

Identification and antimicrobial activity of autochthonous lactic acid bacteria from Brazilian artisanal cheeses: prospecting for bio-preservation

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The search for alternatives to antibiotics in animal production has become a major challenge, particularly in light of the rise in resistant pathogenic bacterial strains. In this context, bio preservation appears to be a promising strategy for enhancing food safety whilst limiting the use of antibiotics. However, the use of autochthonous lactic acid bacteria (LAB) from Brazilian artisanal cheeses remains poorly studied, even though these strains could constitute a natural source of bioactive compounds capable of inhibiting microorganisms of public health concern. This study aims to address this gap by identifying LAB isolated from Brazilian cheeses and evaluating their antimicrobial activities against relevant pathogens. LAB isolates (n = 45) were obtained from Brazilian artisanal cheeses (n = 96), selected based on their antimicrobial activity against *Listeria monocytogenes* ATC 7644 and identified based on 16S rRNA gene sequencing. Their antimicrobial potential was assessed by using the spot-on-the-lawn method. Antimicrobial activity was assessed by observing inhibition halos around the LAB isolates, and their diameters were measured to determine the level of activity. Only halos with a diameter  $\geq 3$  mm - corresponding to the minimum size of the deposited LAB droplet - were considered indicative of true inhibition. Molecular identification has revealed the presence of strains belonging to the genera *Lactococcus* (n=3) and *Lactobacillus* (n=39), known for their production of bacteriocins and other inhibitory metabolites. Indeed, antimicrobial tests have identified some strains exhibiting antimicrobial activity against *Listeria innocua*, which is used as a non-pathogenic model for *Listeria monocytogenes*. Antagonism experiments against foodborne pathogens, such as *Listeria monocytogenes*, *Salmonella* spp., and *Staphylococcus aureus*, are currently underway and will help to demonstrate the potential of some of the isolated bacteria for future application against pathogenic bacteria in bio preservation. These preliminary results suggest that LABs derived from Brazilian cheeses represent a promising resource for the development of natural bio preservation strategies, helping to reduce the use of antibiotics and thereby limit the emergence of resistance.

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