

Product Data Sheet

Product Name: 2',4-Dihydroxychalcone

Cat. No.: GC78944

Chemical Properties

Cas. No. 13323-66-5

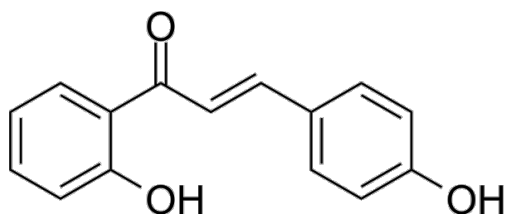
Formula $C_{15}H_{12}O_3$ M.Wt 240.25

Solubility DMSO: 100 mg/mL (416.23 mM; Need ultrasonic) Storage Store at 4°C, stored under nitrogen

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



Background

2',4-Dihydroxychalcone is an orally active natural chalcone flavonoid. 2',4-Dihydroxychalcone restores intestinal barrier integrity by upregulating tight junction proteins, regulates intestinal flora balance and alleviates inflammation. 2',4-Dihydroxychalcone induces GPX4 degradation, ferroptosis and apoptosis, triggers cell cycle arrest, and exhibits broad anti-tumor activity. 2',4-Dihydroxychalcone also possesses antifungal activity, antileishmanial activity, and reduces the hemolytic effect and virulence of *Vibrio vulnificus* [1] [2] [3] [4] [5] [6].

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In Vivo, 2',4-Dihydroxychalcone (10-30 mg/kg; i.g.; daily; 10 days) significantly alleviates DSS - induced acute ulcerative colitis in C57BL/6J mice by inhibiting NLRP3 inflammasome activation, restoring gut barrier integrity, and balancing gut microbiota, with no observed organ toxicity^[1]. 2',4-Dihydroxychalcone (6.25-12.5 mg/kg; i.p.; repeated dosing schedule) significantly inhibits cholangiocarcinoma xenograft tumor growth with minimal organ toxicity^[2]. 2',4-Dihydroxychalcone (15 mg/kg; injection; single dose) provides ~50% protection to *Galleria mellonella* larvae against *Vibrio vulnificus* infection^[6].

In Vitro, 2',4-Dihydroxychalcone (1.25-40 μ M; 1-2 h) selectively inhibits NLRP3 inflammasome activation in THP-1-derived macrophages and 774A.1 macrophages by blocking the cleavage of caspase-1 and Gasdermin D, and exhibits no cytotoxicity at concentrations up to 40 μ M^[1]. 2',4-Dihydroxychalcone (25 μ M; 1 h) potently inhibits Nigericin -induced IL-1 β secretion in THP-1-derived macrophages^[1]. 2',4-Dihydroxychalcone (12.5-50 μ M; 24-72 h) potently inhibits the proliferation of HuCCT1 and QBC939 cholangiocarcinoma cells in a concentration-dependent manner^[2]. 2',4-Dihydroxychalcone (12.5-50 μ M; 14 days) inhibits the colony-forming ability of HuCCT1 and QBC939 cholangiocarcinoma cells in a concentration-dependent manner^[2]. 2',4-Dihydroxychalcone (25 μ M; 24 h) inhibits the proliferation of HuCCT1 and QBC939 cholangiocarcinoma cells by reducing EdU incorporation^[2]. 2',4-Dihydroxychalcone (12.5-50 μ M; 48 h) inhibits horizontal and vertical migration of HuCCT1 and QBC939 cholangiocarcinoma cells in a concentration-dependent manner^[2]. 2',4-Dihydroxychalcone (12.5-50 μ M; 24 h) increases intracellular ROS levels in HuCCT1 and QBC939 cholangiocarcinoma cells in a concentration-dependent manner^[2]. 2',4-Dihydroxychalcone (12.5-50 μ M; 24 h) induces ferroptosis in HuCCT1 and QBC939 cholangiocarcinoma cells^[2]. 2',4-Dihydroxychalcone (12.5-50 μ M; 24 h) inhibits epithelial-mesenchymal transition in HuCCT1 and QBC939 cholangiocarcinoma cells, while downregulating the PI3K/AKT/mTOR signaling pathway and ferroptosis-related markers SLC7A11 and GPX4^[2]. 2',4-Dihydroxychalcone (12.5-50 μ M) downregulates the expression of ERO1A in HuCCT1 and QBC939 cholangiocarcinoma cells in a concentration-dependent manner^[2]. 2',4-Dihydroxychalcone (0.06-256 μ g/mL; 48 h) inhibits the metabolic activity and hyphal growth of *Aspergillus fumigatus* Af293, with an MIC₅₀ ranging from 64 to 128 μ g/mL, and significantly reduces hyphal growth at a concentration of 256 μ g/mL^[3]. 2',4-Dihydroxychalcone (8 μ g/mL; 48 h) inhibits the radial growth of *Aspergillus fumigatus* Af293 by 20%, blocks its sporulation process, and reduces the expression levels of sporulation-related genes *brlA*,

