

Product Data Sheet

Product Name: Oroxylin A

Cat. No.: GC41625

Chemical Properties

Cas. No. 480-11-5

SMILES O=C1C2=C(O)C(OC)=C(O)C=C2OC(C3=CC=CC=C3)=C1

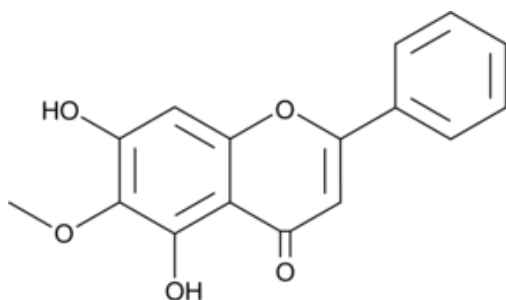
Formula $C_{16}H_{12}O_5$ M.Wt 284.3

Solubility DMF: 30 mg/ml, DMSO: 30 mg/ml, DMSO:PBS (pH 7.2) (1:4): 0.20 mg/ml
Storage Store at -20°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	MDA-MB-231 cells
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Caution: Product has not been fully validated for medical applications. For research use only.

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Preparation Method	MDA-MB-231 cells were cultured in DMEM medium, supplemented with 10% fetal bovine serum, 1% penicillin-streptomycin, at 37°C in an incubator with 5% CO ₂ . 10 ⁴ cells were seeded in each well of a flat-bottom 96-well plate. Cells were treated with different concentrations of Oroxylin A (0, 10, 20, 30, and 40μM). After 48h, cell viability was tested.
Reaction Conditions	0, 10, 20, 30, and 40μM; 48h
Applications	Oroxylin A treatment markedly reduced cell viability of MDA-MB-231 cells in a dose-dependent manner.
Animal experiment [2]:	
Animal models	Male DBA/1 mice
Preparation Method	Male DBA/1 mice (8 weeks old) were housed in specific pathogen-free conditions and fed standard mouse chow and water ad libitum. 4mg/ml of chicken type II collagen (CII) was dissolved in 0.1M acetic acid and emulsified in an equal volume of complete Freund's adjuvant (CFA). A total volume of 100μl of emulsified CII/CFA per mouse was injected intradermally at the base of the tail (on day 0). On day 21 following the primary immunization, mice received a booster immunization with CII emulsified in incomplete Freund's adjuvant (IFA). Oroxylin A was dissolved in sodium carboxymethylcellulose diluted in saline. Thirty mice with established CIA on day 6 after the booster immunization were randomly divided into 2 groups (n= 15/group: vehicle-treated CIA mice, Oroxylin A-treated CIA mice) and were intraperitoneally administered Oroxylin A (10mg/kg/day) or vehicle daily for 10 days. Paws were removed for analysis.

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Dosage form	10mg/kg/day; 10 days; i.p.
Applications	Oroxylin A treatment diminished the joint damage in CIA mice.
References:[1] Sun X H, Chang X, Wang Y, et al. Oroxylin A suppresses the cell proliferation, migration, and EMT via NF-κB signaling pathway in human breast cancer cells[J]. BioMed Research International, 2019, 2019(1): 9241769.[2] Wang Y, Gao J, Xing L Z. Therapeutic potential of Oroxylin A in rheumatoid arthritis[J]. International Immunopharmacology, 2016, 40: 294-299.	

Background

Oroxylin A is an active flavonoid with anti-inflammatory, anti-bacterial, anti-viral, and anti-cancer properties^[1]. Oroxylin A upregulates the protein expression of Nrf2, HO-1, and NQO1, induces the translocation of Nrf2 to the nucleus, enhances the activity of antioxidant response elements (ARE), inhibits the ubiquitination and proteasome activity of Nrf2, thereby exerting anti-inflammatory effects^[2]. Oroxylin A has been widely used to inhibit glycolytic metabolism and thereby regulate tumor growth^[3].

In vitro, Oroxylin A treatment for 48 hours significantly inhibited the viability of HepG2, HCT116, and BCG-823 cells, with IC₅₀ values of 22.7μM, 33.9μM and 25.5μM, respectively^[4]. Incubation with 20μM Oroxylin A for 24 hours suppressed the migration and invasion of MDA-MB-231 cells, decreased the expression levels of N-cadherin and Vimentin, and increased the mRNA and protein expression levels of E-cadherin^[5]. Treatment with 100μM Oroxylin A for 24 hours induced the dissociation of hexokinase II from the mitochondria in MCF-7 cells, resulting in a decrease in mitochondrial membrane potential and a decline in cell viability^[6].

In vivo, Oroxylin A treatment via oral administration at a dose of 60mg/kg/day for 4 consecutive days promoted liver regeneration and improved survival in mice with CCl₄-induced acute liver injury^[7]. Continuous intraperitoneal injection of Oroxylin A at a dose of 10mg/kg/day for 10 consecutive days alleviated the joint damage in mice with collagen-induced arthritis (CIA) and inhibited the expression

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of pro-inflammatory cytokines^[8].

References:

- [1] Sajeev A, Hegde M, Girisa S, et al. Oroxylin A: a promising flavonoid for prevention and treatment of chronic diseases[J]. *Biomolecules*, 2022, 12(9): 1185.
- [2] Ye M, Wang Q, Zhang W, et al. Oroxylin A exerts anti-inflammatory activity on lipopolysaccharide-induced mouse macrophage via Nrf2/ARE activation[J]. *Biochemistry and Cell Biology*, 2014, 92(5): 337-348.
- [3] Lu L, Guo Q, Zhao L. Overview of oroxylin A: a promising flavonoid compound[J]. *Phytotherapy Research*, 2016, 30(11): 1765-1774.
- [4] Fu W, Wang J, Yu L, et al. Synthesis and biological evaluation of 7-O-modified oroxylin A derivatives[J]. *Bioorganic & medicinal chemistry letters*, 2012, 22(2): 1118-1121.
- [5] Sun X H, Chang X, Wang Y, et al. Oroxylin A suppresses the cell proliferation, migration, and EMT via NF- κ B signaling pathway in human breast cancer cells[J]. *BioMed Research International*, 2019, 2019(1): 9241769.
- [6] Wei L, Zhou Y, Dai Q, et al. Oroxylin A induces dissociation of hexokinase II from the mitochondria and inhibits glycolysis by SIRT3-mediated deacetylation of cyclophilin D in breast carcinoma[J]. *Cell death & disease*, 2013, 4(4): e601-e601.
- [7] Zhu R, Zeng G, Chen Y, et al. Oroxylin A accelerates liver regeneration in CCl₄-induced acute liver injury mice[J]. *PloS one*, 2013, 8(8): e71612.
- [8] Wang Y, Gao J, Xing L Z. Therapeutic potential of Oroxylin A in rheumatoid arthritis[J]. *International Immunopharmacology*, 2016, 40: 294-299.

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