Product Data Sheet

Inhibitors • Screening Libraries • Proteins

Diallyl Trisulfide

Cat. No.: HY-117235

CAS No.: 2050-87-5

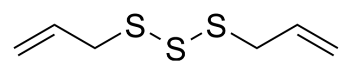
Molecular Formula: $C_6H_{10}S_3$

Molecular Weight: 178.34

Target: Apoptosis; Fungal; Reactive Oxygen Species; SOD; Bcl-2 Family; Influenza Virus; Interleukin Related

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

Storage: -20°C, stored under nitrogen
* In solvent : -80°C, 6 months; -20°C, 1 month (stored under nitrogen)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (560.73 mM; Need ultrasonic)

Preparing Stock Solutions	Concentration \ Solvent \ Mass	1 mg	5 mg	10 mg
	1 mM	5.6073 mL	28.0363 mL	56.0727 mL
	5 mM	1.1215 mL	5.6073 mL	11.2145 mL
	10 mM	0.5607 mL	2.8036 mL	5.6073 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 (14.02 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.5 mg/mL (14.02 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 2.5 mg/mL (14.02 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Diallyl Trisulfide is an orally active anticancer agent that can be isolated from garlic. Diallyl Trisulfide has the ability to induce apoptosis and exhibits anticancer, anti-inflammatory, antioxidant, and antibacterial activities. Diallyl Trisulfide can be used to study a variety of cancers, including liver, colon and prostate cancer[1][2][3][4].

IC_{50} & Target

IC_{50} & Target	IL-6	IL-8

In Vitro

Diallyl Trisulfide (25-100 μM; 24-72 h) induces apoptosis and inhibits cell proliferation in A549 cells, exhibiting anticancer activity[1].

Diallyl Trisulfide (5-10 μM; 1 h) significantly inhibits naphthalene (20 μM)-stimulated ROS generation and reduces the levels of inflammatory factors IL-6, TNF-α, and IL-8 by increasing superoxide dismutase (SOD) activity, thereby possessing antioxidant and anti-inflammatory activities[2].

Diallyl Trisulfide (93.75-375 μM; 24 h) attenuates H9N2 avian influenza virus (AIV) infection in human lung A549 epithelial cells, demonstrating antiviral activity[3].

Diallyl Trisulfide inhibits the growth of Penicillium expansum with antifungal activity (minimum fungicidal concentration $(MFC)_{99}$ value: ≤ 90 μg/mL)[4].

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

Cell Cytotoxicity Assay[3]

Cell Line:	A549
Concentration:	75 μM, 93.75 μM, 125 μM, 125 μM, 187.5 μM, 250 μM, 375 μM, 500 μM
Incubation Time:	48 h
Result:	Was not cytotoxic to A549 cells.

Cell Viability Assay[1]

Cell Line:	A549
Concentration:	25 μM, 50 μM, 100 μM
Incubation Time:	24 h
Result:	Significantly inhibited cell activity in a dose-dependent manner.

Western Blot Analysis[1]

Cell Line:	A549
Concentration:	25 μM, 50 μM, 100 μM
Incubation Time:	24 h; 48 h; 72 h
Result:	Significantly reduced the expression of Bcl-2 protein at a dose of 100 μM for 48 h. significantly increased the expression of Bax protein.

RT-PCR[1]

Cell Line:	A549
Concentration:	100 μM
Incubation Time:	48 h
Result:	Increased the mRNA expression of caspase-3, -8, and -9. Significantly increased the expression of Bax mRNA.

Real Time qPCR[3]

Cell Line:	A549
Concentration:	375 μM
Incubation Time:	24 h, 48 h

	Result:	Increased the expression of antiviral factors RIG-I, IRF-3 and IFN-β.

In Vivo

Diallyl Trisulfide (6 μM/animal; Oral gavage, every other day for 30 days) inhibits tumor growth and exhibits anticancer activity in BALB/c nude mice[1].
Diallyl Trisulfide (20-80 mg/kg; Oral gavage, single dose) demonstrates antioxidant and anti-inflammatory activities in Kunming mice induced by naphthalene (100 mg/kg; orally, single dose)[2].
Diallyl Trisulfide (30 mg/kg; intraperitoneal injection; once daily for 2 weeks) reduces lung edema and inflammation caused by H9N2 AIV infection in BABL/c mice, exhibiting antiviral activity[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Kunming mouse model of inflammation induced by naphthalene[2]
Dosage:	20 mg/kg, 40 mg/kg, 80 mg/kg
Administration:	Oral gavage (p.o.); Single dose. Before naphthalene treatment (100 mg/kg; p.o., single dose)
Result:	Inhibited the production of serum nitric oxide (NO) and pulmonary myeloperoxidase (MPO). Significantly reduced the area of inflammatory cell infiltration induced by naphthalene and alleviated lung injury in mice.

Animal Model:	BABL/c mice model infected with H9N2 AIV[3]
Dosage:	30 mg/kg
Administration:	Intraperitoneal injection (i.p.); Once daily for two weeks
Result:	Reduced the severity of pulmonary edema. Significantly reduced viral load in mouse lungs.

CUSTOMER VALIDATION

- Front Pharmacol. 2022 Feb 15;13:809034.

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REFERENCES

[1]. Li W, et al. Diallyl trisulfide induces apoptosis and inhibits proliferation of A549 cells in vitro and in vivo. Acta Biochim Biophys Sin (Shanghai). 2012 Jul;44(7):577-83.

[2]. Zhang F, et al. Diallyl trisulfide inhibits naphthalene-induced oxidative injury and the production of inflammatory responses in A549 cells and mice. Int Immunopharmacol. 2015 Dec;29(2):326-333.

[3]. Ming L, et al. Antiviral activity of diallyl trisulfide against H9N2 avian influenza virus infection in vitro and in vivo. Virol J. 2021 Aug 19;18(1):171.

[4]. Pu Liu, et al. Diallyl trisulfide (DATS) effectively induced apoptosis of postharvest diseasePenicillium expansum of citrus. Annals of Microbiology. December 2009, Volume 59, Issue 4, pp 675-679.

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

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