Verrucarin J

Cat. No.: HY-N10113

CAS No.: 4643-58-7

Molecular Formula: $C_{27}H_{32}O_8$

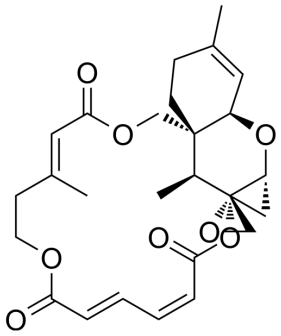
Molecular Weight: 484.54

Target: Apoptosis; Arenavirus; Fungal; Antibiotic; Reactive Oxygen Species

Pathway: Apoptosis; Anti-infection; Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB

Storage:

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



BIOLOGICAL ACTIVITY

Description

Verrucarin J (Muconomycin B) is a metabolite of the Myrothecium fungus family. Verrucarin J generates reactive oxygen species (ROS) and induces apoptosis of cancer cell lines, such as A549, HCT 116 and SW-620 cells. Verrucarin J shows activities against Candida albicans and Mucor miehei. Verrucarin J inhibits arenavirus Junin (JUNV) yield with an IC_{50} of 1.2 ng/mL[1][2][3][4][5].

In Vitro

Verrucarin J (0, 5, 10, 20, 50 nM; 24 hours) induces the apoptosis of A549 cells[1].
Verrucarin J (0, 1, 2, 5, 10, 20, 50 nM; 24, 48, 72 hours) significantly inhibits cell proliferation of A549 and H1793 cells with IC_{50} values of approximately 10 nM and 20 nM after 48 h of treatment, respectively[1].
Verrucarin J (0, 0.1, 0.2, 0.3, 0.4, 0.5 μM; 24 hours) has an IC_{50} of 300 nM for HCT 116 and SW-620 cell proliferation[2].
Verrucarin J (0, 10, 20 nM, 48 hours) inhibits cancer stem cell (CSC) self-renewal pathways Wnt1/β-catenin and Notch1 and down-regulates the expression of key CSC specific genes (ALDH1, LGR5, OCT4 and CD133) of A549 cells[1].
Verrucarin J (compound 2; 50 μg/disk) shows noteworthy activities against Candida albicans and Mucor miehei[3].
Verrucarin J reduces JUNV yield more than 2 log units and has a similar effect against the arenavirus Tacaribe[4].
Verrucarin J reduces the cell viability of Vero cells with a cytotoxic concentration 50% (CC_{50}) of 8.2 ng/mL[4].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Verrucarin J (0.5 mg/kg; i.p. for 4 weeks) suppresses AKT-induced tumor growth in a xenograft model[2].
Verrucarin J (0.1, 0.5, 2.0 mg/kg; i.p. for three weeks) is a highly potent anticancer drug and suppresses tumor growth and metastasis[5].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	6-8 weeks old BALB/c athymic nude mice (nu/nu) with pCMV/HCT 116 and AKT/HCT 116 xenografts[2]
Dosage:	0.5 mg/kg body weight
Administration:	i.p. for 4 weeks
Result:	Reduced the expression of prosurvival markers pAKT, Notch1, p65, and Ki67 in all tumors.

Animal Model:	Female nude nu/nu (5 to 6 weeks old) mice with A2780 xenografts[5]
Dosage:	0.1, 0.5, 2.0 mg/kg (vehicle: 10% DMSO, 90% glyceryl trioctanoate)
Administration:	i.p. for three weeks after 10 days of injection of A2780 cells
Result:	Reduced tumor weight (32% lower compared to control), and reduced visible metastasis in 0.1 mg/kg. Showed a significant reduction in visible peritoneal tumors (61% lower compared to control group) and highly reduced visible metastasis in 0.5 mg/kg. Reduced ovarian tumor weight by 71% compared to vehicle in 0.5 mg/kg. In lethal dose 2 mg/kg, mice sick with a swollen belly, body fluid and subsequently died within 3 treatments.

REFERENCES

[1]. Udoh K, et al. Targeting of Lung Cancer Stem Cell Self-Renewal Pathway by a Small Molecule Verrucarin J. Stem Cell Rev Rep. 2019 Aug;15(4):601-611.

[2]. Pal D, et al. Suppression of Notch1 and AKT mediated epithelial to mesenchymal transition by Verrucarin J in metastatic colon cancer. Cell Death Dis. 2018 Jul 23;9(8):798.

[3]. Mondol MA, et al. Macrocyclic Trichothecenes from Myrothecium roridum Strain M10 with Motility Inhibitory and Zoosporicidal Activities against Phytophthora nicotianae. J Agric Food Chem. 2015 Oct 14;63(40):8777-86.

[4]. García CC, et al, Damonte EB. Evaluation of the antiviral activity against Junin virus of macrocyclic trichothecenes produced by the hypocrealean epibiont of Baccharis coridifolia. Planta Med. 2002 Mar;68(3):209-12.

[5]. Carter K, et al. Verrucarin J inhibits ovarian cancer and targets cancer stem cells. Oncotarget. 2017 Oct 6;8(54):92743-92756.

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA