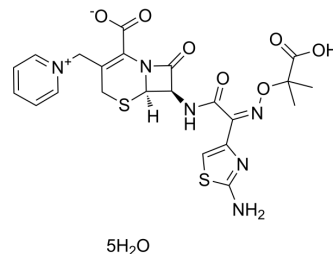


## Ceftazidime pentahydrate

<b>Cat. No.:</b>	HY-B0593A
<b>CAS No.:</b>	78439-06-2
<b>Molecular Formula:</b>	C <sub>22</sub> H <sub>32</sub> N <sub>6</sub> O <sub>12</sub> S <sub>2</sub>
<b>Molecular Weight:</b>	636.65
<b>Target:</b>	Bacterial; Antibiotic; Beta-lactamase
<b>Pathway:</b>	Anti-infection
<b>Storage:</b>	4°C, sealed storage, away from moisture * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



### SOLVENT & SOLUBILITY

<b>In Vitro</b>	DMSO : 100 mg/mL (157.07 mM; Need ultrasonic)					
	H <sub>2</sub> O : 31.25 mg/mL (49.09 mM; ultrasonic and warming and heat to 60°C)					
	<b>Preparing Stock Solutions</b>	<b>Solvent</b>	<b>Mass</b>	<b>1 mg</b>	<b>5 mg</b>	<b>10 mg</b>
		<b>Concentration</b>				
		<b>1 mM</b>		1.5707 mL	7.8536 mL	15.7072 mL
<b>5 mM</b>			0.3141 mL	1.5707 mL	3.1414 mL	
	<b>10 mM</b>		0.1571 mL	0.7854 mL	1.5707 mL	
Please refer to the solubility information to select the appropriate solvent.						
<b>In Vivo</b>	1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline Solubility: 2.5 mg/mL (3.93 mM); Suspended solution; Need ultrasonic					
	2. Add each solvent one by one: 10% DMSO >> 90% corn oil Solubility: ≥ 2.5 mg/mL (3.93 mM); Clear solution					

### BIOLOGICAL ACTIVITY

<b>Description</b>	Ceftazidime (GR20263) pentahydrate, an antibiotic, has a broad spectrum activity against Gram-positive and Gram-negative aerobic bacteria. Ceftazidime pentahydrate is also active against Enterobacteriaceae (including β-lactamase-positive strains) and is resistant to hydrolysis by most β-lactamases <sup>[1]</sup> .
<b>IC<sub>50</sub> &amp; Target</b>	β-lactam
<b>In Vitro</b>	Ceftazidime (0-8 μg/mL approximately, 24 h) pentahydrate displays antibacterial and anti-biofilm activities against <i>P. aeruginosa</i> strains <sup>[2]</sup> . Ceftazidime (0-40 μg/mL approximately, 18-20 h) pentahydrate has inhibitory activities against <i>S. maltophilia</i> isolates <sup>[3]</sup> . MCE has not independently confirmed the accuracy of these methods. They are for reference only.

### Cell Viability Assay<sup>[2]</sup>

Cell Line:	P. aeruginosa strains (PAO1, PA1, PA2)
Concentration:	0-8 µg/mL approximately
Incubation Time:	24 h
Result:	Displayed antibacterial and anti-biofilm activities with MIC values of 2-4 µg/mL.

### In Vivo

Ceftazidime (2 h infusion of injection, 2 000 mg, every 8 h for 24 h) pentahydrate moderately reduces bacterial density in a murine thigh infection model<sup>[4]</sup>.

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

Animal Model:	Murine thigh infection model <sup>[4]</sup>
Dosage:	2000 mg
Administration:	2 h infusion of injection, every 8 h for 24 h.
Result:	Reduced bacterial density against the isogenic NDM (New Delhi metallo-β-lactamase) strain.

## CUSTOMER VALIDATION

- Nat Commun. 2022 Mar 2;13(1):1116.
- Adv Sci (Weinh). 2020 Jul 21;7(17):2001374.
- Int J Antimicrob Agents. 2018 Aug;52(2):269-271.
- NPJ Biofilms Microbiomes. 2024 Oct 28;10(1):111.
- Biomed Pharmacother. 2023 Nov 8:115856.

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## REFERENCES

- [1]. Esmat Kamali, et al. In vitro activities of cellulase and ceftazidime, alone and in combination against Pseudomonas aeruginosa biofilms. BMC Microbiol. 2021 Dec 16;21(1):347.
- [2]. Qiuxia Lin, et al. Avibactam potentiated the activity of both ceftazidime and aztreonam against S. maltophilia clinical isolates in vitro. BMC Microbiol. 2021 Feb 22;21(1):60.
- [3]. Shawn H MacVane, et al. Unexpected in vivo activity of ceftazidime alone and in combination with avibactam against New Delhi metallo-β-lactamase-producing Enterobacteriaceae in a murine thigh infection model. Antimicrob Agents Chemother. 2014 Nov;58(11):7007-9.
- [4]. Richards DM, et al. Ceftazidime. A review of its antibacterial activity, pharmacokinetic properties and therapeutic use. Drugs. 1985 Feb;29(2):105-61.

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

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