

TITLE: EVALUATION OF *Lactobacillus casei* IN SYMBIOTIC FROZEN WITH INULIN, OLIGOFRUCTOSE AND POLYDEXTROSIS USING A SIMPLEX-CENTROID MIXTURE DESIGN

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ABSTRACT:

Fibers are functional components that, in addition to exerting beneficial effects in the human organism, can also improve technological functions, such as gel formation, water or lipid retention, increased viscosity, formation and stabilization of emulsions and foams, modification of the texture and the fermentative capacity of the products. Still, the fibers can act as prebiotics, selectively stimulating the growth of probiotics. *Lactobacillus casei* is a microorganism considered as probiotic, so it is interesting to develop foods with high counts of this microorganism. Considering that fermented milk products have been demonstrated as a suitable substrate for the growth of probiotic microorganisms, the objective of this work was to develop a frozen symbiotic with addition of inulin, oligofructose and polydextrose using a simplex-centroid mixture design. Eight trials were performed, three with pure ingredients, three with binary mixtures and three with the ternary mixture. The maximum level of each variable added (X_1 = inulin, X_2 = oligofructose and X_3 = polydextrose) was 3% in relation to the total formulation. The fermentation was carried out with culture of *Lactobacillus casei*, *Lactobacillus bulgaricus* and *Streptococcus thermophilus*. The count of *Lactobacillus casei* was performed using MRS vancomycin agar medium in anaerobic conditions at 37 ° C for 72 hours. The model that best fit the experimental data was the quadratic ($Y = 6,1.X_1 + 5,7.X_2 + 5,8.X_3 + 0,9.X_1.X_2 + 2,4.X_1.X_3 - 3,5.X_1.X_2.X_3$), and the adjusted coefficient of determination was 86%. The mixture containing inulin and polydextrose gave a higher *Lactobacillus casei* count to the product. The results demonstrated that formulations containing binary mixtures of inulin and polydextrose provided a further development of *Lactobacillus casei* in relation to the other formulations, demonstrating that these fibers can stimulate the growth of probiotic microorganisms.

KEYWORDS: Probiotics, fibers, frozen, *Lactobacillus casei*.