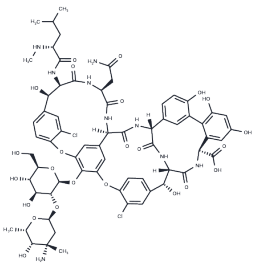
Data Sheet (Cat.No.T8641)

TargetMol

Vancomycin

Chemical Properties



CAS No. : 1404-90-6

Formula: C66H75Cl2N9O24

Molecular Weight: 1449.25

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Vancomycin is a glycopeptide antibiotic that exerts its antibacterial activity by inhibiting the second stage of cell wall synthesis in susceptible bacteria. It also alters cell membrane permeability and selectively inhibits RNA synthesis. Vancomycin is commonly used to treat severe infections resistant to other antibiotics and is frequently employed in experimental studies to induce kidney injury models.
Targets(IC50)	Antibacterial,Antibiotic,Autophagy
In vitro	**METHODS**: B. burgdorferi was treated with Vancomycin (0.5-2.0 μg/mL) for 24 h and cell morphology was examined using real-time time-lapse microscopy. **RESULTS**: At higher concentrations of Vancomycin (≥1.0 μg/mL), many abnormal cells were observed, which were visually identified by vesiculation, granule formation, and morphological changes. The proportion of these abnormal bacteria in the population increased in a dose-dependent manner. [1] **METHODS**: Human osteosarcoma cells MG-63 were treated with Vancomycin (10-10000 μg/mL) for 24-72 h. Cell counts were measured using an Elzone Celi Counter. **RESULTS**: Localized levels of Vancomycin at 1000 μg/mL and below had little effect on osteoblast replication, and concentrations of 10,000 μg/mL resulted in cell death. [2]
In vivo	**METHODS**: To detect nephrotoxicity, Vancomycin (400 mg/kg) and Vitamin C (200 mg/kg) were administered intraperitoneally to C57BL/6J mice once daily for seven days. **RESULTS**: Renal index, renal injury score, apoptosis, serum Cr and BUN, as well as renal Cr, BUN, MDA, IL-1β, IL-6, TNF-α, and NF-κB were higher in the Vancomycin group than in the control group, whereas body weight and renal SOD activity were lower. On the contrary, no differences were observed between the control and Vitamin C groups in all these indices. [3] **METHODS**: To deplete the intestinal microbiota of mice, the antibiotics (ABX) Vancomycin (0.5 g/L), Ampicillin (1 g/L), Neomycin sulfate (1 g/L), and metronidazole (1 g/L) were administered to mice by drinking water for two weeks. **RESULTS**: Antibiotics significantly reduced the diversity and composition of the gut microbiota. [4]

Solubility Information

Solubility	DMSO: 250 mg/mL (172.5 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+90% Saline: 1 mg/mL (0.69 mM),Solution. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	0.690 mL	3.4501 mL	6.9001 mL
5 mM	0.138 mL	0.690 mL	1.380 mL
10 mM	0.069 mL	0.345 mL	0.690 mL
50 mM	0.0138 mL	0.069 mL	0.138 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Harman MW, et al. Vancomycin Reduces Cell Wall Stiffness and Slows Swim Speed of the Lyme Disease Bacterium. Biophys J. 2017 Feb 28;112(4):746-754.

Shan T, Huang Y, Zhao Z, et al. Ketogenic diet restrains herpes simplex encephalitis via gut microbes. Microbes and Infection. 2022: 105061.

Li F, Wang Y, Song X, et al. The intestinal microbial metabolite nicotinamide n-oxide prevents herpes simplex encephalitis via activating mitophagy in microglia. Gut Microbes. 2022, 14(1): 2096989

Edin ML, et al. Effect of cefazolin and vancomycin on osteoblasts in vitro. Clin Orthop Relat Res. 1996 Dec;(333): 245-51.

He J, et al. Vitamin C reduces vancomycin-related nephrotoxicity through the inhibition of oxidative stress, apoptosis, and inflammation in mice. Ann Transl Med. 2021 Aug;9(16):1319.

Li F, et al. The intestinal microbial metabolite nicotinamide n-oxide prevents herpes simplex encephalitis via activating mitophagy in microglia. Gut Microbes. 2022 Jan-Dec;14(1):2096989.