PHYSICOCHEMICAL CHARACTERIZATION AND SENSORY ACCEPTANCE OF A FUNCTIONAL FRESH CHEESE WITH *Lactobacillus delbrueckii* subsp. *bulgaricus* NCFB-2772 AND *Lactobacillus rhamnosus* GG

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Introduction. Development of new functional foods must take into account consumer acceptance, *ie.* it must be tasty and healthy. Functional foods provide physiological benefits contributing to consumer's health (1). Fresh cheese is a traditional Mexican product that may be supplemented with probiotic microorganisms; however, it is necessary to analyze sensory changes that this may induced in the product (1). The aim of this work was to develop a fresh cheese (LrGG-Lb2772) added with the probiotic *Lactobacillus rhamnosus* GG (LrGG) and the exopolysaccharide-producing *Lactobacillus delbrueckii* subsp. *bulgaricus* NCFB 2772 (Lb2772), evaluating its physicochemical characteristics and consumer's perception.

Methods. Inoculum for cheese of LrGG was growth in MRS broth at 37°C for 6h and Lb2772 was incubated in pasteurized milk (Santa Clara) at 37°C for 12h. Milk maturation was controlled monitoring the pH and titrable acidity (2). Production of the EPS was quantified indirectly by monitoring viscosity. A cheese control without microorganisms was made; and additional control was also elaborated adding only the probiotic bacteria (LrGG cheese). Consumers liking (hedonic scaling), intensity of creaminess and firmness (JAR scaling) and willingness to purchase were evaluated with 77 consumers (3) versus two commercial cheeses (NL and VL).

Results. Viscosity and pH in milk before coagulation were 17.26 cp and 6.12 for Lb2772-LrGG cheese and 14.02 cp and 6.6 for control cheese respectively. There was no significant difference between control cheese and LrGG cheese for pH and viscosity. Fat content was higher for Lb2772-LrGG cheese and control cheese (Table 1).

Table 1. Physicochemical data of cheese after 9 days.

Cheese	Moisture (%)	Fat (%)	TS (%)
Control	61.47^{b}	15.87^{b}	38.65^{b}
LrGG	60.40^{a}	15.62^{b}	39.60^{a}
Lb2772-LrGG	61.67^{b}	16.87^{a}	38.34^{b}

TS: Total solids. Different letter mean significant difference.

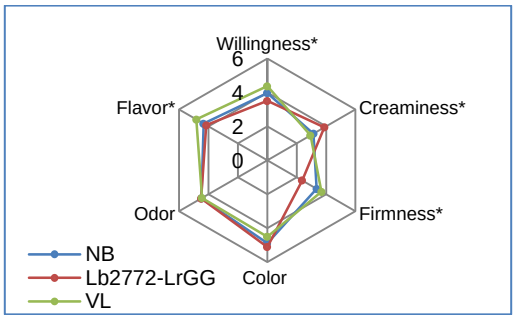

Fig.1 Consumer´s perception of fresh cheese (Lb2772-LrGG) compared with two commercial products, NB and VL. *Attributes with significant difference.

It is possible that the exopolisaccharide of bacteria (Lb2772), favored fat retention.

Sensory acceptance of the Lb2772-LrGG cheese was compared with the LrGG and control cheeses. Lb2772-LrGG cheese had significant difference in flavor, firmness and willingness. For this reason we consider a broader comparison with cheeses in the market place (Fig.1). Higher creaminess and lower firmness were found in Lb2772-LrGG cheese than in commercial cheeses. There were significant differences in willingness to purchase between the different cheeses evaluated (BN, VL and Lb2772-LrGG), although the most important differences were in texture attributes. This suggested that the principal factor affecting the overall consumer acceptance could be the texture properties over the flavor properties.

Conclusions. The use of probiotics and an exopolysaccharide-producer *Lactobacillus* affected the physicochemical and sensory properties when added to fresh cheese, mainly fat retention, firmness and creaminess.

References.

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