Genipin

Cat. No.: HY-17389

CAS No.: 6902-77-8

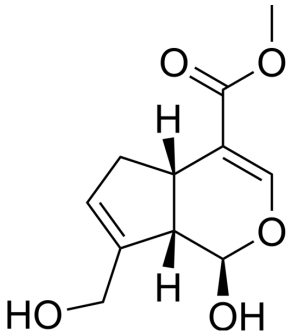
Molecular Formula: $C_{11}H_{14}O_5$

Molecular Weight: 226.23

Target: Autophagy

Pathway: Autophagy

Storage: 4°C, protect from light
* In solvent : -80°C, 1 year; -20°C, 6 months (protect from light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (442.03 mM)

H_2O : 4 mg/mL (17.68 mM; Need ultrasonic)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	4.4203 mL	22.1014 mL	44.2028 mL
5 mM	0.8841 mL	4.4203 mL	8.8406 mL
10 mM	0.4420 mL	2.2101 mL	4.4203 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 9.09 mg/mL (40.18 mM); Clear solution; Need ultrasonic and warming and heat to 60°C
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (11.05 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (11.05 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (11.05 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Genipin ((+)-Genipin) is a natural crosslinking reagent derived from Gardenia jasminoides Ellis fruits. Genipin inhibits UCP2 (uncoupling protein 2) in cells. Genipin has a variety of bioactivities, including modulation on proteins, antitumor, anti-inflammation, immunosuppression, antithrombosis, and protection of hippocampal neurons. Genipin also can be used for type 2 diabetes research[1][2].

In Vitro	Genipin increases mitochondrial membrane potential, increased ATP levels, closed KATP channels, and stimulated insulin secretion in pancreatic islet cells. Genipin causes suppression of insulin signal transduction through hyperactivation of c-Jun N-terminal kinase (JNK) and subsequent serine phosphorylation of insulin receptor substrate-1 (IRS-1), thus impairing insulin-stimulated glucose uptake in 3T3-L1 adipocytes[1]. Genipin activates IRS-1, PI3-K, and downstream signaling pathway and increases concentrations of calcium, resulting in glucose transporter 4 (GLUT4) translocation and glucose uptake increase in C2C12 myotubes[1]. Cytochrome c content increases significantly in the cytosol of Genipin-treated FaO cells. Activation of caspase-3 and caspase-7 is ultimately responsible for Genipin-induced apoptotic process in hepatoma cells. ROS level notably increases in Hep3B cells treated with 200 μM Genipin[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Kinase Assay [3]	Briefly, the peptide substrate N-acetyl-Asp-Glu-Val-Asp-ρ-nitroanilide (Ac-DEVD-ρNA) is added to the cell lysates in assay buffer (50 mM HEPES, pH 7.4, 100 mM NaCl, 0.1% CHAPS, 10 mM dithiothreitol, 1 mM EDTA, 10% glycerol) and incubated at 37°C. The cleavage of the substrate is monitored at 405 nm. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Environ Pollut. 2021, 116840.
- CNS Neurosci Ther. 2023 Sep 22.
- Mol Neurobiol. 2021 May 4.
- Eur J Pharmacol. 2019 Feb 15;845:56-64.
- Molecules. 2018 Mar 16;23(3). pii: E675.

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REFERENCES

[1]. Ma C, et al. Genipin stimulates glucose transport in C2C12 myotubes via IRS-1 and calcium- dependent mechanism. J Endocrinol. 2012 Dec 20.

[2]. Kim BC, et al. Genipin-induced apoptosis in hepatoma cells is mediated by reactive oxygen species/c-Jun NH2-terminal kinase-dependent activation of mitochondrial pathway. Biochem Pharmacol. 2005 Nov 1;70(9):1398-407.

[3]. Ye D, et al. Genipin normalizes depression-like behavior induced by prenatal stress through inhibiting DNMT1. Epigenetics. 2018 Mar 9:1-22.

[4]. Kim BC, et al. Genipin-induced apoptosis in hepatoma cells is mediated by reactive oxygen species/c-Jun NH2-terminal kinase-dependent activation of mitochondrial pathway. Biochem Pharmacol. 2005 Nov 1;70(9):1398-407.

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