

Genotypically different clones of *Staphylococcus aureus* are diverse in the antimicrobial susceptibility patterns and biofilm formations

ABSTRACT

This study evaluated whether genotypically different clinical isolates of *S. aureus* have similar susceptibilities to individual antibiotics. It further aims to check the impact of biofilm on the in vitro activity of vancomycin, daptomycin, linezolid, and tigecycline against *S. aureus* clones. The study used a total of 60 different clinical MSSA and MRSA isolates. Susceptibilities were performed in planktonic cultures by macrobroth dilution and epsilon-test (E test) system. Biofilm production was determined using an adherent plate assay. The efficacy of antimicrobial activities against biofilms formation was checked using confocal laser scanning microscopy (CLSM). The study found that similar and different spa, MLST, and SCCmec types displayed high variation in their susceptibilities to antibiotics with tigecycline and daptomycin being the most effective. The biofilms were found resistant to high concentrations of most antibiotics tested with daptomycin being the most effective drug used in adhesive biofilms. A considerable difference exists among similar and various clone types against antibiotics tested. This variation could have contributed to the degree of virulence even within the same clonal genotype and enhanced heterogeneity in the infection potential. Thus, the development of a rapid and precise identification profile for each clone in human infections is important.

Keyword: *Staphylococcus aureus*; Biofilm; Genotypically; Antimicrobial susceptibility