Sensory assessment of fruit and milk-based beverages fermented with selenized lactic acid bacteria

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Selenium (Se) is an essential micronutrient for human health, which is found as selenocysteine (SeCys) in the active site of Se-dependent enzymes involved in the response to oxidative stress and in thyroid functions, among others. Some lactic acid bacteria (LAB) can reduce Se salts into seleno-nanoparticles (SeNPs) and seleno-amino acids, which are highly bioavailable forms. The Se content in food is scarce in Argentina, indicating a moderate status of this trace element in the soil. Hence, Se consumption is below the recommended dietary intake (RDI). Se-enrichment of foods is an attractive strategy to increase its ingestion. In this work, we aimed to evaluate individual sensory attributes and global acceptability of fruit juice-milk beverage (FJMB) fermented with selenized LAB. *Levilactobacillus brevis* CRL 2051 and *Fructobacillus tropaeoli* CRL 2034 were grown (at 30 °C 24 h) in MRS with 5 mg/L of Se prior to inoculation (2% v/v, separately) or co-inoculation (1% v/v of each strain) in the FJMB, and then were incubated at 30 °C 14 h. Consumers (n= 105) were given a set of samples refrigerated at 6-10 °C including an unfermented FJMB (control). Participants scored individual attributes (appearance, odor, oral texture, acidity, sweetness, and flavor) and overall liking using a 9-point hedonic scale with phrases ranging from dislike extremely (1) to like extremely (9). The fermentation process itself ameliorated the appearance and oral texture compared to the non-fermented beverage. Flavor, sweetness, and odor were the sensory attributes that contributed the most to the overall acceptability of beverages (Pearson correlation coefficient > 0.97). *L. brevis* and the mixed-starter culture exhibited highest values in sweetness and flavor liking compared with *F. tropaeoli*-fermented and non-fermented FJMB. Moreover, the drink fermented with *L. brevis* showed better odor and acidity liking characteristics, and the highest scores in all sensory attributes as well as in general acceptance followed by the FJMB fermented with the mixed-culture. Our results suggest that selenized cells of *L. brevis* CRL 2051 and those of the studied mixed-culture can be used to elaborate fermented FJMB with high general acceptance and outstanding sensory attributes.

Keywords: Selenium, Global acceptability, Sensory attributes