

TITLE: SURVEY OF THE RESISTANCE PROFILE TO B-LACTAMICS ANTIBIOTICS FROM *Staphylococcus* sp. ISOLATED FROM BOVINE AND BUFFALO MILK WITH MASTITIS

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## ABSTRACT

Mastitis is an inflammation of the mammary gland that usually relates to the action of infectious agents. This disease represents a major obstacle for the world's livestock, as it leads to losses in milk production and increases costs to the health of the herd. One of the main microorganisms related to the disease in ruminants is *Staphylococcus* sp., Especially those that show resistance to antibiotics, such as  $\beta$ -lactams which act by inhibiting peptidoglycan synthesis. The indiscriminate use of them has led to the selection of resistant strains, which use several mechanisms to prevent the action of  $\beta$ -lactams, such as the presence of  $\beta$ -lactamases and biofilm production. In addition, resistant strains in animals are likely to be transmitted to humans. Therefore, the present study aimed to identify isolates of *Staphylococcus* sp. resistant to five different  $\beta$ -lactams antibiotics, such as Penicillin, Ampicillin, Oxacillin, Cefotaxime and Ceftriaxone, and to evaluate the presence of the *blaZ* gene, as well as biofilm production. 13 isolates from buffalos and 65 from bovines were used in this study. For the resistance evaluation, there were used two methods: agar diffusion disc and the microdilution method to find the minimum bactericidal concentration. The presence of *blaZ* gene was identified by Polymerase Chain Reaction (PCR) and biofilm formation by plate adhesion method. Several resistance profiles were observed for all the isolates, either resistance to a single antibiotic or to all antimicrobials tested. Of the 78 selected isolates, 63 presented amplification for the *blaZ* gene and 16 did not have the same. For biofilm production, all were producers ranging from moderate to strong biofilm producer. Therefore, the present study demonstrated that it was possible to identify several  $\beta$ -lactam resistance profiles in isolates from bovine and buffalo mastitic milk, in addition for indicating a possible degradation of this resistance as the *blaZ* gene and biofilm production, being an important fact, as it brings attention to the indiscriminate use of antibiotics together with the identification of the microorganisms that cause the infections and their profile of resistance, once it is a deadlock in the treatment of the infection.

**Keywords:** *Staphylococcus*, multidrug resistance, Penicillins, cephalosporins