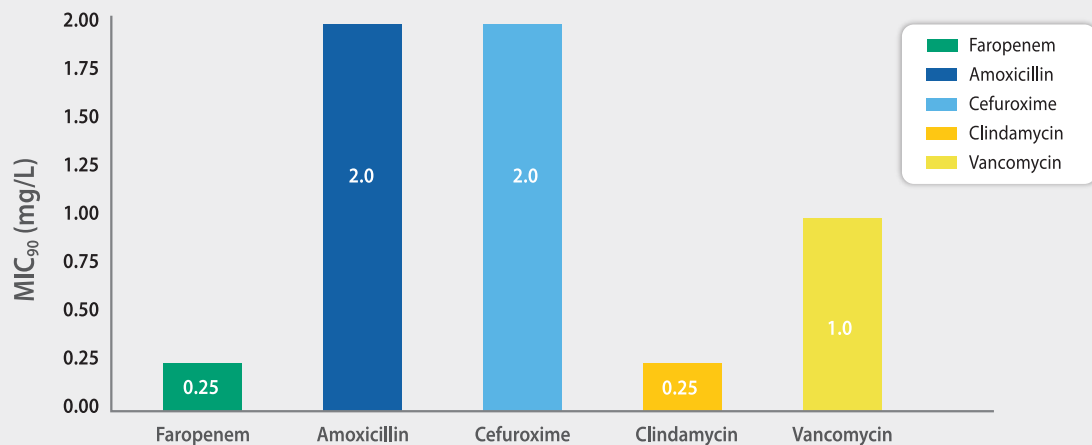


Comparative in vitro activity of faropenem against Staphylococci

- ⚡ Staphylococcus aureus is a leading cause of skin & soft tissue infections (SSTIs), ranging from abscesses to severe invasive disease, its resistance patterns-especially MRSA and small colony variants (SCVs) - pose major therapeutic challenges.
- ⚡ Faropenem, a novel β -lactam oral penem stable to most β -lactamases.
- ⚡ The broad spectrum anti staphylococcal activity of Faropenem was evaluated against 234 staphylococcal isolates (MSSA, MRSA, CoNS, SCVs) and compared with amoxicillin, cefuroxime, clindamycin, and vancomycin to assess its anti-staphylococcal potential.

Study Design		In vitro comparative study		
Isolates	Centre	Duration	Comparators	Outcome
234 staphylococcal strains (151 S. aureus incl. MSSA, MRSA, SCVs; 83 CoNS)	30 university & community hospitals, Germany	Collected over multiple years	Faropenem vs Amoxicillin, Cefuroxime, Clindamycin, Vancomycin	Faropenem showed superior activity against MSSA, PSSA, CoNS & retained efficacy against many MRSA strains

MIC comparison of Faropenem , Amoxicillin, Cefuroxime, Clindamycin & Vancomycin against MSSA



*MIC = Minimum inhibitory concentration,
*MSSA = Methicillin-Sensitive Staphylococcus aureus

Faropenem showed potent in vitro activity across S. aureus phenotypes and CoNS, with superior efficacy over conventional β -lactams and consistent effectiveness against MSSA, PSSA, and many MRSA strains. Its oral availability and strong anti-staphylococcal profile highlight Faropenem as a promising therapeutic option for SSTIs, supporting its role in reducing hospital reliance on glycopeptides and improving outpatient management of resistant staphylococcal infections.

Ref.: von Eiff C, Schepers S, Peters G. Comparative in vitro activity of faropenem against staphylococci. J Antimicrob Chemother. 2002 Aug;50(2):277-80. doi: 10.1093/jac/dkf100. PMID: 12161412.

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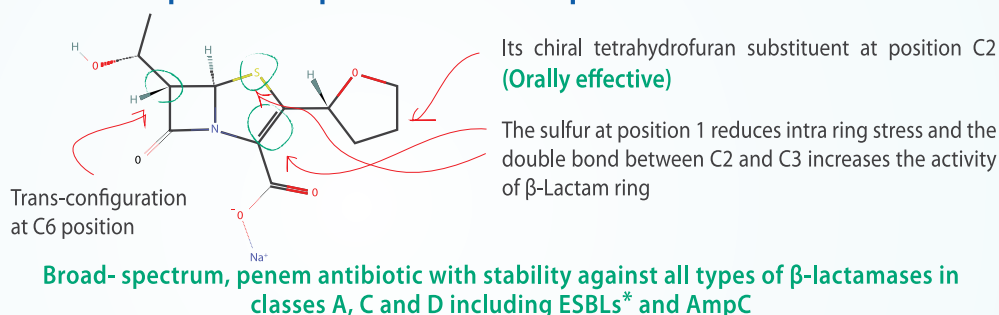
Drug Review

