

Product Data Sheet

Product Name: Cirsimaritin

Cat. No.: GC31120

Chemical Properties

Cas. No. 6601-62-3

SMILES O=C1C=C(C2=CC=C(O)C=C2)OC3=CC(OC)=C(OC)C(O)=C13

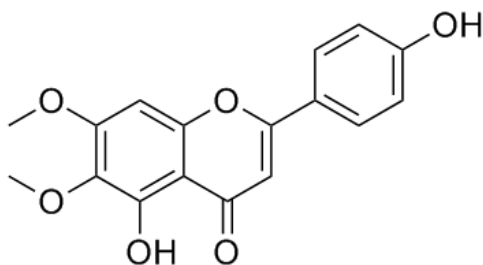
Formula $C_{17}H_{14}O_6$ M.Wt 314.29

Solubility DMSO : 22.73 mg/mL (72.32 mM; Need ultrasonic) 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 NCIH-520 cell line

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

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Cells were cultured in high glucose DMEM or RPMI media and supplemented with 1% Ab/Am and 10% FBS and placed in a CO₂ incubator at 37 °C temperature in 95% humidity. Cells were seeded in a sterile 96-well flat-bottom Preparation Method cell culture plates with approximately 2×10^3 cells/well in each well, and the plates were incubated for 24h in CO₂ incubator. After 24h of incubation, cells were treated with different concentrations of cirsimaritin, ranging from 0.1-100µM and followed by incubation for 24h.

Reaction
Conditions 0.1-100µM; 24h

Applications Cirsimaritin significantly decreased cell proliferation in the NCIH-520 cell line, with an *IC*₅₀ value of $23.29 \pm 3.51 \mu\text{M}$.

Animal experiment [2]:

Animal models Male Swiss albino mice

Preparation Method Mice were given a regimen of cirsimaritin, which was administered at a daily dose of 10mg/kg body weight (BW) through gavage, before they were exposed to DSS (4% DSS in their drinking water for 6 days).

Dosage form 10mg/kg; i.g

Applications Cirsimaritin maintains BW (body weight) and reduces DAI (disease activity index) in mice with DSS (dextran sulfate sodium)-induced colitis.

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References:

- [1]. Pathak G, Singh S, et.al. Cirsimaritin, a lung squamous carcinoma cells (NCIH-520) proliferation inhibitor. J Biomol Struct Dyn. 2021 Jun;39(9):3312-3323. doi: 10.1080/07391102.2020.1763198. Epub 2020 May 13. PMID: 32362196.
- [2]. Alqudah A, Qnais E, et.al. Cirsimaritin Alleviates Dextran Sodium Sulfate-Induced Acute Colitis in Experimental Animals: A Therapeutic Approach for Inflammatory Bowel Disease. Prev Nutr Food Sci. 2024 Mar 31;29(1):31-39. doi: 10.3746/pnf.2024.29.1.31. PMID: 38576881; PMCID: PMC10987388.

Background

Cirsimaritin is a dimethoxy flavonoid found in plants, it has anticancer potential and shows potent antimicrobial, antioxidant, antispasmodic, activity, and also inhibits cyclooxygenase-1^[1-3].

Cirsimaritin significantly decreased cell proliferation in the NCIH-520 cell line, with an IC_{50} value of $23.29 \pm 3.51 \mu\text{M}$ ^[4]. Cirsimaritin(0–120 $\mu\text{g/mL}$; 20h) inhibited interleukin-6, tumor necrosis factor- α , and NO production in a concentration-dependent manner in lipopolysaccharide (LPS)-stimulated RAW264.7 cells^[5]. Cirsimaritin(5-20 $\mu\text{g/mL}$) reduced viral titers and influenza A virus (IAV) RNA and protein synthesis in a dose-dependent manner^[6].

Cirsimaritin(10mg/kg; i.g) effectively prevented DSS-induced colon inflammation in mice by mitigating mucosal damage and inflammatory cell infiltration. It significantly downregulated proinflammatory cytokines such as MMP9, NF- κB , COX-2, and iNOS. Additionally, cirsimaritin reversed DSS-induced effects, including weight loss, colon shortening, tissue damage, increased inflammatory cells, and elevated cytokine secretion^[7]. Treatment with cirsimaritin(0.5-1mg/kg; p.o; 8 weeks) reduced the severity of liver injury in the experimental mouse model of metabolic dysfunction-associated fatty liver disease (MAFLD) by inhibiting hepatic steatosis, oxidative stress, inflammation, and liver fibrosis^[8].

References:

- [1]. Benali T, Jaouadi I, et.al. The Current State of Knowledge in Biological Properties of Cirsimaritin. Antioxidants (Basel). 2022 Sep 19;11(9):1842. doi: 10.3390/antiox11091842. PMID: 36139916; PMCID: PMC9495358.
- [2]. Ben Sghaier M, Skandrani I, et.al. Flavonoids and sesquiterpenes from Tecurium ramosissimum

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promote antiproliferation of human cancer cells and enhance antioxidant activity: a structure-activity relationship study. Environ Toxicol Pharmacol. 2011 Nov;32(3):336-48. doi:

10.1016/j.etap.2011.07.003. Epub 2011 Jul 12. PMID: 22004952.

[3]. Nyiligira E, Viljoen AM, et.al. Phytochemistry and in vitro pharmacological activities of South African Vitex (Verbenaceae) species. J Ethnopharmacol. 2008 Oct 28;119(3):680-5. doi:

10.1016/j.jep.2008.07.004. Epub 2008 Jul 16. PMID: 18678237.

[4]. Pathak G, Singh S, et.al. Cirsimaritin, a lung squamous carcinoma cells (NCIH-520) proliferation inhibitor. J Biomol Struct Dyn. 2021 Jun;39(9):3312-3323. doi: 10.1080/07391102.2020.1763198.

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[5]. Shin MS, Park JY, et.al. Anti-inflammatory effects and corresponding mechanisms of cirsimaritin extracted from Cirsium japonicum var. maackii Maxim. Bioorg Med Chem Lett. 2017 Jul

15;27(14):3076-3080. doi: 10.1016/j.bmcl.2017.05.051. Epub 2017 May 17. PMID: 28554870.

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[7]. Alqudah A, Qnais E, et.al. Cirsimaritin Alleviates Dextran Sodium Sulfate-Induced Acute Colitis in Experimental Animals: A Therapeutic Approach for Inflammatory Bowel Disease. Prev Nutr Food Sci. 2024 Mar 31;29(1):31-39. doi: 10.3746/pnf.2024.29.1.31. PMID: 38576881; PMCID: PMC10987388.

[8]. Che DN, Shin JY, et.al. Ameliorative effects of Cirsium japonicum extract and main component cirsimaritin in mice model of high-fat diet-induced metabolic dysfunction-associated fatty liver disease.

Food Sci Nutr. 2021 Sep 1;9(11):6060-6068. doi: 10.1002/fsn3.2548. PMID: 34760237; PMCID: PMC8565240.

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