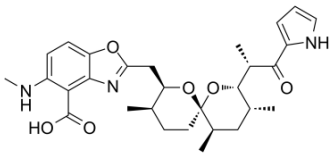
Calcimycin

Cat. No.:	HY-N6687
CAS No.:	52665-69-7
Molecular Formula:	$C_{29}H_{37}N_3O_6$
Molecular Weight:	523.62
Target:	Bacterial; Fungal; Apoptosis; Autophagy; Antibiotic
Pathway:	Anti-infection; Apoptosis; Autophagy
Storage:	4°C, stored under nitrogen * In solvent : -80°C, 6 months; -20°C, 1 month (stored under nitrogen)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 50 mg/mL (95.49 mM; Need ultrasonic)

H_2O : < 0.1 mg/mL (insoluble)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	1.9098 mL	9.5489 mL	19.0978 mL
5 mM	0.3820 mL	1.9098 mL	3.8196 mL
10 mM	0.1910 mL	0.9549 mL	1.9098 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 (4.77 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (4.77 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Calcimycin (A-23187) is an antibiotic and a unique divalent cation ionophore (like calcium and magnesium). Calcimycin induces Ca^{2+}-dependent cell death by increasing intracellular calcium concentration. Calcimycin inhibits the growth of Gram-positive bacteria and some fungi. Calcimycin also inhibits the activity of ATPase and uncouples oxidative phosphorylation (OXPHOS) of mammalian cells. Calcimycin induces apoptosis[1][2][3][4].

In Vitro

Calcimycin (A-23187) mediates mycobacterial killing by inducing intracellular calcium-regulated autophagy in a P2RX7 dependent manner[4].

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

In Vivo

Calcimycin (A-23187) (2.5 or 7.5 nM; intrapleurally) induces protein leakage[5].

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

Animal Model:	Mice (ICR, 25-30 g)[5]
Dosage:	2.5 or 7.5 nM
Administration:	Intrapleurally
Result:	Two hours after 2.5 nM, or three hours after 7.5 nM, challenge the protein levels in the pleural cavity were equivalent to about a half of their corresponding peak values.

REFERENCES

[1]. Wu Q, et al. Characterization of the biosynthesis gene cluster for the pyrrole polyether antibiotic calcimycin(A23187) in Streptomyces chartreusis NRRL 3882. Antimicrob Agents Chemother. 2011 Mar;55(3):974-82.

[2]. Elliott JI, et al. IKCa1 activity is required for cell shrinkage, phosphatidylserine translocation and death in Tlymphocyte apoptosis. EMBO Rep. 2003 Feb;4(2):189-94.

[3]. Engedal N, et al. Modulation of intracellular calcium homeostasis blocks autophagosome formation. Autophagy. 2013 Oct;9(10):1475-90.

[4]. Mawatwal S, et al. Calcimycin mediates mycobacterial killing by inducing intracellular calcium-regulated autophagy in a P2RX7 dependent manner. Biochim Biophys Acta Gen Subj. 2017 Dec;1861(12):3190-3200.

[5]. Wang JP, et al. Effect of norathyriol, isolated from Tripterospermum lanceolatum, on A23187-induced pleurisy and analgesia in mice. Naunyn Schmiedebergs Arch Pharmacol. 1994 Jul;350(1):90-5.

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