

TITLE: DETECTION OF MULTIDRUG-RESISTANT GRAM POSITIVE BACTERIA ISOLATED OF PIG FROM RIO DE JANEIRO FARMS

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ABSTRACT:

Multidrug-resistant (MDR) bacterial infections are a public health threat in worldwide. In 2017, World Health Organization published a list of antibiotic-resistant "priority pathogens" that represent the greatest threat to human health. In this list, Gram positive bacteria as methicillin-resistant *Staphylococcus aureus* (MRSA) and *Enterococcus faecium* (VRE) were present. The isolation of these bacteria has been reported in livestock animals in several geographic regions. Brazil is the fourth largest producer and exporter of pig meat in the world. However, data about the circulation of MDR Gram positive bacteria in national swine farming are scarce. Thus, the present study aims to investigate the occurrence of swine colonization by MDR Gram-positives bacteria in farms from Rio de Janeiro. Nasal and rectal swabs were collected from 163 (12 farms) and 81 pigs (6 farms), respectively, from 2014 to 2016. Until ten colonies were selected of each body site for pig to bacterial identification by MALDI-TOF. Antimicrobial susceptibility profiles were obtained by disk diffusion and resistance genes by PCR. *S. aureus* isolates were isolated of 10 (6.1%) pigs from six farms. Sixty percent of them were colonized by MDR isolates, including MRSA (33.3%). The MRSA strains carried on *mecA* gene and presented resistance to six antimicrobial classes in addition to beta-lactams. *E. faecium* isolates were recovered from 29 (35.8%) pigs from four farms. The most of the isolates was susceptible to all antimicrobials tested. Resistance was observed only for tetracycline (26.3%) and ciprofloxacin (2.6%). Others enterococci species isolated presented high-level aminoglycoside resistance and the genes *ant(6)-Ia* and *aac(6')-Ie-aph(2'')-Ia*. Aminoglycosides are important antimicrobial agents to treatment of enterococcal infections. Although with isolation low rates, MDR Gram positive bacteria of medical importance, including MRSA, were detected in pig farms in Rio de Janeiro state. Antimicrobials are used to treatment, prophylaxis and growth promotion in livestock what may select MDR bacteria. Therefore, rational antimicrobial use is essential in veterinary medicine and the MDR bacteria monitoring should be continued in pig farms.

Keywords: multidrug-resistance (MDR), colonization, *Staphylococcus aureus*, *Enterococcus faecium*, pig

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