Honokiol

Cat. No.: HY-N0003

CAS No.: 35354-74-6

Molecular Formula: $C_{18}H_{18}O_2$

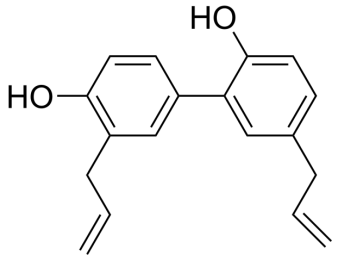
Molecular Weight: 266.33

Target: Akt; ERK; Autophagy; HCV

Pathway: PI3K/Akt/mTOR; MAPK/ERK Pathway; Stem Cell/Wnt; Autophagy; Anti-infection

Storage:

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



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 50 mg/mL (187.74 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	3.7547 mL	18.7737 mL	37.5474 mL
	5 mM	0.7509 mL	3.7547 mL	7.5095 mL
	10 mM	0.3755 mL	1.8774 mL	3.7547 mL

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

In Vivo

1. Add each solvent one by one: corn oil
   Solubility: 16.67 mg/mL (62.59 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (9.39 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (9.39 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (9.39 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Honokiol is a bioactive, biphenolic phytochemical that possesses potent antioxidative, anti-inflammatory, antiangiogenic, and anticancer activities by targeting a variety of signaling molecules. It inhibits the activation of Akt. Honokiol can readily cross the blood brain barrier[1][2][3][4].

IC_{50} & Target	ERK1	ERK2	Autophagy

In Vitro	Honokiol (0, 12.5, 25 and 50 μM) inhibits the growth of GBM cells and induces apoptosis, with IC_{50} of appr against 30 μM DBTRG-05MG cell. Honokiol-induced apoptosis of GBM cells is associated with the downregulation of the Rb protein and cleavage of PARP and Bcl-x (S/L). Honokiol (50 μM) increases the level of autophagy markers in GBM cells[1]. Honokiol has anticancer effect, and the IC_{50} values with MDA-MB-231, MDA-MB-468, and MDA-MB-453 cell lines is 16.99 ± 1.28 μM, 15.94 ± 2.35 μM and 20.11 ±3.13 μM respectively. Honokiol (3, 10 μM) produces significant inhibition on the spheroid number and spheroid sizes in the clonogenic assay[2]. Honokiol (0.1-1.0?μM) specifically inhibits washed human platelet aggregation stimulated by collagen, but not by other agonists. honokiol (0.6 and 1.0?μM) can concentration-dependently inhibit the collagen-induced ATP-release reaction in washed human platelets. Honokiol specifically inhibits platelet aggregation and the phosphorylation of Lyn, PLCγ2, and PKC stimulated with convulxin. Honokiol (5, 10?μM) significantly inhibits convulxin-stimulated MAPKs and Akt activation[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Honokiol-NM (40 mg/kg, p.o.) produces superior anticancer effects, and the PCNA, Cyclin D1 and cleaved caspase 3 expressions are 2.12, 1.92 and 1.68-fold significantly altered in this treated group[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [2]	In cytotoxicity assays, 10,000 cells/well are added to 96 wells plates and incubated overnight, thereafter cells are treated with different concentrations of Honokiol dissolved in dimethylsulphoxide (DMSO). Since Honokiol is not soluble in aqueous solvents, for in vitro studies Honokiol is dissolved in DMSO. To study the possible effect of DMSO on cells, solvent (DMSO) control is used at highest concentration of <0.1%. After 72 h treatment, cells are fixed and cell viability is measured by crystal violet staining (0.05%). MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [2]	For anticancer in vivo studies, the MDA-MB-231 cells (2 million) are injected into mammary fat tissue. Two weeks after the tumor cell injections, palpable tumors are observed in mammary tissues, which is an indication of tumor formation. Then drug treatment either in free form or in nanomicellar forms is given orally at the dose of 40 and 80 mg/kg daily. The drug treatment is continued for 4 weeks, and the tumor volumes and body weights are recorded weekly. After 4 weeks of treatment, animals are sacrificed; final tumor volumes and weights are measured. These tumors are used for western blot and immunohistochemical analysis. For western blot experiments, tumor tissues are stored at −80°C till the analysis is done. For IHC, tumors are fixed in formal saline. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Cell Death Dis. 2023 Mar 1;14(3):174.
- Int J Biol Macromol. 2020 Mar 15;147:79-88.
- Mucosal Immunol. 2021 Oct 22.
- Phytomedicine. 8 September 2021, 153740.
- Aging Cell. 2021 Jan 15;e13306.

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REFERENCES

[1]. Chang KH, et al. Honokiol-induced apoptosis and autophagy in glioblastoma multiforme cells. Oncol Lett. 2013 Nov;6(5):1435-1438.

[2]. Godugu C, et al. Honokiol nanomicellar formulation produced increased oral bioavailability and anticancer effects in triple negative breast cancer (TNBC). Colloids Surf B Biointerfaces. 2017 Jan 23;153:208-219

[3]. Lee TY, et al. Honokiol as a specific collagen receptor glycoprotein VI antagonist on human platelets: Functional ex vivo and in vivo studies. Sci Rep. 2017 Jan 5;7:40002

[4]. Zhai H, et al. Honokiol-induced neurite outgrowth promotion depends on activation of extracellular signal-regulated kinases (ERK1/2). Eur J Pharmacol. 2005 Jun 1;516(2):112-7.

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