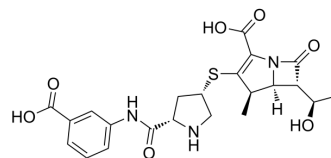


Ertapenem

Cat. No.:	HY-A0294
CAS No.:	153832-46-3
Molecular Formula:	C ₂₂ H ₂₅ N ₃ O ₇ S
Molecular Weight:	475.51
Target:	Antibiotic; Bacterial
Pathway:	Anti-infection
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description	Ertapenem (MK-0826) is a broad spectrum and long acting β -lactam antibiotic. Ertapenem has a broad-spectrum anti-anaerobic activity against a variety of anaerobes with a mode MIC of 0.12 μ g/mL. Ertapenem can be used for the research of severe infections caused by bacteria in the skin, lungs, stomach, pelvis, and urinary tract ^{[1][2]} .								
IC₅₀ & Target	β -lactam								
In Vitro	<p>Ertapenem (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 MIC₉₀ of 1 μg/mL, and MIC's \geq8 μg/mL for <i>B.fragilis</i> and <i>B.vulgatus</i> species, respectively^[1].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>Cell Viability Assay^[1]</p> <table border="1"> <tr> <td>Cell Line:</td> <td><i>B. fragilis</i> (ATCC 25285), <i>B. thetaiotaomicron</i> (ATCC 29741), and <i>Eubacterium lentum</i> (ATCC 43055)</td> </tr> <tr> <td>Concentration:</td> <td>0-100 μg/mL approximately</td> </tr> <tr> <td>Incubation Time:</td> <td>48 h</td> </tr> <tr> <td>Result:</td> <td>Inhibited 99.1% of all isolate with a mode MIC of 0.12 μg/mL and MIC₉₀ of 1 μg/mL, and 98.8% of the isolates were susceptible among the <i>B. fragilis</i> group.</td> </tr> </table>	Cell Line:	<i>B. fragilis</i> (ATCC 25285), <i>B. thetaiotaomicron</i> (ATCC 29741), and <i>Eubacterium lentum</i> (ATCC 43055)	Concentration:	0-100 μ g/mL approximately	Incubation Time:	48 h	Result:	Inhibited 99.1% of all isolate with a mode MIC of 0.12 μ g/mL and MIC ₉₀ of 1 μ g/mL, and 98.8% of the isolates were susceptible among the <i>B. fragilis</i> group.
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In Vivo	<p>Ertapenem (Subcutaneous injection, 0-10 mg/kg, 0-120 h after infection, <i>S. aureus</i> thigh tissue infection model) shows > 3 log₁₀ CFU reduction of organism at 10 mg/kg, and maintains the activity with 3.3 and 4.4 log₁₀ CFU eliminated at 2 mg/kg^[2].</p> <p>Ertapenem (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 ED₅₀s of <0.25 mg/kg/dose^[2].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <table border="1"> <tr> <td>Animal Model:</td> <td><i>S. aureus</i> thigh tissue infection model (DBA/2 mice)^[2]</td> </tr> <tr> <td>Dosage:</td> <td>0.5, 1, 2, 5, 10 mg/kg (given at 2, 6, 10, 24, 48, 72, 96, 120 h)</td> </tr> <tr> <td>Administration:</td> <td>Subcutaneous injection (0.5 mL after infection)</td> </tr> </table>	Animal Model:	<i>S. aureus</i> 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)		
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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 gram-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-∞} 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 _{1/2β} of 3.2 h, Cl _p 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.
- J Antimicrob Chemother. 2023 Jul 31;dkad229.
- J Antimicrob Chemother. 2020 Jul 1;75(7):1850-1858.
- Biomed Res Int. 2018 Jul 2;2018:3579832.

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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.

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

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