61.32 μ M and 47.81 μ M, respectively^[4]. Treatment of MCF-7 cells with 80 μ M Corilagin for 48 hours significantly inhibited cell growth and activated both intrinsic and extrinsic mitochondrial apoptotic pathways^[5]. Corilagin treatment (40 μ M; 48h) induced cell cycle arrest in cholangiocarcinoma cells, suppressed cell proliferation and inhibited the expression of Notch1 protein^[6].

In vivo, Corilagin treatment via intragastric administration (40mg/kg/day) for one month significantly reduced the levels of inflammatory factors in the plasma of rats with peripheral artery disease (PAD) model, and alleviated the severity of atherosclerotic lesions in the arteries^[7]. In the rabbit atherosclerosis model induced by high-fat diet (HFD), after 4 weeks of intragastric administration with 4mg/kg/day dose of Corilagin, the levels of serum total cholesterol, triglyceride and low-density lipoprotein cholesterol were significantly reduced, the level of high-density lipoprotein cholesterol was increased, the intimal thickening of the thoracic aorta was reduced, and the formation of foam cells was decreased^[8]. Intraperitoneal injection with 30mg/kg/day of Corilagin for one week disrupted the nuclear receptor coactivator 4 (NCOA4)-ferritin interaction and inhibited ferroptosis mediated by ferroprotein phagocytosis, thereby alleviating intestinal ischemia/reperfusion injury in mice^[9].

References:

- [1] Hanson Q M, Wilson K M, Shen M, et al. Targeting ACE2–RBD interaction as a platform for COVID-19 therapeutics: development and drug-repurposing screen of an AlphaLISA proximity assay[J]. ACS Pharmacology & Translational Science, 2020, 3(6): 1352-1360.
- [2] Li Q, Yi D, Lei X, et al. Corilagin inhibits SARS-CoV-2 replication by targeting viral RNA-dependent RNA polymerase[J]. Acta Pharmaceutica Sinica B, 2021, 11(6): 1555-1567.
- [3] Li X, Deng Y, Zheng Z, et al. Corilagin, a promising medicinal herbal agent[J]. Biomedicine & Pharmacotherapy, 2018, 99: 43-50.
- [4] Xu Z, Jiang Y, Shan T, et al. Study on the Effects and Mechanism of Corilagin on A2780 Cell Apoptosis[J]. Current Issues in Molecular Biology, 2025, 47(2): 105.

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- [5] Tong Y, Zhang G, Li Y, et al. Corilagin inhibits breast cancer growth via reactive oxygen species-dependent apoptosis and autophagy[J]. Journal of cellular and molecular medicine, 2018, 22(8): 3795-3807.
- [6] Gu Y, Xiao L, Ming Y, et al. Corilagin suppresses cholangiocarcinoma progression through Notch signaling pathway in vitro and in vivo[J]. International Journal of Oncology, 2016, 48(5): 1868-1876.
- [7] Li Y, Wang Y, Chen Y, et al. Corilagin ameliorates atherosclerosis in peripheral artery disease via the toll-like receptor-4 signaling pathway in vitro and in vivo[J]. Frontiers in immunology, 2020, 11: 1611.
- [8] He B, Chen D, Zhang X, et al. Antiatherosclerotic effects of corilagin via suppression of the LOX-1/MyD88/NF- κ B signaling pathway in vivo and in vitro[J]. Journal of Natural Medicines, 2022, 76(2): 389-401.
- [9] Wang Y, Li B, Liu G, et al. Corilagin attenuates intestinal ischemia/reperfusion injury in mice by inhibiting ferritinophagy-mediated ferroptosis through disrupting NCOA4-ferritin interaction[J]. Life sciences, 2023, 334: 122176.

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