Mollugin

Cat. No.: HY-N0316

CAS No.: 55481-88-4

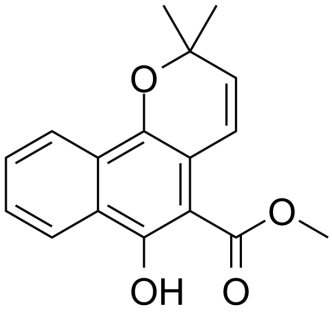
Molecular Formula: $C_{17}H_{16}O_4$

Molecular Weight: 284.31

Target: NF-κB; Reactive Oxygen Species; Apoptosis; VEGFR; c-Myc

Pathway: NF-κB; Immunology/Inflammation; Metabolic Enzyme/Protease; Apoptosis; Protein Tyrosine Kinase/RTK

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



SOLVENT & SOLUBILITY

In Vitro

DMSO : 33.33 mg/mL (117.23 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	3.5173 mL	17.5864 mL	35.1729 mL
	5 mM	0.7035 mL	3.5173 mL	7.0346 mL
	10 mM	0.3517 mL	1.7586 mL	3.5173 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 (8.79 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (8.79 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Mollugin is an orally active and potent NF-κB inhibitor. Mollugin induces S-phase arrest of HepG2 cells, and increased intracellular reactive oxygen species (ROS) levels. Mollugin induces DNA damage in HepG2 cells, as well as an increase in the expression of p-H2AX. Mollugin shows anti-cancer effect by inhibiting TNF-α-induced NF-κB activation. Mollugin enhances the osteogenic action of BMP-2 (bone morphogenetic protein 2) via the p38-Smad signaling pathway[1][2][3].

In Vitro

Mollugin (0-80 μM, 24 h) inhibits the expression of an NF-κB reporter gene induced by TNF-α in a dose-dependent manner[1].
Mollugin (0-80 μM, 12 h) inhibits the proliferation of HeLa cells[1].
Mollugin (0-80 μM, 12 h) inhibits TNF-α-induced phosphorylation and nuclear translocation of p65, phosphorylation and degradation of IκBα, and IKK phosphorylation, and inhibits the TNF-α-induced mRNA expression of Cyclin D1, c-Myc, and VEGF[1].
Mollugin (0-80 μM, 12 h) enhances TNF-α-induced apoptosis[1].

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

Cell Viability Assay[1]

Cell Line:	HeLa, Hep3B, and HEK293 cells
Concentration:	0, 10, 20, 40, and 80 μM
Incubation Time:	24 h
Result:	Significantly inhibited NF-κB reporter gene expression in a dose-dependent manner, did not display significant cellular toxicity in HeLa, Hep3B, and HEK293 cells.

Cell Proliferation Assay[1]

Cell Line:	HeLa cells
Concentration:	0, 20, 40, and 80 μM
Incubation Time:	12 h
Result:	Inhibited the proliferation of HeLa cells.

Apoptosis Analysis[1]

Cell Line:	HeLa cells
Concentration:	0, 10, 20, 40, and 80 μM
Incubation Time:	12 h
Result:	Slightly affected the caspase-3 activation, potentiated the effect of TNF-α-induced PARP cleavage, and enhanced the apoptotic effects of TNF-α.

Western Blot Analysis[1]

Cell Line:	HeLa cells
Concentration:	0, 10, 20, 40, and 80 μM
Incubation Time:	12 h
Result:	Significantly inhibited the TNF-α-induced p65 phosphorylation and block TNF-α-induced nuclear translocation of p65 in a dose-dependent manner, completely inhibited degradation of IκBα at 80 μM, and abolished the TNF-α-induced IKK phosphorylation at 80 μM. Inhibited the TNF-α-induced mRNA expression of Cyclin D1, c-Myc, and VEGF at 80 μM.

In Vivo

Mollugin (0-75 mg/kg, Orally, three times per week for 36 days) inhibits growth of HeLa cells in a xenograft tumor model[1].

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

Animal Model:	BALB/c female athymic nude mice (six-week-old, subcutaneously injected with 0.2 mL HeLa cells)[1]
Dosage:	0, 25 and 75 mg/kg
Administration:	Orally, three times per week for 36 days
Result:	Suppressed tumor growth, whereas the body weight did not change. Significantly reduced

	the protein expression of p-p65 and COX-2 in the tumors.

REFERENCES

[1]. Ke XG, Xiong YY, Yu B, et al. Mollugin induced oxidative DNA damage via up-regulating ROS that caused cell cycle arrest in hepatoma cells. Chem Biol Interact. 2022;353:109805.

[2]. Wang Z, et al. Mollugin Has an Anti-Cancer Therapeutic Effect by Inhibiting TNF-α-Induced NF-κB Activation. Int J Mol Sci. 2017 Jul 26;18(8).

[3]. Moon SH, et al. Mollugin enhances the osteogenic action of BMP-2 via the p38-Smad signaling pathway. Arch Pharm Res. 2017 Nov;40(11):1328-1335.

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