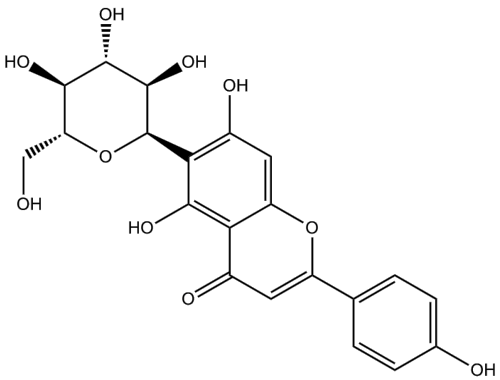
Product Data Sheet

Product Name: Isovitexin
Cat. No.: GN10804

Chemical Properties

Cas. No.	38953-85-4 ; 29702-25-8		
Chemical Name	5,7-dihydroxy-2-(4-hydroxyphenyl)-6-[(2S,3R,4R,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]chromen-4-one		
SMILES	C1=CC(=CC=C1C2=CC(=O)C3=C(C(=C(C=C3O2)O)C4C(C(C(C(O4)CO)O)O)O)O)O		
Formula	$C_{21}H_{20}O_{10}$	M.Wt	432.38
Solubility	DMF: 30 mg/ml,DMSO: 30 mg/ml,DMSO:PBS (pH 7.2) (1:5): 0.16 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 RAW 264.7

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Preparation Method	RAW 264.7 cells were plated in 96-well plates (1×10^4 cells/well) and incubated with various concentrations of Isovitexin (final concentration: 0-200μg/ml) and LPS (2μg/ml) for 24h. In addition, the cells were pretreated with Isovitexin (25 or 50μg/ml) for 1h, followed by the addition of H_2O_2 (300μM). After 24h, cell viability was determined by MTT assay.
Reaction Conditions	0-200μg/ml; 24h.
Applications	100μg/ml Isovitexin were not toxic to RAW 264.7 cells, but treatment with 200μg/ml Isovitexin caused significant cytotoxicity. The addition of H_2O_2 markedly reduced cell viability and induced apoptosis, which were attenuated by Isovitexin exposure at 25 and 50μg/ml.

Animal experiment [1]:

Animal models	6-8 weeks old male BALB/c mice
Preparation Method	Mice were randomly divided into six groups: control (saline), Isovitexin only (100mg/kg, dissolved in 0.5% DMSO), LPS only (0.5mg/kg, dissolved in saline), LPS (0.5mg/kg) + Isovitexin (50 or 100mg/kg), and LPS (0.5mg/kg) + dexamethasone (Dex, 5mg/kg dissolved in saline). Isovitexin (50 or 100mg/kg) or Dex (5mg/kg) were administered intraperitoneally. After exposure to Isovitexin or Dex for 1h, the mice were anesthetized with diethyl ether, and LPS was administered intranasally (i.n.) to induce lung injury. After LPS administration for 12h, the animals were euthanized.
Dosage form	50 or 100mg/kg; i.p.; once.

Caution: Product has not been fully validated for medical applications. For research use only.
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Applications	Isovitexin pretreatment decreased TNF-α and IL-6 production, ROS generation, and MPO and MDA content, while increased SOD and GSH levels and inhibited the protein expression of iNOS and COX-2 in LPS-induced ALI mice.

References:
[1]. Lv, Hongming, et al. "Isovitexin exerts anti-inflammatory and anti-oxidant activities on lipopolysaccharide-induced acute lung injury by inhibiting MAPK and NF-κB and activating HO-1/Nrf2 pathways." International journal of biological sciences 12.1 (2016): 72.

Background

Isovitexin extracted from rice hulls of *Oryza sativa*, possesses various biological activities, including anti-inflammatory and antioxidant activities[1].

In vitro， Isovitexin (5-20μM; 24h) protected HaCaT cells from H_2O_2-induced oxidative damage, alleviated H_2O_2-induced apoptosis[2]. Pretreatment HaCaT cells with 10-50μM Isovitexin for 30min completely abolished PM2.5-induced elevation of ROS levels[3].

In vivo, Isovitexin (50 or 100mg/kg; i.p.; once) pretreatment decreased TNF-α and IL-6 production, ROS generation, and MPO and MDA content, while increased SOD and GSH levels and inhibited the protein expression of iNOS and COX-2 in LPS-induced acute lung injury (ALI) mice[4]. Isovitexin (5mg/kg; oral) restored bone mass and architecture of trabecular bones (femur metaphysis and fifth lumbar vertebra/L5) and cortical bones (femur diaphysis) in ovariectomized (OVX) osteopenic mice. Isovitexin has an oral bioavailability of 14.58%[5].

References:
[1] Kang, Jie, et al. "Flavonoids from acai (Euterpe oleracea Mart.) pulp and their antioxidant and anti-inflammatory activities." Food chemistry 128.1 (2011): 152-157.
[2] Lv, Xuechun, et al. "The anti-apoptosis effect of isovitexin on human keratinocytes by regulating miR-98-5p/Bcl-2/Bcl-xL and MAPKs/NF-κB signaling pathways." Food Chemistry Advances 2 (2023): 100238.
[3] Chowjarean, Verisa, et al. "Isovitexin increases stem cell properties and protects against PM2. 5 in keratinocytes." in vivo 33.6 (2019): 1833-1841.

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[4] Lv, Hongming, et al. "Isovitexin exerts anti-inflammatory and anti-oxidant activities on lipopolysaccharide-induced acute lung injury by inhibiting MAPK and NF-κB and activating HO-1/Nrf2 pathways." International journal of biological sciences 12.1 (2016): 72.
[5] Pal, Subhashis, et al. "Oral Administration of Isovitexin, a Naturally Occurring Apigenin Derivative Showed Osteoanabolic Effect in Ovariectomized Mice: A Comparative Study with Teriparatide: S. Pal et al." Calcified Tissue International 111.2 (2022): 196-210.

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