Peiminine

Cat. No.: HY-N0213

CAS No.: 18059-10-4

Molecular Formula: $C_{27}H_{43}NO_3$

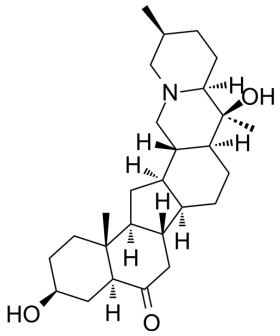
Molecular Weight: 429.64

Target: Autophagy; Caspase; Bcl-2 Family; PARP; p38 MAPK; ERK; NF-κB; Apoptosis

Pathway: Autophagy; Apoptosis; Cell Cycle/DNA Damage; Epigenetics; MAPK/ERK Pathway; Stem Cell/Wnt; NF-κB

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (232.75 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.3275 mL	11.6376 mL	23.2753 mL
5 mM	0.4655 mL	2.3275 mL	4.6551 mL
10 mM	0.2328 mL	1.1638 mL	2.3275 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: ≥ 2.5 mg/mL (5.82 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (5.82 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (5.82 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Peiminine is a compound that can be isolated from Bolbostemma paniculatum (Maxim) Franquet (Cucurbitaceae family). Peiminine can induce apoptosis in human hepatocellular carcinoma HepG2 cells through both extrinsic and intrinsic apoptotic pathways. Peiminine has anti-inflammatory, anticancer, anti-osteoporosis, cardioprotective and other activities in many animal models[1][2][3][4][5][6].

IC_{50} & Target	Caspase 3	Caspase-8	Caspase-9	PARP-1
	ERK1	ERK2	Bcl-2	p65

In Vitro

Peiminine (2-6 μg/mL, 24 h) decreases the expressions of procaspase-3, procaspases-8 and -9 and increases the levels of caspase-3, 8, 9 protein in HepG2 cells[1].
Peiminine (2-14 μg/mL, 24-72 h) displays the marked cytotoxicity to HepG2, Hela, SW480 and MCF-7 cells[1].
Peiminine (2-6 μg/mL, 24 h) induces apoptosis in HepG2 cells[1].
Peiminine (2-6 μg/mL, 24 h) induces HepG2 cells arrest at the G2/M phase[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Cytotoxicity Assay[1]

Cell Line:	HepG2, Hela, SW480, MCF-7
Concentration:	2 μg/mL, 4 μg/mL, 6 μg/mL, 8 μg/mL, 10 μg/mL, 12μg/mL, and 14 μg/mL
Incubation Time:	24 h, 48 h, 72 h
Result:	Exhibited a significant inhibition on the survival of HepG2, Hela, SW480 and MCF-7 cells with the IC_{50} values were 4.58, 4.89, 5.07 and 5.12 μg/mL at 24 h, respectively.

Apoptosis Analysis[1]

Cell Line:	HepG2
Concentration:	2 μg/mL, 4 μg/mL, 6 μg/mL, 8 μg/mL
Incubation Time:	24 h
Result:	Dissociated chromosome to produce DNA fragments dose-dependently.

Cell Cycle Analysis[1]

Cell Line:	HepG2
Concentration:	2 μg/mL, 4 μg/mL, 6 μg/mL
Incubation Time:	24 h
Result:	Decreased the percentage of G1 phases from 65.15% ± 0.78 to 49.55% ± 0.17 with the increase of concentrations. Increased the percentage of G2/M phases from 17.32% ± 0.20 to 39.99% ± 0.47 with the increase of concentrations.

Western Blot Analysis[1]

Cell Line:	HepG2
Concentration:	2 μg/mL, 4 μg/mL, 6 μg/mL
Incubation Time:	24 h
Result:	Reduced the expression of procaspase-3, PARP1, procaspases-8 and -9, and Bcl-2 at 2-6 μg/mL. Increased caspase-3, 8, 9, PARP1 cleaved and Bax protein levels.

