Antimicrobial Activity of Commercial Yogurt Supernatant

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ABSTRACT

The inhibition effect (antimicrobial activities) of the supernatant of four commercial drinking yogurts, which were hold at 4oC, on the growth of five microbial strains (Streptococcus aureus BCRC10451, Salmonella typhimurium BCRC12947, Bacillus subtilis BCRC11634, E. coli BCRC11634, Pseudomonas aeruginosa BCRC11633) was investigated in the study. The cell count of lactic acid bacteria (LAB), pH value and titrable acidity of the supernatants were also studied. During the 16-day storage time at 4oC, the LAB cell count of all the commercial yogurt supernatant still kept maintaining over 8.9-9.5 log CFU/mL, the pH values of the supernatants little gradually changed from original 4.32-4.21 to 4.03, the titrable acidity was little gradually increased from 0.48%-0.58% to 0.58%-0.63%. For antimicrobial activity, the inhibition zones of the yogurt supernatants for all microbial strains except for P. aeruginosa (no quantitative detection) by using agar diffusion were at the range of 23.0-36.0 mm, especially the range of 34.5-36.0 mm for S. aureus. The antimicrobial activity of the original supernatant with pH 4-5 was better that of the neutral one adjusted to pH 7.0. In addition, the pH value of the agar for microbial diffusion was decreased from 2.58 to 2.22 as increasing the addition concentration of lactic acid (0.3%-2.0%). For the antimicrobial activity of lactic acid, the inhibition zones for the five microbial strains increased with increasing the addition concentration. Based on these results, there was no antimicrobial effect of the original or neutral supernatant (pH 4.0-5.0 or 7.0, respectively) on P. aeruginosa growth. This may be due to that the pH value or the lactic acid content of the supernatant was less than 2.48 or more than 0.3%. However, the supernatants of the four commercial yogurts only showed much effective on the growth inhibition of effects of S. aureus, S. typhimurium, B. subtilis and E. coli.

Keywords : yogurt ; antimicrobial activity ; lactic acid bacteria ; lactic acid

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