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Comparison of *in vitro* activity (MIC) of seven antibiotics for exclusive use in humans between *Staphylococcus pseudintermedius* and *Staphylococcus aureus*



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Background

S. pseudintermedius is a widespread pathogen of companion animals and many strains carry multiple resistances (Lynch and Helbig, 2021)

Its identification and treatment are made hard due to difficulties in recognition from other *Staphylococcus intermedius* group staphylococci (Murugaiyan et al., 2014)

Occasional infection of pet owners by *S. pseudintermedius* has been reported (Somayaji et al., 2016; Lozano et al., 2017)

Aim of the study

1. Evaluating the MIC of seven A-category antibiotics (AMEG), namely Ceftaroline, Daptomycin, Linezolid, Quinupristin-Dalfopristin, Teicoplanin, Telavancin, Vancomycin, against *S. pseudintermedius*
2. Comparing our results with MIC distributions reported by EUCAST for *S. aureus*

Materials and methods

Sampling

40 clinical samples (31 dogs and 5 cats) from Turin University Veterinary Hospital during two years (July 2019 – May 2021)

Reason for admission: 21 orthopedic surgeries (52.5%), 9 dermatitis (22.5%), 5 soft-tissues surgeries (12.5%), 5 urinary disorders (12.5%)

Species identification and AST

MALDI-TOF identification confirmed by *nuc* gene PCR (Sasaki et al. 2010)

MIC measured by E-Tests (Liofilchem)

Statistical analysis

Visual evaluation of MIC and $\log_2(\text{MIC})$ distributions

Comparison of MIC weighted mean between *S. pseudintermedius* (our sample) and *S. aureus* (EUCAST) by non-parametric tests (Wilcoxon rank-sum)

Adjustment for multiple comparisons (Storey, 2010)

Results 1/2

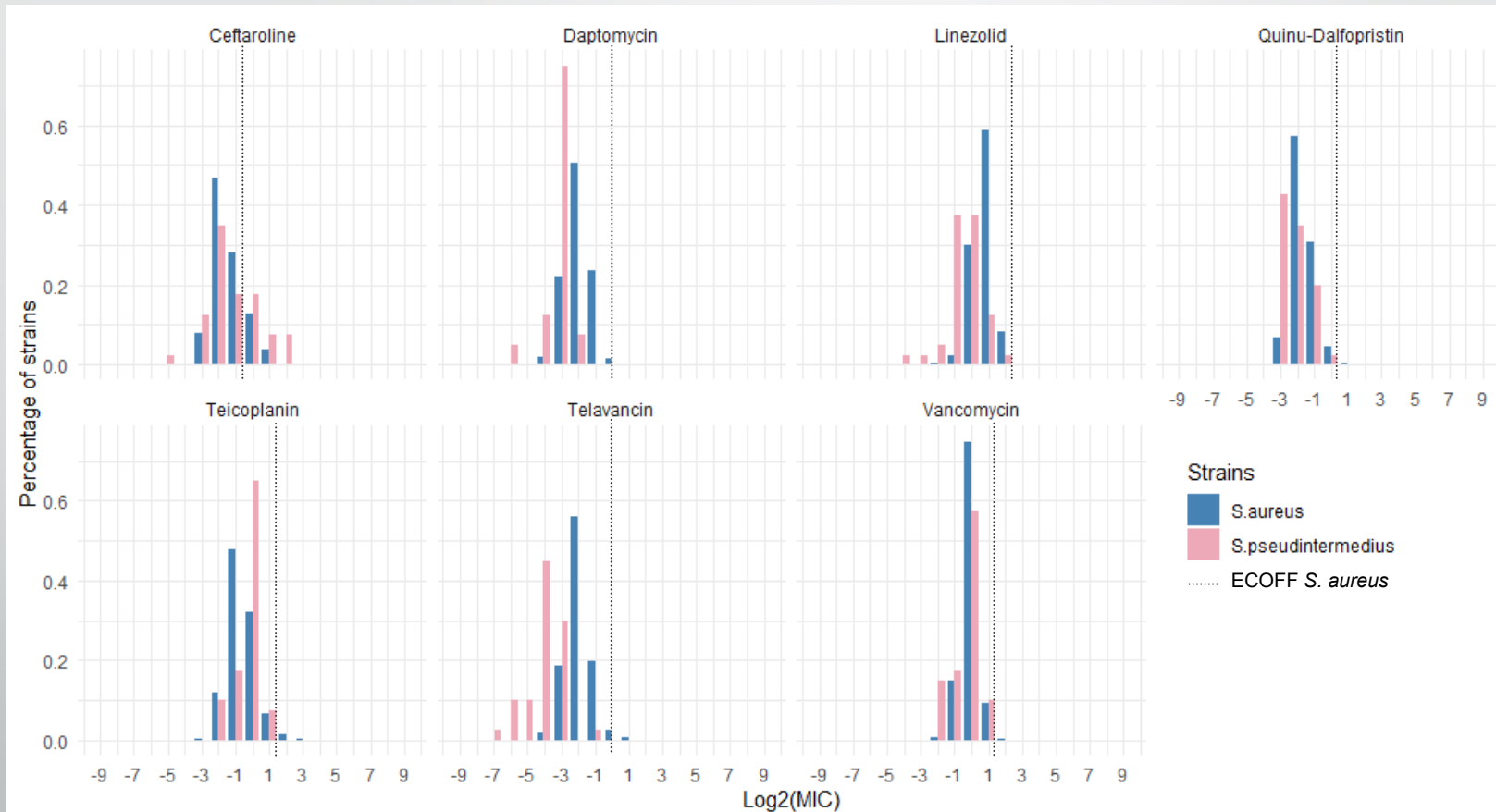


Figure 1. Distributions of $\log_2(\text{MIC})$ for *S. aureus* (EUCAST, $n = 40609 \pm 32124.69$) and *S. pseudintermedius* (our sample, $n = 40$). Data are presented as percentages

Results 2/2

Only one population of *S. pseudintermedius* identified, thus it was not possible to differentiate between wild-type and resistant strains

The $\log_2(\text{MIC})$ values of Daptomycin, Linezolid, Quinu-Dalfopristin, and Telavancin were higher for *S. aureus* than *S. pseudintermedius* ($p < 0.001$)

The $\log_2(\text{MIC})$ of Teicoplanin was higher for *S. pseudintermedius* than *S. aureus* ($p = 0.003$)

No difference was observed in the $\log_2(\text{MIC})$ of Ceftaroline and Vancomycin.

Discussion and conclusion

Referring to *S. aureus* ECOFFs, isolated *S. pseudintermedius* likely belong to wild type for all antibiotics but Ceftaroline

Nonetheless, about Teicoplanin, Vancomycin, Quinu-Dalfopristin and Linezolid some concerns are advisable since strains are susceptible to the upper-limit concentration

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