Effect of Selected Oligosaccharides on the Viability and Fermentation Kinetics of Lactobacillus acidophilus and Lactobacillus casei in Cultured Milk

Abstract

The study aimed to investigate the effect of fructo-oligosaccharides (FOS) on the growth and fermentation kinetics of Lactobacillus casei LC-01 (LC) and Lactobacillus acidophilus LA5 (LA) in cultured milk. Two commercially available FOS with different degree of polymerization (DP), namely Fibrulose F97 (DP, 2-20) and Fibruline Instant (DP, 3-60) were used at 4% (w/v) and 8% (w/v) respectively during fermentation and storage of cultured milk. Physicochemical properties and acidification kinetic of milk were measured throughout the fermentation. The concentration and DP values of the FOS do not seem to affect the growth of both probiotics during fermentation. Nevertheless, the pH and total soluble solid of milk fermented by both probiotics supplemented with FOS decreased tremendously during fermentation. It is noted that the percentage of lactic acid produced in L. acidophilus is higher than L. casei owing to the metabolic characteristic of the strain. The kinetic of maximum acidification rate Vmax of cultured milk was significantly higher with the addition of FOSs at 4%. However, FOS with lower DP seemed to enhance ($p<0.05$) the stability of LA in cultured milk during cold storage, but no significant effect on LC. The results of this work indicate that FOS could significantly improve the survival of probiotics in cultured milk especially during refrigerated storage**.**