

TITLE: COMPARISON BETWEEN VIRULENCE GENES PROFILE AND ANTIMICROBIAL SUSCEPTIBILITY OF *Enterococcus faecalis* FROM DAIRY AND UROCULTURE.

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ABSTRACT:

Enterococcus faecalis have emerged as an important nosocomial pathogen and its occurrence in food becomes problematic. These enterococci may possess and/or express virulence and antimicrobial resistance that can be transmitted through mobile genetic elements between them or to other more virulent bacteria. Therefore, our aim was to verify the occurrence of virulence genes and antimicrobial resistance in 30 *E. faecalis* isolates from dairy (raw milk and Minas fresh cheese) and in 30 isolates from uroculture. We searched the genes *agg*, *ace*, *efaA*, *esp*, *cylA*, *cylB*, *cylM*, *gelE*, *vanA* and *vanB* by Polymerase Chain Reaction. The disk-diffusion assay was carried out for ampicillin, chloramphenicol, erythromycin, streptomycin, gentamicin, norfloxacin, rifampicin, teicoplanin, tetracycline and vancomycin. The dairy isolates had between 2 and 8 virulence genes studied (± 4 per isolate) while the clinical isolates had between 3 and 8 (± 5 per isolate). The *agg* gene (aggregative substance) was found in 63.33% (19/30) of the clinical enterococci and in 56.67% (17/30) of the dairy enterococci. The expression of *agg* is pheromone-mediated and causes cell aggregation that leads to facilitated conjugation and thus dissemination of plasmids, such as pAD1. All the clinical and food isolates showed the *ace* gene (collagen-binding protein). The *efaA* gene (endocarditis antigen) was found in 100% (30/30) and 73.33% (22/30) of the uroculture and dairy isolates, respectively. The *esp* gene (enterococci surface protein) was more frequent in the dairy isolates (76.67%) than in the clinical isolates (60%). This gene is involved with evasion of immunity, adhesion and biofilm production. The operon *cylABM* for cytolysin was present in 10 (33.33%) clinical isolates and only in 4 (13.33%) dairy isolates. None of the 60 isolates presented *vanA* nor *vanB* genes. As for the antimicrobial susceptibility assay, 40% (12/30) of the food enterococci and 70% (21/30) of the clinical enterococci were resistant to erythromycin. The majority of both isolates showed resistance to tetracycline. None of them was resistant to glycopeptides. These virulent and non-sensitive enterococci isolates from dairy, whereas do not necessarily implicate a direct infection in humans, act as a reservoir of these genes in the food chain. Once assimilated by the intestinal microbiota, they can evolve into infective strains and cause enterococcal diseases especially in immunocompromised individuals.

Keywords: Food Safety, Minas Fresh Cheese, *Enterococcus faecalis*, Molecular Assessment, Pathogenic Potential.