

TITLE: RESISTANCE MARKERS TO MACROLIDES AND TETRACYCLINES IN DENTAL BIOFILM OF CALVES TREATED OR UNTREATED WITH STREPTOGRAMINS CLASS ANTIBIOTICS

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ABSTRACT:

Periodontopathies have a significant impact on cattle, compromising their systemic health. Among the measures to control these diseases, the use of virginiamycin is recommended, which contributes to the reduction of economic losses. The dysbiosis in oral biofilm leads to a significant increase in populations of obligatory gram-negative anaerobes, with a change in the patterns of resistance to antimicrobials, particularly to tetracyclines and macrolides, and genes of resistance to the latter can also confer certain protection against streptogramins. The present study aimed to evaluate the effect of virginiamycin on the distribution of resistance markers to macrolides and tetracyclines in the oral biofilm of cattle kept under controlled conditions. For this purpose, 10 calves, Jersey crossbreed, aged 4 to 6 months, kept for 4 months in suitable zootechnical conditions, were divided into two groups, receiving or not virginiamycin (340mg/oral/day). Fortnightly, microbial biofilm was collected, totalizing 148 samples. The first collection took place immediately before the antibiotic was used. The presence of resistance genes *ermA*, *ermB*, *ermC* (macrolides) and *tetM* (tetracycline) was evaluated by amplifying the target DNA by polymerase chain reaction (PCR) with specific primers and amplification conditions for each marker. The results were submitted to Spearman and T-Student correlation tests, with statistical significance of $p < 0.05$. Initially, the presence of the *ermC* marker was observed in 16.7% of the analyzed samples; throughout the experiment the presence of the *ermB* and *ermC* genes could be detected in 20.3% and 19.6% of the samples, respectively, but no significant differences ($p > 0.05$) were observed in the distribution of these markers in the two groups. Common in human oral biofilm samples, *tetM* was not detected in the experiment. Although the presence of macrolide resistance markers may also provide some cross protection against streptogramins and it is common in anaerobes of human oral biofilms, the longitudinal evaluation also did not detect changes in the distribution of these markers in the group treated with virginiamycin and control group. The use of virginiamycin did not alter the distribution of the resistance markers studied, neither longitudinal alteration is applicable in the presence of these elements.

Keywords: Resistance genes, disease periodontal and bovine

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