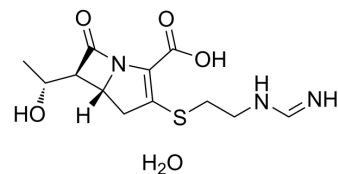


Imipenem monohydrate

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

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



SOLVENT & SOLUBILITY

In Vitro	H ₂ O : 6.25 mg/mL (19.69 mM; ultrasonic and warming and heat to 60°C)					
	DMSO : < 1 mg/mL (insoluble or slightly soluble)					
	Preparing Stock Solutions	Solvent	Mass	1 mg	5 mg	10 mg
		Concentration				
		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.						
In Vivo	1. Add each solvent one by one: PBS Solubility: 10 mg/mL (31.51 mM); Clear solution; Need ultrasonic and warming and heat to 60°C					

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 can be used for the research of carbapenem-nonsusceptible and <i>P. aeruginosa</i> biofilm infections ^{[1][2][3]} .
IC₅₀ & Target	β-lactam
In Vivo	Imipenem monohydrate (4 mg/kg, 8 mg/kg, 16 mg/kg, 32 mg/kg, 64 mg/kg, IP, single) has the killing effect in time-dependent ^[3] . Pharmacokinetic Parameters of Imipenem monohydrate in Neutropenic mouse model of biofilm lung infection (4 mg/kg, 8 mg/kg, 16 mg/kg, 32 mg/kg, 64 mg/kg, IP, single) ^[1] . 50

Drug and dose(mg/kg)	C _{max} (mg/liter)	T _{max} (min)	AUC _{tot} (mg • min/liter)	V _Z /F(ml/kg)	V _{ss} /F (ml/kg)	CL/F(ml/min/kg)	t _{1/2} (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)	507 (140)	543 (121)	5.8 (1)	60 (9.1)	94 (10)
32	54 (11)	18 (6.1)	4,895 (635)	516 (75)	566 (83)	6.6 (0.8)	54 (6.5)	86 (11)
64	69 (37)	15 (9.5)	6,037 (2,976)	547 (274)	617 (308)	7.4 (3.6)	43 (22)	70 (35)

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

Animal Model:	Neutropenic mouse model of biofilm lung infection ^[3]
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:	Showed the killing effect of time-dependent in mice with biofilm bacterial lung infection in vivo.

CUSTOMER VALIDATION

- Nat Commun. 2023 Mar 22;14(1):1594.
- Nat Commun. 2022 Mar 2;13(1):1116.
- Emerg Microbes Infect. 2024 Dec;13(1):2321981.
- Int J Antimicrob Agents. 3 September 2022, 106669.
- J Cachexia Sarcopenia Muscle. 2023 Mar 8.

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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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