

TITLE: SUSCEPTIBILITY TO ANTIMICROBIALS IN *Streptococcus agalactiae* ISOLATED FROM MASTITIC COWS IN BRAZILIAN DAIRY HERDS

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ABSTRACT:

Streptococcus agalactiae is one of the main causative agents of bovine mastitis and is associated with several economic losses for producers. Few studies have evaluated antimicrobial susceptibility and the prevalence of genetic resistance determinants among isolates of this bacterium from Brazilian dairy cattle. This work aimed to evaluate the frequency of the antimicrobial resistance genes *ermA*, *ermB*, *mefA*, *tetO*, *tetM*, *aphA3*, and *aad-6*, and *in vitro* susceptibility to the antimicrobials amikacin, erythromycin, clindamycin, tetracycline, gentamicin, penicillin, ceftiofur, and cefalotin, and the associations between resistance genotypes and phenotypes among 118 *S. agalactiae* isolates obtained from mastitic cows in Brazilian dairy herds. Of the resistance genes examined, *ermB* was found in 19 isolates (16.1%), *tetO* in 23 (19.5%), and *tetM* in 24 (20.3%). The genes *ermA*, *mefA*, *aphA3*, and *aad-6* were not identified. There was an association between the presence of genes *ermB*, *tetM*, and *tetO* and phenotypic resistance to erythromycin, clindamycin, and tetracycline. Rates of resistance to the tested antibiotics varied, as follows: erythromycin (19.5%), tetracycline (35.6%), gentamicin (9.3%), clindamycin (20.3%), penicillin (3.4%), and amikacin (38.1%); conversely, all isolates were susceptible to ceftiofur and cefalotin. The high rates of resistance to tetracycline, clindamycin, and erythromycin observed suggest that the utility of these antimicrobial agents for the treatment of infected cows is limited, and imply that control and preventive measures, including restricted use of antibiotics, may not have been properly applied. On the other hand, the high levels of susceptibility to penicillin, ceftiofur, and cefalotin indicate that beta-lactams and cephalosporins are effective prophylactic and therapeutic options for control of bovine intramammary infections caused by this pathogen. Antimicrobial resistance testing facilitates the treatment decision process, allowing the most judicious choice of antibiotics. Moreover, it enables regional and temporal monitoring of the resistance dynamics of this pathogen of high importance to human and animal health. Furthermore, resistance genes may be transferred horizontally to environmental microorganisms, those of the microbiota and even strictly human pathogens, limiting therapeutic options.

Keywords: antimicrobial resistance genes, bovine diseases, bovine mastitis, GBS, MIC.

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