

Occurrence of high-level aminoglycoside resistance (HLAR) among *Enterococcus* species strains

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ABSTRACT

Purpose: Today, *Enterococcus* species are one of the most frequent etiological agents in nosocomial infections. The aim of this study was to determine the susceptibility to antibiotics and the prevalence of high-level aminoglycoside resistance (HLAR) among *Enterococcus* strains.

Materials and methods: The susceptibility of 85 isolates of *Enterococcus* (47 *E. faecalis* and 38 *E. faecium*) was determined using the disk diffusion method. The results were interpreted according to European Committee on Antimicrobial Susceptibility Testing (EUCAST) guidelines. PASW Statistics 17.0 was used for statistical analysis.

Results: *E. faecalis* strains showed the highest susceptibility to ampicillin, tigecycline, vancomycin, imipenem, and linezolid and *E. faecium* to linezolid, tigecycline, and quinupristin/dalfopristin. Among all tested strains, high-level gentamicin resistance (HLGR) was found in 4% of *E. faecalis* and 8% of *E. faecium* strains, high-level streptomycin resistance (HLSR) in 45% and 42%, and HLAR in 50% and 32% of strains, respectively. HLGR was detected only in vancomycin-resistant

Enterococcus (VRE)- strains (12%), while HLSR in 76.9% of VRE+ and 24% of VRE- strains, and HLAR in 23.1% of VRE+ and 64% of VRE- strains. The tested strains were also divided into two groups: HLSR+ and HLAR+. In both groups, statistically significant susceptibility differences ($p < 0.05$) were found for ampicillin, imipenem and trimethoprim/sulfamethoxazole. The most frequent antibiotic resistance profile among *E. faecalis* strains was S^R (resistance phenotype to streptomycin), and among *E. faecium*, AMP^R, IMP^R, CN^R, S^R, SXT^R (ampicillin, imipenem, gentamicin, streptomycin, trimethoprim/sulfamethoxazole).

Conclusions: This study showed the slowly increasing prevalence of HLAR and resistance to newer antibiotics (linezolid and tigecycline) among *Enterococcus* strains. It is necessary to search for new directions in the treatment of enterococcal infections.

Key words: *Enterococcus*; aminoglycoside resistance; vancomycin-resistant *Enterococcus* (VRE).
