Imipenem

Cat. No.: HY-B1369A

CAS No.: 64221-86-9

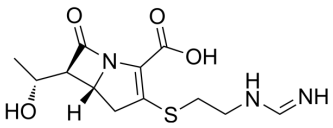
Molecular Formula: $C_{12}H_{17}N_3O_4S$

Molecular Weight: 299.35

Target: Antibiotic; Bacterial

Pathway: Anti-infection

Storage: Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

Imipenem (MK0787), 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 can be used for the research of carbapenem-nonsusceptible and P. aeruginosa biofilm infections[1][2][3].

IC_{50} & Target

β-lactam

In Vivo

Imipenem (MK0787) (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 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].

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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.

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