

Title: SCREENING FOR ANTAGONISM EXPRESSION BY *Enterococcus* STRAINS ISOLATED FROM HOSPITALIZED PATIENTS WITH BLOODSTREAM INFECTION IN BELO HORIZONTE, MINAS GERAIS

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Abstract:

Enterococci are members of the indigenous intestinal microbiota of human beings and other animals. On the other hand, they have been gaining importance due to their clinical relevance and their high antimicrobial resistance. Like lactobacilli, enterococci belong to the group of lactic acid bacteria and are known by their ability to produce antagonistic substances. These substances have great importance due to their ecological role and potential industrial application, being also relevant to the establishment and the course of enterococcal infection. In this study, we searched for the ability to produce antagonistic substances by 35 enterococci strains isolated from hospitalized patients with bloodstream infection in Belo Horizonte, Minas Gerais. The screening for antagonistic activity was done by the double-layer diffusion assay. Bacterial isolates were grown in TSB (tryptic soy broth) for 24 h at 37 °C. Then, using a multiple inoculator (Steers replicator) spots were made onto TSA (tryptic soy agar) and the plates were incubated for 24 h at 37 °C. After that the cultures were exposed to chloroform vapor for 30 min followed by another 30-min period when plates were kept partially open in order to allow evaporation of residual chloroform. TSA layer was covered with 3.5 mL of soft agar (TSB + 0.75% agar) inoculated with 10 µL of an overnight culture of the indicator bacterium and the material was incubated for 24 h at 37 °C. All *Enterococcus* strains were tested against each other and when present, the zone of growth inhibition was measured using a digital pachymeter. Ability to produce antagonistic substances was observed in 26 (74.3%) strains. Two *Enterococcus faecium* isolates were able to express autoantagonism. Isoantagonistic and heteroantagonistic activities were observed for 21 (60.0%) and 16 (45.7%) strains, respectively. Our results show that the ability to express antagonism is a highly disseminated property among the clinical isolates of enterococci studied. Data generated reinforce the relevance of this property as a virulence factor specially considering the disease process when bacteria must compete with several other organisms in order to establish the infection course.

Keywords: *Enterococcus*, virulence, antagonistic substances, bloodstream infection

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