

TITLE: PROFILE OF SENSITIVITY ANTIBIOTIC AND ANTAGONIST POTENTIAL OF LACTIC ACID BACTERIA OF GENUS *Streptococcus* spp. ISOLATED FROM ARTISANAL COALHO CHEESE OF THE SERTÃO OF PARAIBA, BRAZIL

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ABSTRACT

The presence of lactic acid bacteria (BAL) in cheeses is important because of the acceleration of milk coagulation, contribute to sensory properties, act as probiotics and assign benefits to hosts. This work aimed to evaluate the sensitivity profile to antimicrobials and antagonistic activity of lactic acid bacteria of the genus *Streptococcus* spp. isolated from Coalho cheese from Paraiba, Brazil. 11 strains producing *Streptococcus infantarius subsp. infantarius* were activated in broth and Agar, De Man Rogosa and Sharpe (MRS) agar, standardized at $0,5 (10^8 \text{ CFU} / \text{mL})$, submitted to the susceptibility process on Mueller Hinton agar (MHA) against amoxicillin-10 µg; ampicillin-10µg; azithromycin-15µg; chloramphenicol-30µg; cefoxitin-30µg; vancomycin-30µg; aztreonam-30µg and colistin-10µg, and the inhibition halos were measured. They were evaluated against indicator pathogens as *Staphylococcus aureus* (ATCC 29213), *Escherichia coli* (ATCC 3539), and *Pseudomonas aeruginosa* (ATCC 9027), *Klebsiella pneumoniae* (ATCC 3028), were incubated in Brain Heart Infusion broth. The producer species were standardized at $0.5 (10^8 \text{ CFU} / \text{mL})$, and 15 µl of the inoculum were pipetted onto discs present in MRS agar, the indicators were standardized at 10^7 CFU mL^{-1} , poured onto the producers, incubated and gauged. inhibition halos. They showed sensitivity to ampicillin, chloramphenicol, vancomycin and amoxicillin, resistance against aztreonam and colistin, and variations to cefoxitin and azthromycin. Resistance to B-lactams (aztreonam) can be explained by the action of B-lactamases. Antimicrobial susceptibility is one of the factors to be considered probiotic. As for the antagonistic profile, 63.6%, 72.7% and 36.4% inhibited Gram-negative *Pseudomonas aeruginosa*, *Klebsiella pneumoniae* and *Escherichia coli*, respectively, and did not inhibit the Gram-positive indicator *Staphylococcus aureus*. Generally, bacteriocins produced by BAL are only active against Gram-positive and not against Gram-negative since they present protection of lipopolysaccharides of the outer membrane preventing the action of this substance under the plasma membrane. However, Gram-negative bacteria became susceptible to bacteriocins after exposure to sub-lethal stress. It can be concluded that the analyzed species presents, preliminarily, probiotic characteristics since they demonstrated sensitivity to some antibiotics and antagonistic effect against human pathogens.

Keywords: Antagonism; Lactic bacteria; Probiotic; Coalho cheese; Sensitivity.