TITLE: PHYSICAL-CHEMICAL CHARACTERIZATION AND ELABORATION OF PROBIOTIC FERMENTED BEVERAGE WITH EXTRACT FROM *CASTANHA-DO-PARÁ* (*Bertholletia excelsea)*

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ABSTRACT:

The expansion of the use of lactic fermentation using plant material has been proposed for the development of nutritious foods with good sensory properties, replacing milk. Due to the pleasant taste and high nutritional value, the *Castanha-do-Pará* can be incorporated into the diet of the Brazilian population. Thus, the aim of this study was to elaborate and evaluate the fermented non-dairy drink based on brown nut extract. *Lactobacillus rhaminosus* (Danisco LR 032) was used as bacteria starter, and Physicochemical analyzes were performed. To obtain the extract, nuts were crushed in the ratio of 1:7 (nuts:water) and the liquid portion was removed for subsequent analysis. The extract obtained was pasteurized at 65 °C for 30 minutes and soon after being cooled in an ice bath. The bacteria cell of the *L. rhaminosus* was removed by centrifuging it at 7000 rpm for 10 minutes at 4 °C, and then inoculated with 10% of total volume of the nut extract (approximately 10^8 cell/mL). The sample was incubated at 37 °C for 24 hours, and the pH value used as an indicative parameter for the end of fermentation process. For counting the characteristic colonies plating was done by the spread plate technique in MRS agar medium. The plates were incubated at 37 °C for 48 hours and the analyze were performed in triplicate. Determination of titratable acidity was performed by titration with 0.01 mol/L sodium hydroxide solution (NaOH), using phenolphthalein as the color indicator. Sugar consumption was monitored by measuring ºBrix, every 6 hours. The *L. rhaminosus* population increased during the fermentation process from $5{,}9x10^8$ to $5{,}1x10^{11}$ CFU/mL, according to the nutritional recommendations for fermented foods. The pH decreased from 6.58 to 4.0 at 12 hours of fermentation, and two more pH points were taken to confirm the stability of the beverage. The values of the titratable acidity (%TA) were inversely proportional to the pH values, ranging from 0.9368 to 10.8096 %TA, corresponding to that expected for the lactic fermentation. Soluble solids varied from 2.5° to 0.8° Brix. Therefore, the present beverage presented great potential for a commercial product, considering the market demand for lactose-free products and without animal derivatives, besides the greater use of a typical Brazilian product with excellent nutritional values. Future studies should be performed to evaluate consumer acceptance of the beverage.

KEYWORDS: Non-dairy; Beverage; Nuts; *Lactobacillus rhaminosus*; Probiotics.

DEVELOPMENT AGENCY: Conselho Nacional de Desenvolvimento Científico e Tecnológico do Brasil (CNPQ); Fundação de Amparo à Pesquisa do Estado de Minas Gerais (FAPEMIG); Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES).