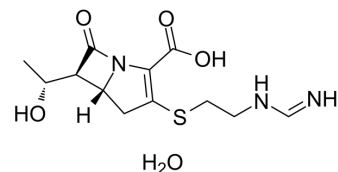


## Imipenem monohydrate

<b>Cat. No.:</b>	HY-B1369
<b>CAS No.:</b>	74431-23-5
<b>Molecular Formula:</b>	C <sub>12</sub> H <sub>19</sub> N <sub>3</sub> O <sub>5</sub> S
<b>Molecular Weight:</b>	317.36
<b>Target:</b>	Bacterial; Antibiotic
<b>Pathway:</b>	Anti-infection
<b>Storage:</b>	Powder -20°C 3 years

\* The compound is unstable in solutions, freshly prepared is recommended.



### SOLVENT & SOLUBILITY

#### In Vitro

H<sub>2</sub>O : 7.14 mg/mL (22.50 mM; Need ultrasonic)  
 DMSO : < 1 mg/mL (insoluble or slightly soluble)

Preparing Stock Solutions	Solvent Concentration	Mass	1 mg	5 mg	10 mg
		Concentration	1 mg	5 mg	10 mg
	1 mM		3.1510 mL	15.7550 mL	31.5100 mL
	5 mM		0.6302 mL	3.1510 mL	6.3020 mL
	10 mM		0.3151 mL	1.5755 mL	3.1510 mL

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

### BIOLOGICAL ACTIVITY

#### Description

Imipenem monohydrate, a stable crystalline derivative of thienamycin, is an antibiotic and has the excellent activity against a broad range of gram-positive and gram-negative aerobic and anaerobic bacteria. Imipenem monohydrate, the equivalent of imipenem, can be used for carbapenem-nonsusceptible *P. aeruginosa* biofilm infections<sup>[1][2][3]</sup>.

#### In Vitro

Imipenem is too unstable: 10% degradation at 25°C after 3.5 h<sup>[4]</sup>.  
 The degradation rate constant of Imipenem is temperature dependent<sup>[5]</sup>.  
 MCE has not independently confirmed the accuracy of these methods. They are for reference only.

#### In Vivo

Imipenem monohydrate (4 mg/kg, 8 mg/kg, 16 mg/kg, 32 mg/kg, 64 mg/kg, IP, single) shows the killing effect of time-dependent in mice with biofilm bacterial lung infection in vivo. Imipenem monohydrate has good correlated with TMBIC in the elimination of the biofilm bacteria in the lung. Imipenem monohydrate has postantibiotic effect (PAE) in biofilm infections<sup>[3]</sup>.  
 MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model: Neutropenic mouse model of biofilm lung infection<sup>[3]</sup>

Dosage:	4 mg/kg, 8 mg/kg, 16 mg/kg, 32 mg/kg, 64 mg/kg								
Administration:	4 mg/kg, 8 mg/kg, 16 mg/kg, 32 mg/kg, 64 mg/kg, IP, single								
Result:	50								
	Drug and dose(mg/kg)	C <sub>max</sub> (mg/liter)	T <sub>max</sub> (min)	AUC <sub>tot</sub> (mg • min/liter)	V <sub>z</sub> /F(ml/kg)	V <sub>ss</sub> /F(ml/kg)	CL/F(ml/min/kg)	t <sub>1/2</sub> (min)	MRT(min)
	Imipenem								
	8	15 (7.1)	21 (11)	1,470 (777)	648 (330)	721 (343)	6.7 (3)	67 (11)	108 (12)
	16	34 (6)	28 (18)	2,857 (559)					

## CUSTOMER VALIDATION

- Nat Commun. 2022 Mar 2;13(1):1116.
- J Antimicrob Chemother. 2020 Jul 1;75(7):1850-1858.
- Antibiotics (Basel). 2021 Sep 14;10(9):1110.
- Animal Diseases. 02 November 2021.

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## REFERENCES

- [1]. Johann Motsch, et al. RESTORE-IMI 1: A Multicenter, Randomized, Double-blind Trial Comparing Efficacy and Safety of Imipenem/Relebactam vs Colistin Plus Imipenem in Patients With Imipenem-nonsusceptible Bacterial Infections. Clin Infect Dis. 2020 Apr 15;70(9):1799-1808.
- [2]. F P Tally, et al. In vitro activity of N-formimidoyl thienamycin (MK0787). Antimicrob Agents Chemother. 1980 Oct;18(4):642-4.
- [3]. Wang Hengzhuang, et al. In vivo pharmacokinetics/pharmacodynamics of colistin and imipenem in Pseudomonas aeruginosa biofilm infection. Antimicrob Agents Chemother. 2012 May;56(5):2683-90

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

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