

TITLE: EFFECT OF PROCESSING CONDITIONS ON THE JUÇARA PULP FOR *IN VITRO* FERMENTATION..

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ABSTRACT:

Functional food ingredients, as prebiotics, must be stable to food processing treatments, such as heat and low pH. Some studies have evaluated the chemical stability of prebiotics to heat and acidic conditions. Lactobacilli and bifidobacteria are among the intestinal bacteria favored by prebiotics, and juçara pulp also presents as an appropriate fermentative medium for these bacteria. This study established a quantitative score to describe the extent to which juçara pulp support selective growth of *Lactobacillus reuteri* LR 92 and *Bifidobacterium animalis subsp. lactis* BB-12. The prebiotic activity assay was based on the change in cell biomass after 24 h of fermentation of the strains with 1% (w/v) juçara pulp or 1% (w/v) glucose in relation to the change in cell biomass of *Escherichia coli* grown under the same conditions. A prebiotic activity score was calculated from the biomass data for *L. reuteri* and *Bifidobacterium animalis*. Juçara pulp that was dissolved in citrate-phosphate buffer solutions and then exposed to each of treatments simulating food processing conditions: low pH (pH 3, 4 e 5) and heat at low pH (30 min at 85 °C, pH 3, 4 e 5). The treatment with pH 3 presented better growth activities: 1.6 for *L. reuteri* and 1.7 for *Bifidobacterium*, when compared to the control samples (0,80 for *L. reuteri* and 0,75 for BB-12 growing with juçara pulp *in natura*) The pulp submitted to pH 4 showed only a significant increase in the prebiotic activity for *L. reuteri*. At pH 5 for both strains there were no differences when compared to juçara pulp without pH change. The lower pH (3) may cause a chemical alteration of the functional food, resulting in a selective increase of beneficial bacteria of the colon. When juçara pulps submitted to thermal processing, at pH 3 there was a significant decrease in prebiotic activity, for *L. reuteri* the score was 0.23 and for BB-12 0.17. This result indicates that the combination of low pH and high temperature causes a possible hydrolysis of its sugars, no longer offering selective stimulation to probiotics. The pulp at pH 4 and 5 when submitted to high temperature showed no differences when compared to pulp of juçara *in natura*. It is possible to observe that at low pH, but without thermal processing, the juçara pulp presents greater efficiency in the growth of probiotic bacteria. However, when subjected to high temperatures, present in many food preparations, a higher pH for the growth of probiotic bacteria is preferable.

Keywords: pH, probiotics, prebiotics, *L reuteri*, *Bifidobacterium*.

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