Neohesperidin dihydrochalcone

Cat. No.: HY-N0154

CAS No.: 20702-77-6

Molecular Formula: $C_{28}H_{36}O_{15}$

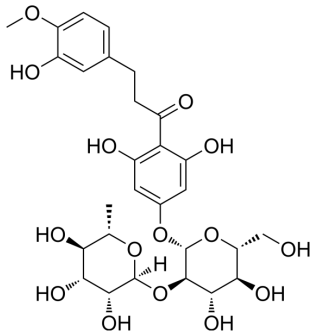
Molecular Weight: 612.58

Target: Reactive Oxygen Species

Pathway: Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (163.24 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	1.6324 mL	8.1622 mL	16.3244 mL
	5 mM	0.3265 mL	1.6324 mL	3.2649 mL
	10 mM	0.1632 mL	0.8162 mL	1.6324 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (4.08 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (4.08 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (4.08 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Neohesperidin dihydrochalcone is a synthetic glycoside chalcone, is added to various foods and beverages as a low caloric artificial sweetener.

In Vitro

Neohesperidin dihydrochalcone shows remarkable radical scavenging activity against stable radical and reactive oxygen species (ROS) in concentration dependent manner. Especially, neohesperidin dihydrochalcone is the most potent inhibitor of H_2O_2 and HOCl. Neohesperidin dihydrochalcone shows HOCl scavenging activity of 93.5% and H_2O_2 scavenging property of 73.5%. Neohesperidin dihydrochalcone shows extensive inhibitory effect especially on non-radical ROS H_2O_2 and HOCl

	with IC_{50} values of 205.1, 25.5 μM[1]. Neohesperidin dihydrochalcone is found to be an activator of porcine pancreatic alpha-amylase (PPA) with an IC_{50} of 389 μM[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Neohesperidin dihydrochalcone administration results in significant reduction in activities of two useful markers of liver damage, AST and ALT. The relative levels of NF-κB, IL-6, IL-1β and TNF-α protein in the liver of PQ-treated mice are inhibited by neohesperidin dihydrochalcone[3]. The embryotoxicity/teratogenicity of neohesperidin dihydrochalcone is examined in Wistar Crl:(WI)WU BR rats. No adverse effects are observed at neohesperidin dihydrochalcone levels of up to 5% of the diet, the highest dose level tested, at which the rats consumed about 3.3 g/kg body weight/day[4]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	WST-8 dye is used in the cell viability assay. HIT-T15 and HUVEC cells are grown and maintained in Dulbecco's modified Eagle's medium, supplemented with 10% fetal bovine calf serum. 1000 cells in each well are incubated with various concentrations of neohesperidin dihydrochalcone (50, 100, 500 μM, 1 mM) and other compounds. After treating HIT-T15 and HUVEC cells with 500 μM HOCl, WST-8 dye is added to each well, and the absorbance is detected at 420 nm with microplate reader[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [3][4]	Rats: The embryotoxicity/teratogenicity of neohesperidin dihydrochalcone is examined in Wistar Crl:(WI)WU BR rats. The study is comprised of four groups of 28 mated female rats each, i.e., a control group (0% neohesperidin dihydrochalcone) and three treatment groups (1.25, 2.5, and 5% neohesperidin dihydrochalcone). The general condition and behavior of the animals are observed twice daily. Body weight is determined on days 0, 7, 14, and 21 of gestation. Food consumption is determined during three consecutive periods (days 0-7, 7-14, and 14-21 of gestation)[4]. [3]Mice: Neohesperidin dihydrochalcone is dissolved in a 0.5% CMC vehicle. Mice are randomized into four groups. The control group receives equal volume of vehicles throughout. The PQ group receives saline once daily for 6 consecutive days. One hour after final saline treatment, mice are injected with PQ (75 mg/kg body weight). The neohesperidin dihydrochalcone group receives a daily dose of 200 mg/kg body weight by oral gavage for 6 consecutive days. One hour after final neohesperidin dihydrochalcone treatment, mice are injected with PQ (75 mg/kg body weight)[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Philos Trans R Soc Lond B Biol Sci. 2023 Nov 20;378(1890):20220248.

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REFERENCES

[1]. Choi JM, et al. Antioxidant properties of neohesperidin dihydrochalcone: inhibition of hypochlorous acid-induced DNA strand breakage, protein degradation, and cell death. Biol Pharm Bull. 2007 Feb;30(2):324-30.

[2]. Kashani-Amin E, et al. Neohesperidin dihydrochalcone: presentation of a small molecule activator of mammalian alpha-amylase as an allosteric effector. FEBS Lett. 2013 Mar 18;587(6):652-8.

[3]. Shi Q, et al. Artificial sweetener neohesperidin dihydrochalcone showed antioxidative, anti-inflammatory and anti-apoptosis effects against paraquat-induced liver injury in mice. Int Immunopharmacol. 2015 Dec;29(2):722-9.

[4]. Waalkens-Berendsen DH, et al. Embryotoxicity and teratogenicity study with neohesperidin dihydrochalcone in rats. Regul Toxicol Pharmacol. 2004 Aug;40(1):74-9.

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