Stimulating the Viability of Bifidobacterium spp. in Synbiotic Fermented Milk by Co-culturing with Lactobacillus paracasei 441 and Inulin.

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ABSTRACT:

Bifidobacterium spp. and *Lactobacillus* spp. are probiotic bacteria have been incorporated in dairy-fermented products as live cultures to assist in maintaining the balance and health of human intestinal microflora. The aim of this study is to examine the ability of three *Bifidobacterium* (*bifidum, breve and infantis*) and *Lactobacillus paracasei* 441 strains to survive at different (1.5, 2.0, 2.5 and 3.0) pH values, and different (0.5 and 1.0%) bile salts concentrations for 3h, also to determine the stimulatory effect of *L. paracasei* 441 strain in combination with inulin on the viability of *B.* (*bifidum, breve and infantis*) strains in fermented milk during storage condition. Each strain of *B.* (*bifidum, breve and infantis*) were cultured with and without *L. paracasei* 441, then each treatment was split into three groups [0, 1.0, and 3.0 inulin (w/v %)] and incubated at 37°C for 3 h. The viable bacterial counts of all strains were cultured in fermented milk during 15 days at 4°C was determined. The initial bacterial population reached 8.00 ±0.0 Log CFU/mL on an average. Our results showed that the bacterial populations of *B.* (*bifidum, breve and infantis*) strains in the control samples [without co-cultured with (*L. paracasei* 441 and inulin)] reached (7.45±0.0, 7.11±0.0, and 7.22±0.0) Log CFU/mL on an average, respectively. However, when the tested strains co-cultured with *L. paracasei* strain 441 strain in combination with 1.0 % of inulin the bacterial population reached (8.67±0.0, 8.24±0.0, and 8.70±0.0). These results were indicated that there was a significant difference ($P > 0.05$) in the growth of *B.* (*bifidum, breve and infantis*) in fermented milk co-culturing with Lactobacillus paracasei 441 and Inulin. Therefore, our results indicated that the presents of *L. paracasei* 441 with 1% inulin was maintained, and stimulated the viability of *Bifidobacterium* strains during 15 days at 4°C.

Key words: *Bifidobacterium*, *Lactobacillus*, Low pH, Low bile salts, Stimulating, Synbiotic fermented milk, and Inulin.