Product Data Sheet

Product Name: Gardenia yellow
Cat. No.: GC60172

Chemical Properties

Cas. No.	94238-00-3		
SMILES	[Gardenia yellow]		
Formula		M.Wt	
Solubility	DMSO : 30 mg/mL Water : 25 mg/mL	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ 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	Gardenia yellow		

Protocol

Cell experiment [1]:

Cell lines	Human umbilical vein endothelial cells (HUVECs)

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Preparation Method	HUVECs were cultured in F-12K medium supplemented with 100μg/ml heparin, 30μg/ml ECGS, 10% FBS, and 1% P/S, and then cultured in a humidified incubator at 37℃ with 5% CO_2. HUVECs were seeded in 24-well plates and cultured until cell confluence. Wound areas were created by scratching the monolayer with a 200μl pipette tip. After removing non-adherent cells by washing with PBS, high serum (10% FBS) medium containing various concentrations of Gardenia yellow (0, 100, 200, 300, and 400μM), 0.1% DMSO (solvent control), and 10μM SU5416 (positive control) was added to each well. After 20h of incubation, the cells were washed with PBS. Images were taken at 0 h and 20h and analyzed for cell migration distance.
Reaction Conditions	0, 100, 200, 300, and 400μM; 20h
Applications	Gardenia yellow dose-dependently inhibited the cell migration of HUVECs.

Animal experiment [2]:

Animal models	SPF-grade Sprague-Dawley (SD) rats

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Preparation Method	SPF-grade Sprague-Dawley (SD) rats were housed in IVC cages (40 air changes per hour). All cages were housed in a room with controlled light (10-h light/14-h dark cycle), temperature (20-25°C), and humidity (40%-70%). Rats received standard rodent feed and tap water ad libitum. The rats were randomly divided into 2 groups: a solvent control group and an experimental group. The rats in the experimental group (n = 10) were given 0.00 and 4.50g/kg/day Gardenia yellow by gavage for 90 days, respectively. The organs and tissues of the rats were collected for analysis.
Dosage form	4.50g/kg/day for 90 days; p.o.
Applications	Gardenia yellow treatment resulted in weight loss, pigment deposition in several important organs, and significant kidney damage in rats.

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References:
[1] Zhao C, Kam H T, Chen Y, et al. Crocetin and its glycoside crocin, two bioactive constituents from Crocus sativus L.(saffron), differentially inhibit angiogenesis by inhibiting endothelial cytoskeleton organization and cell migration through VEGFR2/SRC/FAK and VEGFR2/MEK/ERK signaling pathways[J]. Frontiers in Pharmacology, 2021, 12: 675359.
[2] Tang X, Wang Y, Yang W, et al. Acute and subchronic oral toxicity study of gardenia yellow E500 in sprague-dawley rats[J]. International Journal of Environmental Research and Public Health, 2020, 17(2): 531.

Background

Gardenia yellow is a commonly used natural food coloring material with excellent water solubility properties [1]. Gardenia yellow has a potential capacity for DNA damage and could increase a number of sister chromatid exchange [2]. Gardenia yellow has been widely used as an internal reference for developing novel separation processes and purification techniques to prepare related compounds with high purity[3].

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In vitro, Gardenia yellow treatment (400μM) for 20 hours significantly inhibited the migration and tube formation of human umbilical vein endothelial cells (HUVECs), as well as the phosphorylation of VEGFR2 and the downstream signaling molecules[4].

In vivo, Gardenia yellow treatment via oral administration at a dose of 4.50g/kg/day for 90 days resulted in weight loss, pigment deposition in several important organs, and significant kidney damage in rats[5]. Oral administration of Gardenia yellow at a dose of 40mg/kg/day for two consecutive weeks improved neuroinflammation and restored liver mitochondrial function in corticosterone-induced depression mice[6]. Oral administration of Gardenia yellow at a dose of 40mg/kg daily for 3 weeks significantly attenuated diquat-induced pulmonary fibrosis in C57BL/6 male mice, accompanied by reduced collagen deposition[7].

References:

[1] Xu W, Yu J, Feng W, et al. Selective extraction of gardenia yellow and geniposide from Gardenia jasminoides by mechanochemistry[J]. Molecules, 2016, 21(5): 540.
[2] Ozaki A, Kitano M, Furusawa N, et al. Genotoxicity of gardenia yellow and its components[J]. Food and chemical Toxicology, 2002, 40(11): 1603-1610.
[3] Chen J F, Fu G M, Wan Y, et al. Enrichment and purification of gardenia yellow from Gardenia jasminoides var. radicans Makino by column chromatography technique[J]. Journal of Chromatography B, 2012, 893: 43-48.
[4] Zhao C, Kam H T, Chen Y, et al. Crocetin and its glycoside crocin, two bioactive constituents from Crocus sativus L.(saffron), differentially inhibit angiogenesis by inhibiting endothelial cytoskeleton organization and cell migration through VEGFR2/SRC/FAK and VEGFR2/MEK/ERK signaling pathways[J]. Frontiers in Pharmacology, 2021, 12: 675359.
[5]Tang X, Wang Y, Yang W, et al. Acute and subchronic oral toxicity study of gardenia yellow E500 in sprague-dawley rats[J]. International Journal of Environmental Research and Public Health, 2020, 17(2): 531.
[6] Xiao Q, Xiong Z, Yu C, et al. Antidepressant activity of crocin-I is associated with amelioration of neuroinflammation and attenuates oxidative damage induced by corticosterone in mice[J]. Physiology & behavior, 2019, 212: 112699.
[7] Xi S, Li X, Chen W, et al. Crocin-I mitigates diquat-induced pulmonary fibrosis via activation of the SIRT3/FOXO3a pathway[J]. Biomedicine & Pharmacotherapy, 2025, 186: 118043.

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