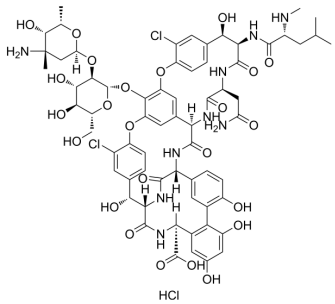
Vancomycin hydrochloride

Cat. No.:	HY-17362
CAS No.:	1404-93-9
Molecular Formula:	$C_{66}H_{76}Cl_3N_9O_{24}$
Molecular Weight:	1485.71
Target:	Bacterial; Autophagy; Antibiotic
Pathway:	Anti-infection; Autophagy
Storage:	4°C, sealed storage, away from moisture * In solvent : -80°C, 2 years; -20°C, 1 year (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

H_2O : 33.33 mg/mL (22.43 mM; Need ultrasonic)
DMSO : 24 mg/mL (16.15 mM; Need ultrasonic and warming)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	0.6731 mL	3.3654 mL	6.7308 mL
5 mM	0.1346 mL	0.6731 mL	1.3462 mL
10 mM	0.0673 mL	0.3365 mL	0.6731 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 130 mg/mL (87.50 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (1.40 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (1.40 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (1.40 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Vancomycin hydrochloride is an antibiotic for the treatment of bacterial infections. It acts by inhibiting the second stage of cell wall synthesis of susceptible bacteria. Vancomycin also alters the permeability of the cell membrane and selectively inhibits ribonucleic acid synthesis.

IC_{50} & Target

Glycopeptide

In Vitro	Vancomycin is a large glycopeptide compound with a molecular weight of 1450 Da[1]. Vancomycin is a unique glycopeptide structurally unrelated to any currently available antibiotic. It also has a unique mode of action inhibiting the second stage of cell wall synthesis of susceptible bacteria. Vancomycin is active against a large number of species of Gram-positive bacteria, such as Staphylococcus aureus, Staph. epidermidis, Str. agalactiae, Str. bovis, Str. mutans, viridans streptococci, enterococci[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Vancomycin is administered intravenously, with a standard infusion time of at least 1 h, to minimize infusion-related adverse effects. Subjects with normal creatinine clearance, vancomycin has an α-distribution phase of 30 min to 1 h and a β-elimination half-life of 6-12 h. The volume of distribution is 0.4–1 L/kg. The binding of vancomycin to protein ranges from 10% to 50%. Factors that affect the overall activity of vancomycin include its tissue distribution, inoculum size, and protein-binding effects[1]. Vancomycin treatment of infected mice is associated with improved clinical, diarrhea, and histopathology scores and survival during treatment[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Animal Administration [3]	Mice: One set of experiments is performed in which infected mice are treated with vancomycin (50 mg/kg) daily for 1, 2, 3, or 5 days and are observed for 21 days postinfection or with vancomycin (20 mg/kg) daily for either 5 or 10 days and monitoring for 15 days postinfection[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Cell Metab. 2023 Sep 29:S1550-4131(23)00340-6.
- Chem Eng J. 2024 Apr 15, 486 150125.
- Small. 2021 Dec 19;e2107137.
- Emerg Microbes Infect. 2024 Dec;13(1):2321981.
- Emerg Microbes Infect. 2022 Feb 22;1-34.

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REFERENCES

[1]. Rybak MJ, et al. The pharmacokinetic and pharmacodynamic properties of vancomycin. Clin Infect Dis. 2006 Jan 1;42 Suppl 1:S35-9.

[2]. Watanakunakorn C, et al. Mode of action and in-vitro activity of vancomycin. J Antimicrob Chemother. 1984 Dec;14 Suppl D:7-18.

[3]. Warren CA, et al. Vancomycin treatment's association with delayed intestinal tissue injury, clostridial overgrowth, and recurrence of Clostridium difficile infection in mice. Antimicrob Agents Chemother. 2013 Feb;57(2):689-96.

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