In C. Lima, A. M. Cunha, A. Pereira, R. Carvalho, Y. Dulyanska, R. Guiné (Coords.),

ABSTRACT BOOK: INTERNATIONAL WEB CONFERENCE ON FOOD CHOICE & EATING MOTIVATION

(pp. 54-54)

EVALUATION OF THE KEFIR POTENTIAL TO PRODUCE A FERMENTED PRODUCT FROM CHESTNUT PURÉE: A PRELIMINARY STUDY

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The concept of functional food involves the food as a source of energy and nutrients, promoting a healthy benefit and reducing the disease risk. Kefir is a fermented beverage produced by a consortium of microorganisms (bacteria and yeasts) that live in symbiosis in the kefir grains. Several studies report many health benefits from the regular consumption of kefir, being considered a probiotic food.

Due to the lactose-intolerant people and the adoption of vegetarianism, there has been a growing concern about using non-dairy substrates, such as fruits and vegetables, to produce kefir-based products.

Chestnut fruits are mainly composed of carbohydrates (mostly starch and other sugars such as sucrose and, in fewer proportions, glucose, fructose and maltose) and, in less content, proteins with essential amino acids, dietary fibre, minerals, vitamins, phenolic compounds and a low amount of fat. Furthermore, it is an excellent alternative food for celiac people as it is gluten-free.

In this work, a preliminary study about the fermentation of chestnut purée by kefir grains was performed. A rheologic study of the chestnut purée was made to understand its flow behaviour at different temperatures (15, 25, 50 and 75 °C). A non-linear relationship between the apparent viscosity and shear rate was observed, describing a non-Newtonian behaviour. All samples demonstrated thixotropic properties, observed by a difference between the upward and downward curves. Moreover, it was determined the parameters of the Ostwald-De Waele and Hershel-Bulkley models, being concluded that the Hershel-Bulkley model described well the behaviour of the chestnut purée. The Arrhenius model well described a temperature dependency of the apparent viscosity.

The colony-forming units per millilitre (CFU/mL), pH, total sugars, lactic acid and acetic acid contents were determined during the fermentation. An increase in the counts of bacteria and yeasts was observed, as well as the production of lactic and acetic acids. On the contrary, a decrease in pH and total sugar concentration was determined.

Some bacteria and yeasts were isolated from the kefir fermentation. They were identified as L*euconostoc mesenteroides*, *Levilactobacillus brevis*, *Micrococcus luteus*, *Lentilactobacillus kefiri*, *Sporobolomyces ruberrimus*, and *Kazachstania unispora*.

In conclusion, the chestnut purée seems to be a suitable substrate for kefir fermentation producing a potential non-dairy product that can be consumed by lactose intolerant and celiac people.

Keywords: Fermentation; Kefir; Chestnut purée; Probiotics; Functional food