Deoxyshikonin

Cat. No.: HY-N2187

CAS No.: 43043-74-9

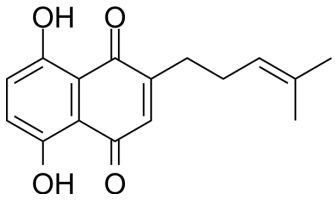
Molecular Formula: $C_{16}H_{16}O_4$

Molecular Weight: 272.3

Target: Bacterial; HIF/HIF Prolyl-Hydroxylase; PI3K; Apoptosis

Pathway: Anti-infection; Metabolic Enzyme/Protease; PI3K/Akt/mTOR; Apoptosis

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 (122.40 mM; ultrasonic and warming and heat to 60°C)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	3.6724 mL	18.3621 mL	36.7242 mL
	5 mM	0.7345 mL	3.6724 mL	7.3448 mL
	10 mM	0.3672 mL	1.8362 mL	3.6724 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 (9.18 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (9.18 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Deoxyshikonin increases the expression of VEGF-C and VEGF-A mRNA in HMVEC-dLy, promotes HIF-1α and HIF-1β subunit interaction and binds to specific DNA sequences targeted by HIF. Deoxyshikonin inhibited colorectal cancer (CRC) through the PI3K/Akt/mTOR pathway. Deoxyshikonin has proangiogenesis effect and antitumor activity. Deoxyshikonin is an antibacterial agent against methicillin-resistant S. aureus (MRSA) and S. pneumonia (MIC=17 μg/mL)[1][2][3].

IC_{50} & Target			
	HIF-1α	HIF-1β	PI3K

In Vitro

Deoxyshikonin (6.25-100 μg/mL; 48 h) inhibits the growth of human colonic cancer cells[1].
Deoxyshikonin (25-100 μg/mL; 24, 48 h) induces early apoptotic cells death[1].
Deoxyshikonin (25-100 μg/mL; 48 h) leads to a dose-dependent increase in the percentage of cells at G0/G1 phase[1].
Deoxyshikonin (25-100 μg/mL; 48 h) exerts a decrease of PI3K, p-PI3K, Akt, p-Akt308 and mTOR proteins expression in HT29

and DLD-1 cell lines[1].

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

Cell Viability Assay[3]

Cell Line:	Caco-2, HCT116, DLD-1 and HT29 cells
Concentration:	6.25, 12.5, 25, 50 and 100 μg/mL
Incubation Time:	48 h
Result:	At low concentration inhibited the growth of human colonic cancer cells including DLD-1, HCT-116, Caco-2 and HT29 cells. Had IC_{50} values of 31.00 μM at 24 h, while 10.97 μM at 48 h in HT29 cells.

Apoptosis Analysis[3]

Cell Line:	HT29 cells
Concentration:	25, 50 and 100 μg/mL
Incubation Time:	24 or 48 h
Result:	The ratio of early apoptotic cells increased from 1% to 29% in a dose-dependent manner by being treated with 0-50 μg/mL at 48 h.

Cell Cycle Analysis[3]

Cell Line:	HT29 cells
Concentration:	25, 50 and 100 μg/mL
Incubation Time:	48 h
Result:	The percentage of G0/G1 cells increased from approximately 44% to 67% in HT29 cells after treatment with 0-50 μg/mL, accompanied by a significant decrease in the percentage of cells at S and G2/M phases.

Western Blot Analysis[3]

Cell Line:	HT29 and DLD-1 cell lines
Concentration:	25, 50 and 100 μg/mL
Incubation Time:	48 h
Result:	Exerted a decrease of PI3K, p-PI3K, Akt, p-Akt308 and mTOR proteins expression in HT29 and DLD-1 cell lines.

In Vivo

Deoxyshikonin (20 mg/kg; intraperitoneal injection; every two days for 13 days) markedly suppresses the growth of xenograft tumours on day 5, 9 and 11 with 20 mg/kg[1].

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

Animal Model:	Male BALB/c nude mice of 10-14 g with DLD-1 cells[1]
Dosage:	20 mg/kg
Administration:	Intraperitoneal injection; every two days for a total of 13 days

Result:	Markedly suppressed the growth of xenograft tumours on day 5, 9 and 11 with 20 mg/kg, while there were no significant changes in body weight of the mice.

CUSTOMER VALIDATION

- Microb Pathog. 2023 Mar 10;106065.

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REFERENCES

[1]. Yuzhen Zhu, et al. Deoxyshikonin isolated from Arnebia euchromainhibits colorectal cancer by down-regulating the PI3K/Akt/mTOR pathway. Pharm Biol. 2019 Dec;57(1):412-423.

[2]. Prangsaengtong O, et al. Enhancement of Lymphangiogenesis In Vitro via the Regulations of HIF-1α Expression and Nuclear Translocation by Deoxyshikonin. Evid Based Complement Alternat Med. 2013;2013:148297.

[3]. Zhang S, et al. Antibacterial effects of Traditional Chinese Medicine monomers against Streptococcus pneumoniae via inhibiting pneumococcal histidine kinase (VicK). Front Microbiol. 2015 May 20;6:479.

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