

**Title: DETECTION AND CHARACTERIZATION OF METHICILIN RESISTANT *Staphylococcus* ISOLATED OF HEALTHY DOGS AND HUMANS IN CLOSE CONTACT**

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**Abstract:**

*Staphylococcus* sp. are members of microbiota and agents of infections in different hosts. Methicillin-resistant *S. aureus* (MRSA) infection is a serious public health problem worldwide. Isolation of MRSA or other species of methicillin resistant *Staphylococcus* (MRS) from animals has been increasingly reported. However, the extent of transmission of these bacteria between animals and humans has been unexplored. The close proximity may render dogs and humans mutual sources of infections. Almost no data is available about the occurrence of MRS and MRSA colonization in dogs and humans in close contact in our country. The present study aim was to investigate the occurrence of nasal colonization of MRS and MRSA in dogs and humans in close contact, and characterize them for antimicrobial susceptibility, SCC*mec* type and *pvl* gene. The study included 43 dogs and the 43 owners of these dogs, two veterinarians and three pet groomers. Nasal swabs were obtained at a veterinarian clinic in Rio de Janeiro and at a teaching veterinary hospital, in Niterói, Rio de Janeiro state, from March to May 2015. Specimens were cultured in mannitol salt agar with and without oxacillin (2µg/mL). Bacterial identification was performed by MALDI-TOF mass-spectrometry, and antimicrobial susceptibility by disk diffusion for cefoxitin, ciprofloxacin, clindamycin, chloramphenicol, erythromycin, gentamicin, linezolid, norfloxacin, penicillin, rifampicin, trimethoprim-sulfamethoxazole and tetracycline. SCC*mec* typing and PCR for *pvl* gene were performed for MRSA. In total, 11 *S. aureus* were obtained, including two MRSA. One MRSA was from a dog (9.3%), and other was from dog owner (but not owner of the colonized dog). Both had SCC*mec* type IV, and none carried *pvl*. The MRSA dog isolate, in addition to beta-lactams, was resistant to erythromycin. Methicillin susceptible *S. aureus* isolates showed resistance to erythromycin, clindamycin, penicillin and gentamicin. MRS obtained from dogs were *S. haemolyticus* (2) and *S. intermedius* group (1). Resistance to other antimicrobials was also observed among these isolates, such as ciprofloxacin, clindamycin, chloramphenicol, erythromycin, gentamicin, norfloxacin, penicillin, trimethoprim-sulfamethoxazole and tetracycline. MRSA and MRS isolation from dog indicates these animals may be sources of infections to humans. Although MRS isolates different than *S. aureus* are opportunistic agents, these are sources of antimicrobial resistance genes.

**Key-words:** Methicillin-resistant *Staphylococcus aureus*, colonization, dog

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