

TITLE: ANTAGONISTIC ACTIVITY OF *Lactobacillus brevis* ISOLATED FROM SOUR CASSAVA STARCH FERMENTATION PROCESS

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ABSTRACT:

Sour cassava starch is obtained from the natural fermentation of cassava in a spontaneous process conducted by microorganisms from raw materials and fermentation tanks, with prevalence of lactic acid bacteria (LAB) in association with some yeasts. This product is used in the baking industry for the manufacture of biscuits and breads, and represents an alternative to gluten. The LAB, which are used as natural or selected starter cultures in fermented foods, are able to acidify and enhance the flavor. Furthermore, LAB may be a useful and effective strategy to prevent or reduce the incidence of pathogens, due to the formation of antimicrobial compounds, thus improving food safety and consumer health. The objective of this work was to evaluate antagonistic activity against foodborne pathogens of a LAB species isolated from sour cassava starch fermentation. Strains of LAB isolated during sour cassava starch production in Formiga (MG, Brazil), identified molecularly by Restriction Fragment Length Polymorphism (RFLP) by digestion with restriction enzymes *MspI*, *HinfI* and *HaeIII*, and subjected to 16S rRNA sequence analysis were evaluated for their inhibitory activity against strains of *Bacillus cereus* ATCC 11778, *Escherichia coli* ATCC 25922, and *Salmonella* Typhimurium CCD S004. The strains (n=12) belonging to the species *Lactobacillus brevis*, which were among the prevalent LAB in cassava fermentation and demonstrated high acidification capacity, were tested in triplicate by spot-on-lawn method for direct inhibitory activity. The data obtained were subjected to analysis of variance (ANOVA) and significant differences between means were determined by Duncan's test with a 0.05 significance level. Only one isolate showed antagonistic activity against *B. cereus*. All the isolates, except one, showed inhibition halos against *E. coli*. All the isolates showed antagonistic activity against *S. Typhimurium*. The only isolate that showed antagonistic activity against *B. cereus* was among the isolates that showed the biggest inhibition halos against *E. coli* and *S. Typhimurium*. From the spot-on-lawn test, one isolate of *L. brevis* presented satisfactory antagonistic effects. Thus, it can be concluded that this strain of *L. brevis* is capable of inhibiting the main pathogens found in sour cassava starch. Future studies should investigate the possibility of using this isolate as a starter culture for the industrial production of sour cassava starch, contributing to ensure food safety.

Keywords: Antagonistic activity, fermentation, lactic acid bacteria, *Lactobacillus brevis*, sour cassava starch

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