Antimicrobial resistance

- Antimicrobial resistance (AMR) has been prioritized by the World Health Organization (WHO) as one of the top 10 global public health threats facing humanity.²
- Resistance to beta-lactams is an alarming and growing phenomenon and, in turn, a public health challenge. Following are the mechanisms of resistance³ :
 - Inactivation by the production of beta-lactamases.
 - Decreased penetration to the target site (e.g., the resistance of *Pseudomonas aeruginosa*).
 - Alteration of target site Penicillin Binding Proteins (PBPs) (e.g., penicillin resistance in *pneumococci*).
 - Efflux from the periplasmic space through specific pumping mechanisms.

The key distinguishing features of faropenem⁴⁻⁷

Faropenem- a penem with unique chemical structure



Time, concentration and oxygen dependent **bactericidal effect** against **Aerobic, Anaerobic, Gram-positive & Gram-negative** bacteria.

Faropenem has shown lower MICs (Minimum Inhibitory Concentrations) than other beta-lactam antibiotics against certain bacteria.

	Bacteria	Faropenem			Amox - clav		Cefuroxime		Imipenem	
		MIC ₅₀	MIC ₉₀	Range	MIC ₅₀	MIC ₉₀	MIC ₅₀	MIC ₉₀	MIC ₅₀	MIC ₉₀
Gram (+ve)	<i>Staphylococcus aureus</i> (MS)	0.12	0.12	0.03–0.5	1	2	1	2	≤ 0.5	≤ 0.5
	<i>S. aureus</i> (MR)	>32	>32	0.12–>32	8	16	>32	>32	32	32
	<i>Staphylococcus epidermidis</i> (All)	0.12	0.5	0.06 –>128	1	8	0.5	16	0.016	16
	<i>S. epidermidis</i> (MS)	0.12	0.5	0.06 – 4	1	2	0.5	1	0.016	0.016
	<i>Streptococcus pyogenes</i>	0.03	0.03	≤ 0.015 – 0.06	0.03	0.03	≤ 0.015	≤ 0.015	≤ 0.008	≤ 0.008
Gram (-ve)	<i>Streptococcus pneumoniae</i>	0.008	0.25	≤ 0.004 – 2	0.03	0.5	≤ 0.12	4	≤ 0.5	≤ 0.5
	<i>Escherichia coli</i>	0.5	1	0.12 – 32	4	16	4	8	≤ 0.5	≤ 0.5
	<i>Haemophilus influenzae</i>	0.25	1	≤ 0.004 – 4	0.5	1	0.5	2	1	4
	<i>H. influenzae</i> (BLN)	0.25	1	≤ 0.004 – 4	0.5	1	0.5	2	1	2
	<i>Klebsiella pneumoniae</i>	0.5	2	0.25 –>32	2	8	4	>32	0.25	1

Ref: 1. Chimura T, Kaneko N, Hayashi Y, Funayama T, Numazaki M, Oda T, Murayama K, Morisaki N, Hirayama T, Sato F, Akatsuka K. [Clinical studies of faropenem in the field of obstetrics and gynecology]. *Jpn J Antibiot.* 1999 Jul;52(7):504-10. Japanese. PMID: 10516930 | 2. 10 global health issues to track in 2021, World Health Organization Newsroom (24 Dec 2020) | 3. Phenotypic Characterization and Antibiotic Resistance Patterns of Extended-Spectrum β -Lactamase- and AmpC β -Lactamase-Producing Gram-Negative Bacteria in a Referral Hospital, Saudi Arabia, Ibrahim ME, Abbas M, Al-Shahrai AM, Elamin BK. *Can J Infect Dis Med Microbiol* | 4. Dalhoff A, Janjic N, Echols R. Redefining penems. *Biochem. Pharmacol.* 71(7), 1085–1095 (2006) | 5. Dalhoff A, Nasu T, Okamoto K. β -lactamase stability of Faropenem. *Chemotherapy* 49(5), 229–236 (2003) | 6. Faropenem: review of a new oral penem, Kristen N Schurek, Ryan Wiebe, James A Karlowsky, Ethan Rubinstein, Daryl J Hoban and George G Zhanel, *Expert Rev. Anti Infect. Ther.* 5(2), (2007) | 7. Boswell FJ, Andrews JM, Wise R. Pharmacodynamic properties of faropenem demonstrated by studies of time–kill kinetics and post-antibiotic effect. *J. Antimicrob. Chemother.* 39(3), 415–418 (1997) |