TETRACICLIN RESISTANT *STAPHYLOCOCCUS AUREUS* IN DAIRY GOAT PRODUCTION.

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Abstract

Dairy goat raising is an important activity in the Brazilian northeast region, for it generates employment and income. Although important goat raising is a low technified activity, which brings out sanitation issues, mainly, such as mastitis, especially those caused by antimicrobial-resistant *Staphylococcus aureus*. Besides goat mastitis, *S. aureus* is also a hygiene and sanitation indicator on the dairy industry. Antimicrobial-resistant *S. aureus* is the main cause of production loss and is considered a serious risk for public health since it can be transmitted by consumption of dairy products from infected animals or products that have been contaminated during manufacturing or product processing. Among the antimicrobials used to control *S. aureus* and other microorganisms, it is the class of the Tetracyclines. Due to the productive impact and health risk presented by antimicrobial-resistant *S. aureus*, this study aimed to approach the characteristics of resistance mechanisms to tetracyclines This molecule acts by binding to the bacterial ribosome in the 30s region, preventing the aminoacyl-tRNA from binding, and thus, protein synthesis, having bacteriostatic action. Resistance to tetracycline is caused by specific genes, such as *tet*-38, *tet*K *tet*L *tet*O, and *tet*M that code ribosome protecting proteins, transmembrane transportation proteins, and efflux pump proteins. Antimicrobial resistance became a recurrent event in various species of bacteria and is a phenomenon that it's not restricted to the class of tetracyclines. Tetracycline resistance occurs especially because of inadequate and/or underdosing of the antimicrobial, which promotes the selection of isolates that carry genes responsible for the phenotypic characteristic of resistance. The mechanism of resistance to tetracyclines usually occurs by drug efflux from the interior of the cell, or by ribosome protection by cytoplasmatic proteins. The gene te*t*-38 codes an efflux pumping system that is part of the Major Facilitator Superfamily (MFS), coded by other *tet* genes. The genes *tet*K and *tet*L are responsible for coding the transmembrane proteins responsible for tetracycline efflux, while the *tet*M and *tet*O code cytoplasmatic ribosome protection proteins. Resistance to antimicrobials is a major issue responsible for recurring infections, as well as reduction of productive potential in dairy species such as goats. Such occurrence is alarming, especially considering the importance of goat milk and derivates as a source of food and income. Thus, the importance of correct use of antimicrobials on infection control is evident, as well as the relevance of detection and epidemiological studies regarding resistant microorganisms.

Keywords: Antimicrobials, Goat milk, Resistance.

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