

The effect of inulin and milk proteins on *Lactobacillus rhamnosus* GG survival in synbiotic acai ice cream under simulated gastrointestinal conditions

Marina Padilha, Martha Lissete Villarreal Morales, Antônio Diogo Silva Vieira, Mayra Garcia Maia Costa, Susana Marta Isay Saad
University of Sao Paulo, Brazil

Many health-promoting claims attributed to probiotic microorganism are dependent on the cells being both viable and active to be able to survive and lead to beneficial effects in the consumer intestinal tract. Studies suggested that milk proteins and prebiotics may protect probiotic bacteria during the passage through the gastrointestinal tract. Therefore, the aim of this study was to evaluate the effect of inulin (I), whey protein concentrate (WPC), and whey protein isolate (WPI) added at 4% during the production of a synbiotic acai (*Euterpe oleracea*) ice-cream on the resistance of *Lactobacillus rhamnosus* GG (Lr GG) to *in vitro* simulated gastrointestinal conditions. Four formulations of synbiotic acai ice-cream were investigated: F1 (control); F2 (with I); F3 (with WPC); F4 (with WPI). Samples from each formulation were used for the evaluation of Lr GG survival rate in acai ice-creams submitted to *in vitro* gastrointestinal stress, after 7 and after 56 days of storage at -18°C. On day 7, Lr GG survival rate was significantly higher in F2 (51.3%), F3 (52.0%), and F4 (53.4%) than in F1 (43.0%) ($p < 0.05$). After 56 days, a decrease in the survival rate was observed for F4 (41.9%), which did not differ from F1 (42.5%) ($p < 0.05$). However, F2 and F3 maintained their survival rate of, respectively, 51.8% and 52.7%. Therefore, the results suggested that the incorporation of inulin and whey protein concentrate to acai ice-creams may improve the tolerance of the probiotic strain studied to gastrointestinal stress.

Biography

Mayra Garcia studied Food Engineering at the Federal University of Ceará (UFC), Brazil. She has a master on Food Science and Technology at Federal University of Ceara (UFC), Brazil. Currently, she is developing her doctorate in Science at the Program of Biochemical and Pharmaceutical Technology from University of São Paulo (USP) with emphasis on probiotics and synbiotic ice cream, technological and sensory analysis, gastrointestinal *in vitro* test for probiotic enumeration.

mayra_gmc@yahoo.com.br