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abaA and wetA by 3-5 folds^[3]. 2',4-Dihydroxychalcone (8 µg/mL; 48 h) reduces the expression levels of calcineurin pathway genes cnaA and crzA in *Aspergillus fumigatus* Af293^[3]. 2',4-Dihydroxychalcone (4-256 µg/mL; 48 h) enhances the antifungal activity of Itraconazole and Caspofungin against *Aspergillus fumigatus* Af293^[3]. 2',4-Dihydroxychalcone (0.195-100.0 µg/mL; 72 h) potentially inhibits the growth of *Leishmania amazonensis* promastigotes, with an IC₅₀ of 0.4 µM, and this compound shows high selectivity for parasites over mammalian cells^[4]. 2',4-Dihydroxychalcone (24 h) exhibits low cytotoxicity against mouse peritoneal macrophages, with a CC₅₀ of 416.7 µM^[4]. 2',4-Dihydroxychalcone (5-20 µg/mL; 48 h) induces morphological changes associated with apoptosis in human gastric cancer MGC-803 cells, with severe cell detachment and nuclear damage observed at the highest concentration^[5]. 2',4-Dihydroxychalcone (5-20 µg/mL; 48 h) induces cell cycle arrest in human gastric cancer MGC-803 cells: it triggers S-phase arrest at 5 µg/mL, induces G2/M-phase arrest in a dose-dependent manner as the concentration increases to 10 µg/mL, while the G2/M-phase arrest effect attenuates at 20 µg/mL^[5]. 2',4-Dihydroxychalcone (2.5-20 µg/mL; 48 h) increases the activity of caspase-3 in human gastric cancer MGC-803 cells in a dose-dependent manner^[5]. 2',4-Dihydroxychalcone (5-20 µg/mL; 48 h) downregulates the expression of survivin mRNA in human gastric cancer MGC-803 cells in a dose-dependent manner^[5]. 2',4-Dihydroxychalcone (0.2-5 µM; cultured to an OD₆₀₀ of 1.8-2.0) potentially reduces the transcription levels of HlyU-regulated toxin genes rtxA1 and vvhA in wild-type *Vibrio vulnificus* MO6-24/O, without altering the expression of hlyU or hns^[6]. 2',4-Dihydroxychalcone (2-8 µM) inhibits the hemolytic activity of wild-type **Vibrio vulnificus** MO6-24/O in a concentration-dependent manner, and at the concentration of 8 µM, the hemolysis level decreases to a level comparable to that of the ΔhlyU mutant^[6]. 2',4-Dihydroxychalcone exhibits low cytotoxicity against HeLa and HEK293 cells, with IC₅₀ values of 100.3 µM and 60.0 µM, respectively, which are much higher than the maximum working concentration of 8 µM^[6]. 2',4-Dihydroxychalcone (150-300 µM) inhibits the specific DNA-binding activity of purified wild-type *Vibrio vulnificus* HlyU protein with the PrtXA1 promoter, and prevents the formation of specific high-mobility DNA-protein complexes^[6].

References:

- [1]. Zhang G, et al. 2',4'-dihydroxychalcone alleviates inflammatory bowel disease by inhibiting NLRP3 inflammasome and modulating gut microbiota. *Frontiers in immunology*. 2026;17:1751218.
- [2]. Wang T, et al. 2',4'-dihydroxychalcone induces ferroptosis through ERO1A/GPX4 regulatory axis

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[3]. Seo YH, et al. In Vitro Antifungal Activity and Mode of Action of 2',4'-Dihydroxychalcone against *Aspergillus fumigatus*. Mycobiology. 2015 Jun;43(2):150-6.

[4]. Passalacqua TG, et al. The 2',4'-dihydroxychalcone could be explored to develop new inhibitors against the glycerol-3-phosphate dehydrogenase from *Leishmania* species. Bioorganic & medicinal chemistry letters. 2015 Sep 01;25(17):3564-8.

[5]. Lou C, et al. 2',4'-Dihydroxychalcone-induced apoptosis of human gastric cancer MGC-803 cells via down-regulation of survivin mRNA. Toxicology in vitro: an international journal published in association with BIBRA. 2010 Aug;24(5):1333-7.

[6]. Imdad S, et al. Identification of 2',4'-Dihydroxychalcone as an Antivirulence Agent Targeting HlyU, a Master Virulence Regulator in *Vibrio vulnificus*. Molecules. 2018 Jun 20;23(6):1492.

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