In Vivo

Peiminine (3mg/kg, intraperitoneal injection, single dose) alleviates inflammatory manifestations and mitigates intestinal tissue damage in an experimental model of ulcerative colitis[2].

Peiminine (10 mg/kg, Intraperitoneal injection, once every 2 days for 6 weeks) prevents bone loss and fat formation in OVX-induced rat model[3].
Peiminine (1-5 mg/kg, are applied to the dorsal skin, once daily for 16 days) inhibits serum IL-6 and TNF-α in the dinitrochlorobenzene (DNCB)-induced Allergic dermatitis animal model[4].
Peiminine (2-5 mg/kg, Intraperitoneal injection, once a day for 4 weeks) has a cardioprotective effect against myocardial infarction-induced myocardial injury and fibrosis in myocardial infarction rat model[5].
Peiminine (1-5 mg/kg, Intraperitoneal injection, single dose) can reduce the damage of inflammatory response to the body and the possibility of pulmonary edema in LPS-induced Acute lung injury model mice[6].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	ulcerative colitis model[2]
Dosage:	3mg/kg
Administration:	Intraperitoneal injection (i.p.)
Result:	Reduced inflammation, mucosal ulcers, involvement of digestive system layers, and infltration of inflammatory cells. Reduced the levels of MPO and NO generated in the rectal tissue. Reduced cell proliferation in spleen cell. Decreased the production of f IL-1β, IL-6, and TNF-α cytokines. Reduced expression levels of genes IL-1β, IL-6, TNF-α, iNOS, and COX2.

Animal Model:	Ovariectomized (OVX) rat model[3]
Dosage:	10 mg/kg
Administration:	Intraperitoneal injection (i.p.)
Result:	Alleviated the bone loss caused by surgical castration. Improved the expression of COL1A1 and β-catenin and reduced the increase expression of PPAR-γ in trabecular bone.

Animal Model:	Allergic dermatitis model[4]
Dosage:	1 mg/kg, 5 mg/kg
Administration:	were applied to the dorsal skin
Result:	Alleviated the bone loss caused by surgical castration. Improved the expression of COL1A1 and β-catenin and reduced the increase expression of PPAR-γ in trabecular bone.

CUSTOMER VALIDATION

- Phytomedicine. 2023 Jul 2, 154946.
- Phytother Res. 2023 Feb 17.
- Tissue Cell. 2024 Feb 4:87:102323.

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REFERENCES

[1]. Chao X, et al. The effects and mechanism of peiminine-induced apoptosis in human hepatocellular carcinoma HepG2 cells [J]. PLoS One, 2019, 14(1): e0201864.

[2]. Ranjbar Bushehri M, et al. Anti-inflammatory activity of peiminine in acetic acid-induced ulcerative colitis model [J]. Inflammopharmacology, 2023: 1-9.

[3]. Gu H, et al. Peiminine regulates bone-fat balance by canonical Wnt/β-catenin pathway in an ovariectomized rat mode [J]. Phytotherapy Research, 2023.

[4]. Lim J M, et al. Effect of peiminine on DNCB-induced atopic dermatitis by inhibiting inflammatory cytokine expression in vivo and in vitro [J]. International immunopharmacology, 2018, 56: 135-142.

[5]. Chen P, et al. Peiminine inhibits myocardial injury and fibrosis after myocardial infarction in rats by regulating mitogen-activated protein kinase pathway [J]. The Korean Journal of Physiology & Pharmacology: Official Journal of the Korean Physiological Society and the Korean Society of Pharmacology, 2022, 26(2): 87-94.

[6]. Du B, et al. Peiminine attenuates acute lung injury induced by LPS through inhibiting lipid rafts formation [J]. Inflammation, 2020, 43: 1110-1119.

[7]. Guo H, et al. Peiminine ameliorates bleomycin-induced acute lung injury in rats. Mol Med Rep. 2013 Apr;7(4):1103-10.

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