

BACTERIOCINOGENIC ACTIVITY OF *Lactobacillus curvatus* P99 against *Listeria monocytogenes* ISOLATES

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Listeria monocytogenes is a foodborne pathogen, characterized as Gram-positive, facultative anaerobic, psychotropic and ubiquitous microorganism. Listeriosis is a serious zoonotic disease, caused by eating food contaminated with *L. monocytogenes*. Many outbreaks and sporadic cases of listeriosis have been related to animal products as frankfurters, smoked salmon, as well as dairy products, such as soft cheeses and unpasteurized milk. All of these foods could be a potential source of human listeriosis, because most of them are consumed without additional heat treatment. Furthermore, *L. monocytogenes* also has the ability to growth and survive in adverse conditions, as a wide range of pH and temperature and even under oxygen starvation conditions. These factors are important because they facilitate the microorganism to survive during food manufacturing process, which can lead to the presence of *L. monocytogenes* in the final product. Recently, many studies have studied different ways to control *L. monocytogenes*, such as the use of lactic acid bacteria (LAB), as *Lactobacillus curvatus*. This bacteria group is capable to produce many substances with antimicrobial potential. As an example of these substances we can mention the bacteriocins, a metabolite product produced by LAB that can inhibit the growth of other bacteria, reducing bacteria activity and can be used for food preservation and prevention of foodborne diseases. Thus, the aim of this study was to evaluate the bacteriocinogenic activity of the *L. curvatus* P99 against *L. monocytogenes*. Twelve *L. monocytogenes* isolates from bovine carcasses and one *L. curvatus* isolate from sliced cooked ham were evaluated. The cell-free supernatant (CFS) was obtained from *L. curvatus* P99. The bacteria was cultivated in Man, Rogosa and Sharpe broth (MRS, KASVI®) for 24 h at 37 °C, in anaerobic conditions, and the cells were separated by centrifugation (6,800 rpm, 4 °C, 20 min). After, the supernatant was neutralized and pH was adjusted to 7.0, using

NaOH 1 N solution, and heat-treated for 10 minutes at 80 °C. Aliquots (20 µL) of CFS were added on Petri dishes containing Brain Heart Infusion agar (BHI, KASVI®) with a cell suspension of *L. monocytogenes* at a concentration equivalent to 0,5 McFarland scale (~10⁸ CFU per mL), from each isolate. After adsorption by the culture medium, the plates were incubated at 37 °C for 24 h, in aerobic conditions. The presence of inhibition halos indicates bacteriocin production, showing that the LAB has bacteriocinogenic ability. *Lactobacillus curvatus* P99 showed bacteriocinogenic activity against 50% of *L. monocytogenes* isolates. The results indicate that the anti-listeria activity of *L. curvatus* P99 is isolate-dependent and may be associated with the intrinsic characteristics of each isolate. However, other studies have found antibacterial activity of different *L. curvatus* isolates against *L. monocytogenes*, showing potential for inhibiting and controlling the pathogen growth in raw milk, smoked salmon and soft cheese. Because they are considered safe, LAB have been widely used in food preservation, as well as for defining the characteristics of dairy products. In addition, metabolites produced by these bacteria, such as bacteriocins, have also been extensively studied and are a good alternative for use in food preservation to control foodborne pathogens, such as *L. monocytogenes*. It is noteworthy that in this study, *L. curvatus* P99 was effective in controlling only half of the *L. monocytogenes* isolates, therefore, complementary studies will be carried out.

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Palavras-chave: listeriosis; bacteriocin; foodborne pathogen; food disease.