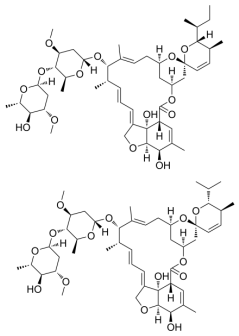
Avermectin B1



Cat. No.:	HY-15311
CAS No.:	71751-41-2
Molecular Formula:	$C_{95}H_{142}O_{28}$
Molecular Weight:	1732.13
Target:	Parasite; Autophagy; Apoptosis; Reactive Oxygen Species; Antibiotic
Pathway:	Anti-infection; Autophagy; Apoptosis; Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB
Storage:	-20°C, sealed storage, away from moisture and light * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)

SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 247 mg/mL (142.60 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	0.5773 mL	2.8866 mL	5.7732 mL
5 mM	0.1155 mL	0.5773 mL	1.1546 mL
10 mM	0.0577 mL	0.2887 mL	0.5773 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 (1.44 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 (1.44 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (1.44 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Avermectin B1 (Abamectin) is a mixture of two similar segments of avermectin. Avermectin B1 is an orally anti-infection agent, which can be used in the research of parasitic worms, insect pests, agriculture and animal husbandry. Avermectin B1 can also induce the production of ROS and induces cytotoxicity, apoptosis and autophagy[1][2][4].

In Vitro

Avermectin B1 (0-80 μM, 12 h) induces cytotoxicity through MAPK and ATM/ATR pathway in mouse embryonic fibroblast (MEF) cells, and induces ROS-mediated DNA damage[1].

Avermectin B1 (36 μg/mL, 72 h) has strong nematicidal efect of on G. pallida in aqueous solution, and negatively influences viability and infectivity of G. pallida J2 detected in potato roots(cv. Spunta)[2].
Abamectin (10 μM, 24 h) induces significant cytotoxicity by overproduction of ROS in haemocytes of Erocheir sinensis[3].
Abamectin (4 μM, 24 h) induces apoptosis and autophagy by inhibiting ROS-mediated PI3K/AKT signaling in MGC803 cells[4].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[1]

Cell Line:	Mouse embryonic fibroblast (MEF) cells
Concentration:	0, 0.5, 5, 10, 20, 40, 80 μM
Incubation Time:	12 h
Result:	Reduced cell viability with an IC_{50} value of 45.6 μM.

Western Blot Analysis[3]

Cell Line:	MGC803 cells
Concentration:	0-4 μM
Incubation Time:	24 h
Result:	Increased active caspase-3 and expression of Bax/Bcl-2, decreased MMP in a dose-dependent manner.

In Vivo

Avermectin B1 (oral administration, 0.2 mg/kg for a single dose) is highly efficacious against intestinal strongyles and Onchocera microfilaria in horses[5].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Horses (had a pruritic dermatosis)[5]
Dosage:	0.2 mg/kg, a single dose.
Administration:	Oral administration
Result:	Decreased in mean strongyle egg counts 14, 28 and 42 d after treatment, and resulted in zero microfilaria counts in all horses 14 d after treatment.

Animal Model:	Healthy adult female sheep (Pharmacokinetic assay)[6]
Dosage:	0.2 mg/kg
Administration:	Subcutaneous administration (in the left neck area of each sheep)
Result:	Pharmacokinetic profiles of Avermectin B1

Parameters	Mean
K_{cl} (/day)	0.17
$t_{1/2cl}$ (day)	4.36

K_{ab} (/day)	0.24
$t_{1/2ab}$ (day)	3.15
C_{max} (ng/mL)	6.24
t_{max} (day)	4.20
AUC $_{(0-27)}$ (ng/day/mL)	80.2
$AU_{C(0-\infty)}$ (ng/day/mL)	84.7
MRT (day)	8.80

CUSTOMER VALIDATION

- Mol Pharm. 2022 Oct 21.
- J Biochem Mol Toxicol. 2020 Aug;34(8):e22505.
- J Biochem Mol Toxicol. 2019 Jul;33(7):e22336.

See more customer validations on www.MedChemExpress.com

REFERENCES

[1]. [1] Yiran Liang, et al. Abamectin induces cytotoxicity via the ROS, JNK, and ATM/ATR pathways. PLoS One. Environ Sci Pollut Res Int. 2020 Apr;27(12):13726-13734.

[2]. Nicola Sasanelli, et al. Abamectin Efficacy on the Potato Cyst Nematode Globodera pallida. Plants (Basel). 2019 Dec 19;9(1):12.

[3]. Yi Huang, et al. Cytotoxicity induced by abamectin exposure in haemocytes of Chinese mitten crab, Eriocheir sinensis. Environ Toxicol Pharmacol. 2020 Jul;77:103384.

[4]. Shanshan Zhu, et al. Abamectin induces apoptosis and autophagy by inhibiting reactive oxygen species-mediated PI3K/AKT signaling in MGC803 cells. J Biochem Mol Toxicol. 2019 Jul;33(7):e22336.

[5]. Mogg TD, et al. Efficacy of avermectin B1 given orally against equine intestinal strongyles and Onchocera microfilaria. Aust Vet J. 1990 Nov;67(11):399-401.

[6]. Peyami Sari, et al. Pharmacokinetics of Abamectin/Levamisole Combination in a Medium Chain Mono and Diglyceride-Based Vehicle and an In Vitro Release and In Vitro In Vivo Correlation Study for Levamisole. AAPS PharmSciTech. 2017 May;18(4):1254-1260.

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