

**TITLE:** ANTIMICROBIAL ACTIVITY OF *Lactococcus lactis* subsp. *lactis* ISOLATED IN THE ARTISANAL CHEESE PRODUCED IN ILHA DO MARAJÓ, PARÁ

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### **ABSTRACT**

*Lactococcus lactis* performs a relevant industrial interest because of its potential for use in the biocontrol of food. Scientific research has identified that some strains of this species present antagonistic activity against pathogenic bacterias, once they have the capacity to produce antimicrobial substances, such as bacteriocins. The present study aimed to test the antimicrobial activity of *L. lactis* isolated in the artisanal cheese produced in Ilha do Marajó, Pará. Strains (n=8) identified as *L. lactis* were subjected to the spot-on-the-lawn method to identify their antimicrobial activity against *Listeria monocytogenes* and *Staphylococcus aureus* (ATCC 25923). The presence of inhibition halos was recorded as the antimicrobial activity of the tested strain. The results showed that all the strains tested presented inhibitory activity (antimicrobial) against the two pathogens tested. These foodborne pathogens were selected as a target because previous studies have demonstrated its susceptibility to the antimicrobial substances produced by lactic acid bacteria, it is usually adopted as an indicator of such activity. The inhibitory capacity of 5 strains was higher against *S. aureus* in relation to 4 strains for *L. monocytogenes* based on the measurement of the mean diameter (mm) of inhibition halos. The results of inhibition of pathogens by the strains showed variation with respect to the mean diameters of the inhibition halos, being that for *S. aureus* an average of 13.5 mm was found, with the presence of halos between 9 mm and 18 mm in diameter and for *L. monocytogenes* an average of 14.25 mm was observed, with halos varying between 6 mm and 24 mm. Variations in the diameter of halos can be justified by the diversity and variety of antimicrobial substances which can be produced, such as organic acids (such as lactic acid), hydrogen peroxide, carbon dioxide, diacetyl, acetaldehyde and bacteriocins. At last, a possible effectiveness can be emphasized of these strains in the application in foods such as lactic cultures, in order to improve the sanitary quality of the product. And, the artisanal cheese proved to be a reservoir of *L. lactis* strains that could be important for future use as bioprotective cultures.

Keywords: antagonistic activity, bacteriocins, pathogens