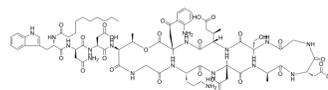


Daptomycin

Cat. No.:	HY-B0108	
CAS No.:	103060-53-3	
Molecular Formula:	C ₇₂ H ₁₀₁ N ₁₇ O ₂₆	
Molecular Weight:	1620.67	
Target:	Bacterial; Antibiotic	
Pathway:	Anti-infection	
Storage:	Powder	-20°C 3 years
	In solvent	-80°C 1 year
		-20°C 6 months



SOLVENT & SOLUBILITY

In Vitro

H₂O : 100 mg/mL (61.70 mM; Need ultrasonic)
 DMSO : ≥ 100 mg/mL (61.70 mM)
 * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	0.6170 mL	3.0851 mL	6.1703 mL
	5 mM	0.1234 mL	0.6170 mL	1.2341 mL
	10 mM	0.0617 mL	0.3085 mL	0.6170 mL

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

In Vivo

- Add each solvent one by one: PBS
Solubility: 100 mg/mL (61.70 mM); Clear solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 2.08 mg/mL (1.28 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.08 mg/mL (1.28 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 2.08 mg/mL (1.28 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Daptomycin is a lipopeptide antibiotic with rapid in vitro bactericidal activity against gram-positive organisms.

IC₅₀ & Target

Lipopeptide

In Vitro

Daptomycin has excellent in-vitro inhibitory and bactericidal activity against nafcillin-susceptible and resistant staphylococci (MIC₉₀ less than or equal to 0.5 mg/L) and against enterococci (MIC₉₀ less than or equal to 2.0 mg/L). Daptomycin is more active than vancomycin against the majority of isolated tested. With the exception of trimethoprim-sulphamethoxazole, daptomycin is the most active agent in vitro against enterococci, and is the most active against nafcillin-resistant staphylococci. Daptomycin and vancomycin show a marked increase in MIC when the inoculum is increased from 10⁵ to 10⁷ cfu/mL^[1]. Daptomycin is effective within a very narrow range of drug concentrations (from 0.125 to 2.0 tLg/mL) and is more active than other agents tested against *S. faecalis*^[2]. Daptomycin inhibits the formation of these nucleotide-linked intermediates^[3].

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

In Vivo

At a dose of 10 mg/kg given twice daily, daptomycin reduces the number of organisms per kidney significantly compared with that in infected untreated controls within 48 h after the initiation of therapy. At 20 mg/kg given once a day, daptomycin is less effective but reduces colony counts significantly after 4 days of therapy, and its activity is comparable to that of vancomycin or vancomycin-gentamicin given twice daily^[2].

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PROTOCOL

Animal Administration ^[2]

Inocula containing 10⁹ CFU/mL are prepared from an 18-h brain heart infusion broth culture. The exact number in each inoculum is subsequently determined by the standard serial 10-fold dilution agar pour plate technique. Animals are challenged intravenously with a 1.0-mL inoculum. This inoculum is known to infect the renal medulla of normal rats. Twenty-four hours later the animals are divided into eight groups and are given either saline only (controls) or antibiotic therapy initiated with Daptomycin at 10 mg/kg (Daptomycin10), Daptomycin at 20 mg/kg (Daptomycin20), Daptomycin10 plus gentamicin at 1.5 mg/kg, vancomycin at 20 mg/kg, vancomycin at 20 mg/kg plus gentamicin at 1.5 mg/kg, ampicillin at 30 mg per rat per injection, and ampicillin at 30 mg per rat plus gentamicin at 1.5 mg/kg. Animals receive Daptomycin20 once daily; all other drugs are administered twice daily. Vancomycin and Daptomycin are given subcutaneously; ampicillin and gentamicin are given intramuscularly. Drugs are administered for up to 13 days.

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

CUSTOMER VALIDATION

- Emerg Microbes Infect. 2024 Dec;13(1):2321981.
- iScience. 5 January 2022, 103731.
- ACS Infect Dis. 2023 Nov 28.
- Appl Microbiol Biotechnol. 2022 Apr;106(7):2689-2702.
- Antimicrob Agents Chemother. 2021 Jan 20;65(2):e01275-20.

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REFERENCES

- [1]. Benson CA, et al. Comparative in-vitro activity of LY146032 a new peptolide, with vancomycin and eight other agents against gram-positive organisms. J Antimicrob Chemother. 1987 Aug;20(2):191-6.
- [2]. Miniter PM, et al. Activity of LY146032 in vitro and in experimental enterococcal pyelonephritis. Antimicrob Agents Chemother. 1987 Aug;31(8):1199-203.
- [3]. Allen NE, et al. Inhibition of peptidoglycan biosynthesis in gram-positive bacteria by LY146032. Antimicrob Agents Chemother. 1987 Jul;31(7):1093-9.

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

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