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ePoster Viewing

Antimicrobials: mechanisms of action and resistance

In vitro susceptibility of *Alloscardovia omnicolens* to 18 antimicrobial agents and molecular analysis of fluoroquinolone resistance

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Objectives: Facultative-anaerobic, non-motile Gram-positive rod, *Alloscardovia omnicolens* is now considered as an emerging uropathogen. Since it is still poorly studied, the aim of the work was to assess its in vitro susceptibility to 18 antimicrobial agents as well as to dissect the genetic basis of acquired FQ resistance.

Methods: A total of 36 clinical isolates of *A. omnicolens* collected from urine specimens as well as the type strain CCUG 31649^T were included. Identification was carried out by MALDI-TOF mass spectrometry and 16S rRNA sequencing. MICs of 18 antibiotics were determined using E-test strips method on Mueller-Hinton agar plate supplemented with lysed horse blood (5%) and β-NAD (20 mg/L, except for fosfomycin (agar dilution method). Interpretation of results was made according to EUCAST clinical breakpoints. The quinolone-resistance-determining regions (QRDRs) of *gyrA* and *parC* genes were also identified and sequence analysis was performed for all strains.

Results: All 37 isolates were susceptible to penicillin G, amoxicillin, cefotaxime, imipenem, vancomycin, teicoplanin, linezolid and cotrimoxazole. One strain was highly resistant to erythromycin and clindamycin (MICs ≥256 mg/L). Whereas 86.5% of isolates were categorized as susceptible to nitrofurantoin, only 18.2% were susceptible to fosfomycin. Surprisingly, daptomycin was only active against 37.8% of tested isolates. All isolates appeared intrinsically resistant to aminoglycosides and metronidazole. While FQs seemed to have a moderate activity against most of the strains, one strain was highly resistant exhibiting MICs of ciprofloxacin and levofloxacin ≥32 mg/L. All isolates that were susceptible or low-level resistant to FQs showed identical GyrA and ParC amino acid QRDR sequences. In contrast, the unique isolate exhibiting high-level FQ resistance possessed a unique mutation in ParC, Ser80Phe (*Escherichia coli* numbering), whereas no mutation was present in GyrA.

Conclusions: Since *A. omnicolens* is mainly an uropathogen, it is important to note that fosfomycin is not active against most of isolates and there is a risk of acquired high-level FQ resistance, and then β-lactams, cotrimoxazole or glycopeptides should be preferred. Finally, reduced susceptibility to daptomycin must be noted.

Antimicrobials	MIC_{50} (mg/L)	MIC_{90} (mg/L)	MIC range (mg/L)	Susceptibility breakpoint (mg/L)	Percentage susceptible
Penicillin G	0.047	0.094	≤0.016-0.19	≤0.25	100
Amoxicillin	0.19	0.25	0.032-0.75	≤2	100
Cefotaxime	0.19	0.38	0.047-0.5	≤1	100
Imipenem	0.047	0.094	0.008-0.125	≤2	100
Gentamicin	32	≥256	4-≥256	≤2	0
Amikacin	≥256	≥256	8-≥256	≤8	2.9
Ciprofloxacin	0.75	1.5	0.094-≥32	≤0.5	48.6
Levofloxacin	0.5	1.5	0.19-≥32	≤1	83.8
Erythromycin	≤0.016	≤0.016	≤0.016-≥256	≤1	96.7
Clindamycin	≤0.016	0.023	≤0.016-≥256	≤4	96.7
Vancomycin	0.38	0.5	0.125-0.75	≤2	100
Teicoplanin	0.064	0.094	0.016-0.125	≤2	100
Daptomycin	2	12	≤0.016-16	≤1	37.8
Linezolid	0.25	0.75	0.094-1	≤4	100
Cotrimoxazole	0.023	0.047	≤0.002-0.094	≤2	100
Nitrofurantoin	0.5	128	0.064-≥512	≤64	86.5
Fosfomycin	128	512	4-2,048	≤32	18.2
Metronidazole	≥32	≥32	≥32	≤4	0