Cucurbitacin B

Cat. No.: HY-N0416

CAS No.: 6199-67-3

Molecular Formula: $C_{32}H_{46}O_8$

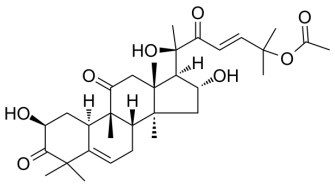
Molecular Weight: 559

Target: Integrin; Autophagy; Apoptosis; Endogenous Metabolite; ROS Kinase; COX

Pathway: Cytoskeleton; Autophagy; Apoptosis; Metabolic Enzyme/Protease; Protein Tyrosine Kinase/RTK; Immunology/Inflammation

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (178.89 mM)

H_2O : < 0.1 mg/mL (insoluble)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	1.7889 mL	8.9445 mL	17.8891 mL
5 mM	0.3578 mL	1.7889 mL	3.5778 mL
10 mM	0.1789 mL	0.8945 mL	1.7889 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 (4.47 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (4.47 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Cucurbitacin B belongs to a class of highly oxidized tetracyclic triterpenoids and is oral active. Cucurbitacin B inhibits tumor cell growth, migration and invasion and cycle arrest, but induces cell apoptosis. Cucurbitacin B has potent anti-inflammatory, antioxidant, antiviral, hypoglycemic, hepatoprotective, neuroprotective activity[1][2][3][4][5].

In Vitro

Cucurbitacin B (up to 40 μM, 12-48 h) inhibits the cell growth and arrests cell cycle progression at the G2/M phase in CCA cell lines [2].

Cucurbitacin B (0.1, 0.3 and 1 μM) increases the level of total superoxide dismutase(T-SOD) and SOD-1, but decrease the

reactive oxygen species (ROS) and malondialdehyde (MDA) in BY4741 yeast cells[3].

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

Cell Viability Assay[2]

Cell Line:	CCA cell lines
Concentration:	0.1, 1 0.5, 1,5, 10, 20, 40 μM
Incubation Time:	24 and 48 h
Result:	Decreased cell viability in a dose-dependent and time-dependent manner with the IC_{50} values of 13:44 μM for 24 h and 1.55 for 48 h.

Cell Cycle Analysis[2]

Cell Line:	CCA cell lines
Concentration:	0.1, 1, 10 μM
Incubation Time:	24 h
Result:	Arrested cell cycle progression at the G2/M phase.

Western Blot Analysis[2]

Cell Line:	CCA cell lines
Concentration:	0.1, 1 0.5, 1,5, 10, 20, 40 μM
Incubation Time:	12 and 24 h
Result:	Decreased the expression of Cyclin A, Cyclin D1, Cdc25A, but increased the level of p21.

In Vivo

Cucurbitacin B (5 mg/kg, oral administration 10day) B shows protective effects against carrageenan-induced prostatitis in rats[4].

Cucurbitacin B (20-50 mg/kg for i.p., 28 day) B afford a decline in AD symptoms and protects neurons against STZ-ICV toxicity that improved memory functions in rats[5].

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

Animal Model:	Carrageenan-induced prostatic inflammation in rats[4]
Dosage:	5mg/kg/day for 10day
Administration:	Oral administration
Result:	Decreased the level of TNF-α, IL-1b, COX-2 and iNOS in prostatic tissues.

Animal Model:	STZ-ICV rat prototype of AD-like dementia[5]
Dosage:	20, 50mg/kg/day for 28days
Administration:	Intraperitoneal injection (i.p.)
Result:	Decreased the TNF-α, IL-1β, MPO, iNOS, acetylcholinesterase, and glutamate levels, but increased gamma-aminobutyric acid. Increase in viable neuron density in the cortex and hippocampus of rats.

CUSTOMER VALIDATION

- Pharmacol Res. 2020 May;155:104751.
- Int J Mol Sci. 2023 Dec 28, 25(1), 442.
- Mech Ageing Dev. 2020 Oct;191:111347.
- Electronic Theses and Dissertations. 2023 Jul.
- Patent. US20220162561A1.

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REFERENCES

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[2]. Klungsaeng, et al. Targeted Modulation of FAK/PI3K/PDK1/AKT and FAK/p53 Pathways by Cucurbitacin B for the Antiproliferation Effect Against Human Cholangiocarcinoma Cells. Am J Chin Med. 2020;48(6):1475-1489.

[3]. Lin Y, et al. Cucurbitacin B Exerts Antiaging Effects in Yeast by Regulating Autophagy and Oxidative Stress. Oxid Med Cell Longev. 2019;2019:4517091.

[4]. Aljohani OS. Phytochemical evaluation of Cucumis prophetarum: protective effects against carrageenan-induced prostatitis in rats. Drug Chem Toxicol. 2022;45(4):1461-1469.

[5]. Liu Z, Kumar M, Kabra A. Cucurbitacin B exerts neuroprotection in a murine Alzheimer's disease model by modulating oxidative stress, inflammation, and neurotransmitter levels. Front Biosci (Landmark Ed). 2022;27(2):71.

[6]. Shang Y, et al. Cucurbitacin-B inhibits neuroblastoma cell proliferation through up-regulation of PTEN. Eur Rev Med Pharmacol Sci. 2014;18(21):3297-303.

[7]. Zhang M, et al. Cucurbitacin B inhibits proliferation and induces apoptosis via STAT3 pathway inhibition in A549 lung cancer cells. Mol Med Rep. 2014 Dec;10(6):2905-11.

[8]. Gupta P, et al. Inhibition of Integrin-HER2 signaling by Cucurbitacin B leads to in vitro and in vivo breast tumor growth suppression. Oncotarget. 2014 Apr 15;5(7):1812-28.

[9]. Guo J, et al. Cucurbitacin B induced ATM-mediated DNA damage causes G2/M cell cycle arrest in a ROS-dependent manner. PLoS One. 2014 Feb 4;9(2):e88140.

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