Ertapenem sodium

Cat. No.: HY-13625

CAS No.: 153773-82-1

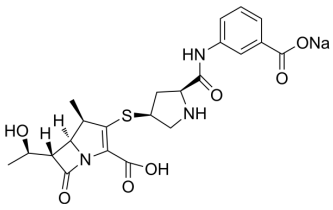
Molecular Formula: $C_{22}H_{24}N_3NaO_7S$

Molecular Weight: 497.5

Target: Bacterial; Antibiotic

Pathway: Anti-infection

Storage: -80°C, protect from light



SOLVENT & SOLUBILITY

In Vitro

H_2O : 50 mg/mL (100.50 mM; Need ultrasonic)

Preparing Stock Solutions	Concentration / Solvent / Mass	1 mg	5 mg	10 mg
	1 mM	2.0101 mL	10.0503 mL	20.1005 mL
	5 mM	0.4020 mL	2.0101 mL	4.0201 mL
	10 mM	0.2010 mL	1.0050 mL	2.0101 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 100 mg/mL (201.01 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Ertapenem sodium (L-749345) is a broad spectrum and long acting β-lactam antibiotic. Ertapenem sodium has a broad-spectrum anti-anaerobic activity against a variety of anaerobes with a mode MIC of 0.12 μg/mL. Ertapenem sodium can be used for the research of severe infections caused by bacteria in the skin, lungs, stomach, pelvis, and urinary tract[1][2].

IC_{50} & Target

β-lactam

In Vitro

Ertapenem sodium (0-100 μg/mL approximately, 48 h) is active against 99.1% of all anaerobes with a mode MIC of 0.12 μg/mL and MIC_{90} of 1 μg/mL, and MIC's ≥8 μg/mL for B.fragilis and B.vulgatus species, respectively[1].

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

Cell Viability Assay[1]

Cell Line:	B. fragilis (ATCC 25285), B. thetaiotaomicron (ATCC 29741), and Eubacterium lentum (ATCC 43055)

Concentration:	0-100 μg/mL approximately
Incubation Time:	48 h
Result:	Inhibited 99.1% of all isolate with a mode MIC of 0.12 μg/mL and MIC_{90} of 1 μg/mL, and 98.8% of the isolates were susceptible among the B. fragilis group.

In Vivo

Ertapenem sodium (Subcutaneous injection, 0-10 mg/kg, 0-120 h after infection, S. aureus thigh tissue infection model) shows > 3 log_{10} CFU reduction of organism at 10 mg/kg, and maintains the activity with 3.3 and 4.4 log_{10} CFU eliminated at 2 mg/kg[2].

Ertapenem sodium (Subcutaneous injection, 4h after infection, systemic infection model) is active against all gram-positive organisms, and is also active against gram-negative organisms tested with ED_{50}s of <0.25 mg/kg/dose[2].

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

Animal Model:	S. aureus thigh tissue infection model (DBA/2 mice)[2]
Dosage:	0.5,1, 2, 5, 10 mg/kg (given at 2, 6, 10, 24, 48, 72, 96, 120 h)
Administration:	Subcutaneous injection (0.5 mL after infection)
Result:	Displayed > 3 log_{10} CFU reduction of organism compared to non-antibiotic-treated controls at 10 mg/kg. Maintained the activity with 3.3 and 4.4 log_{10} CFU eliminated at 2 mg/kg.

Animal Model:	Systemic infection model (DBA/2 female mice, viral antibody-free CD-1 female mice)[2]
Dosage:	0-3 mg/kg approximately
Administration:	Subcutaneous injection (0.5 mL, begin immediately and 4 h after infection)
Result:	Showed activity against all gram-positive organisms, and also ram-negative organisms tested with ED_{50}s of <0.25 mg/kg/dose.

Animal Model:	CD-1 mice, rats[2]
Dosage:	10 mg/kg approximately
Administration:	Intraperitoneal injection (pharmacokinetic assay)
Result:	Exhibited an $AUC_{0-\infty}$ ranging from 1.8-21.82 μg•hr/mL in tissue in mice following a 10-mg/kg i.p. dose. Exhibited slow clearance rate with a $t_{1/2\beta}$ of 3.2 h, Clp of 0.47 mL/min/kg, AUC_{0-8} of 284.15 μg•hr/mL.

CUSTOMER VALIDATION

- Nat Commun. 2022 Mar 2;13(1):1116.
- Nat Commun. 2021 Jul 22;12(1):4461.
- Proc Natl Acad Sci U S A. 2024 Jan 16;121(3):e2314514121.
- J Antimicrob Chemother. 2023 Jul 31;dkad229.

- J Antimicrob Chemother. 2020 Jul 1;75(7):1850-1858.

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REFERENCES

[1]. Kenneth E Aldridge. Ertapenem (MK-0826), a new carbapenem: comparative in vitro activity against clinically significant anaerobes. Diagn Microbiol Infect Dis. 2002 Oct;44(2):181-6.

[2]. C J Gill, et al. In vivo activity and pharmacokinetic evaluation of a novel long-acting carbapenem antibiotic, MK-826 (L-749,345). Antimicrob Agents Chemother. 1998 Aug;42(8):1996-2001.

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