Swertiamarin

Cat. No.: HY-N0807

CAS No.: 17388-39-5

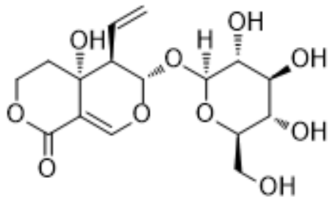
Molecular Formula: $C_{16}H_{22}O_{10}$

Molecular Weight: 374.34

Target: MMP; NF-κB; JAK; Keap1-Nrf2

Pathway: Metabolic Enzyme/Protease; NF-κB; Epigenetics; JAK/STAT Signaling; Protein Tyrosine Kinase/RTK; Stem Cell/Wnt

Storage: 4°C, protect from light
* In solvent : -80°C, 2 years; -20°C, 1 year (protect from light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 250 mg/mL (667.84 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.6714 mL	13.3568 mL	26.7137 mL
	5 mM	0.5343 mL	2.6714 mL	5.3427 mL
	10 mM	0.2671 mL	1.3357 mL	2.6714 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: ≥ 2.17 mg/mL (5.80 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.17 mg/mL (5.80 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.17 mg/mL (5.80 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Swertiamarin is an orally active iridoid compound with hypoglycemic, hypolipidemic, anti rheumatic and antioxidant activities, which can be used in the research of diabetes and arthritis[1][2][4][5].

In Vitro

Swertiamarin (10-50 μg) can regulate the levels of pro-inflammatory cytokines, MMP, and NF - κ B and promote the proliferation of osteoblasts[3].

Swertiamarin (100 mg/mL, 24 h) has anti diabetes activity by up regulating PPAR-g gene expression in 3T3-L1 cells through its active metabolite gentianine[5].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[3].

Cell Line:	Calvarial osteoblast cells
Concentration:	10-50 μg
Incubation Time:	
Result:	Improved cell proliferation and ALP levels of osteoblasts.

Real Time qPCR[5].

Cell Line:	3T3-L1 mouse pre-adipocytes
Concentration:	100 mg/mL
Incubation Time:	24 h
Result:	Increased adiponectin mRNA expression levels.

In Vivo

Swertiamarin (50, 75 mg/kg; once daily; 7 days; p.o.) has a lipid-lowering effect in hypercholesterolemic rats[1].
Swertiamarin (100, 200 mg/kg; once daily; 8 weeks; i.g.) has antioxidant and hepatoprotective effects on carbon tetrachloride induced rat hepatotoxicity through the Nrf2/HO-1 pathway[2].
Swertiamarin (2, 5, 10 mg/kg; once daily; 2 weeks; p.o.) prevents bone erosion in rats by regulating RANKL/RANK/OPG signaling transduction[3].
Swertiamarin (2, 5, 10 mg/kg; once daily; 2 weeks; p.o.) attenuates inflammatory mediators by regulating NF - κ B/I, κ B, and JAK2/STAT3 transcription factors in adjuvant induced arthritis rats[4].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Male Sprague Dawley (SD) rats with hypercholesterolemia induced by supplementing a diet rich in cholesterol[1].
Dosage:	50, 75 mg/kg
Administration:	Oral gavage (p.o.); once daily; 7 days
Result:	Reduced serum total cholesterol, triglyceride concentration and atherosclerosis index.

Animal Model:	Male Sprague Dawley (SD) rat model of liver injury induced by CCl_4[2].
Dosage:	100, 200 mg/kg
Administration:	i.g. ; once daily; 8 weeks
Result:	Reduced the levels of serum marker enzymes ALT, AST, and ALP representing liver damage, and restored antioxidant enzyme activity and GSH content in rat liver.

Animal Model:	Induced arthritis rat model by intradermal injection of 0.1ml Freund's complete adjuvant (FCA) (Sigma Aldrich) in 1ml paraffin oil into the right hind paw of rats[3][4].
Dosage:	2, 5, 10 mg/kg
Administration:	Oral gavage (p.o.); once daily; 2 weeks
Result:	Reduced calcium and TRAP, ACP, and ALP levels in serum and urine of arthritis rats, and

	increased phosphorus and collagen levels[3]. Inhibited paw thickness, lysosomal enzyme levels, and increased body weight in rats[4].

REFERENCES

[1]. Vaidya H, et al. Swertiamarin: a lead from Enicostemma littorale Blume. for anti-hyperlipidaemic effect. Eur J Pharmacol. 2009 Sep 1;617(1-3):108-12.

[2]. Wu T, et al. Antioxidant and Hepatoprotective Effect of Swertiamarin on Carbon Tetrachloride-Induced Hepatotoxicity via the Nrf2/HO-1 Pathway. Cell Physiol Biochem. 2017;41(6):2242-2254.

[3]. Hairul-Islam MI, et al. Swertiamarin, a natural steroid, prevent bone erosion by modulating RANKL/RANK/OPG signaling. Int Immunopharmacol. 2017 Dec;53:114-124.

[4]. Saravanan S, et al. Swertiamarin attenuates inflammation mediators via modulating NF-κB/I κB and JAK2/STAT3 transcription factors in adjuvant induced arthritis. Eur J Pharm Sci. 2014 Jun 2;56:70-86.

[5]. Vaidya H, et al. Anti-diabetic activity of swertiamarin is due to an active metabolite, gentianine, that upregulates PPAR-γ gene expression in 3T3-L1 cells. Phytother Res. 2013 Apr;27(4):624-7.

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