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**ONE HEALTH: BACTERIA ANTIBIOTIC RESISTANCE AND RATIONAL
USE IN VETERINARY MEDICINE**

INTERACTION BETWEEN PROFESSIONAL AND ACADEMIC SECTORS IN ONE HEALTH

**ABSTRACT
BOOK**

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TITLE
Genotypic And Phenotypic Characterization Of Antimicrobial Resistance In
Staphylococcus Spp. Isolated From Cows After Alternative Treatment Of Bovine Mastitis

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ABSTRACT:

Staphylococcus spp. is among the major microorganisms involved in the etiology of bovine mastitis, with the ability to quickly acquire antimicrobial resistance genes. In organic milk production, mastitis is controlled by alternative means such as homeopathy. Animals undergoing this treatment may have persistence of antimicrobial resistance genes, representing a risk of transmission to humans. In view of this, we aimed to investigate Staphylococcus spp. isolated from cows with and without homeopathic treatment of bovine mastitis, genes related to antimicrobial resistance, as well as to verify their susceptibility to oxacillin and ceftiofur. Two homogeneous groups of subclinical mastitis cows, with and without treatment, were followed for twelve months from the beginning of the supply of homeopathic medicine in the feed. The choice of formulation, preparation and administration of the homeopathic compounds were based on expert advice of a technician specialized in homeopathic medicine. *S. aureus* were identified by detection of the SA442 gene and the other species of Staphylococcus spp. by the ITS-PCR technique after DNA extraction. The coding genes for antimicrobial resistance *BlaZ* and *MecA* were investigated with SCCmec typing by PCRmultiplex. Susceptibility to antimicrobials oxacillin (30 g) and ceftiofur (30 g) was verified by disc diffusion technique. One hundred and seventeen staphylococci isolates were identified. *S. aureus* were predominant in treated and untreated cows, with occurrences of 29.1% and 26.5%, respectively. In treated cows, *S. chromogenes*(18.8%), *S. epidermidis*(11.9%), *S. warneri* (1.7%) and *S. agnetis* (0.8%) were also isolated; while untreated cows were also isolated *S. chromogenes* (8.5%) and *S. epidermidis* (2.5%). The gene *MecA* was identified in 70.6% of *S. epidermidis* isolates, all with type I profile for SCCmec. Among the *MecA* positive isolates, all were resistant to oxacillin, while 75% to ceftiofur. Among the microorganisms isolated in milk in untreated cows, 65.9% were positive for the gene *BlaZ*, while in Staphylococcus spp. isolated in treated cows the percentage was 56.1%. The presence and possibility of spread of *MecA* and *BlaZ* genes in milk-isolated Staphylococci from homeopathy-treated mastitis cows and the antimicrobial resistance of these microorganisms may represent a potential risk when transmitted to consumers.

KEYWORDS:

homeopathy; SCCmec; *S. epidermidis*; *MecA*; *BlaZ*;

DEVELOPMENT AGENCY:

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