

**Title: DISTRIBUTION OF GENOTYPES AND ANTIMICROBIAL RESISTANCE GENES IN *Staphylococcus saprophyticus* ISOLATES OBTAINED FROM MINAS CHEESE AND RECREATIONAL WATERS**

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**ABSTRACT:**

The natural reservoir of *Staphylococcus saprophyticus*, an agent of urinary tract infection (UTI) in young women, has not been fully characterized. This organism can be found in foods, but remains unexplored in the marine environment. The presence of antimicrobial resistance genes in this species has been rarely characterized. The aim of the present study was to describe the genotypes and antimicrobial resistance genes in *S. saprophyticus* isolates obtained from 10 minas cheese intact packs and water samples from five beaches of Rio de Janeiro city, and compare these isolates with others from patients with UTI, obtained in this city, previously characterized. Specimens were cultured in mannitol salt agar containing 100µg novobiocin and 0.005% (w/v) azide (for beach water samples), in 2011-2014. Bacterial isolates were identified by biochemical tests and MALDI-TOF mass spectrometry; antimicrobial susceptibility was determined by disk diffusion (CLSI 2015). Genetic determinants for the following drugs were screened by PCR and sequencing: clindamycin (CLI), erythromycin (ERY), gentamicin (GEN), norfloxacin (NOR), oxacillin (OXA), penicillin (PEN) and trimethoprim-sulfamethoxazole (TSX). Typing was performed by PFGE. In total, 43 *S. saprophyticus* isolates were obtained: 13 (30%) from two cheeses and 30 (70%) from the five beaches (1-21 from each beach). Isolates from the beaches showed resistance to the following antimicrobials: ERY 33%, CLI 20%, PEN 17% and OXA 7%. These isolates had the resistance genes *erm(C)* (90%), *msr(A)* (33%), *msr(B)* (25%), *mph(C)* (21%), *mecA* and *dfgG* (7% each) and *lin(A)* (5%). Isolates from cheese were susceptible to all antimicrobials tested; 85% had *erm(C)*. Of the 22 PFGE-typeable isolates, 12 were from a single beach and 10 were from two cheeses (8 from one and two from another). Isolates from the beach were included in four genotypes (2-4 isolates each). All isolates from a cheese belonged to the same genotype. The presence of *S. saprophyticus* and the occurrence of resistance genes in cheese and beaches of Rio de Janeiro city alert to the possibility of transmission of this agent to humans, and suggest a source of resistance to important antimicrobials in clinical practice.

**Key-words:** PFGE, resistance genes, *Staphylococcus saprophyticus*, urinary tract infection

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