

Title : Effect of Synbiotics based Neokestose on Growth of Some Foodborne Pathogenic Bacteria

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ABSTRACT

In a previous study, eight strains of lactic acid bacteria (LAB) capable of fermenting the shortest-chain fructooligosaccharide, neokestose have been characterized as potential probiotics based on the following properties: tolerance to gastric acid and bile salts, adhesion to the human intestinal epithelium, inhibition of a monoculture of pathogenic microorganisms via antimicrobial activity assay, and the ability to utilize or grow on neokestose. Each of the following probiotics, namely *Limosilactobacillus (Lm.) fermentum* strains FS2.2, FS15.2, FS48.1, and FS49.2, *Lactobacillus (L.) argenterotensis* FS41.1, *Lactiplantibacillus (Lp.) plantarum* FS46.2, and *Enterococcus (E.) faecium* strains CG403 and CG501, has been mixed with neokestose at a certain ratio to produce eight synbiotic formulae. This study aimed to screen synbiotics with potential antibacterial effect against some foodborne pathogens for developing potential multi-strain synbiotics based neokestose. Each synbiotic formula was assessed antagonistic activity against mixed pure culture of *Escherichia (E.) coli* TISTR 527, *Staphylococcus (St.) aureus* TISTR 746, and *Salmonella (S.) typhimurium* TISTR 1472. The results revealed that antagonistic activity of synbiotics was strain dependent. A synbiotic of *Lm. fermentum* FS49.2 completely inhibited *S. typhimurium* within 24 h, while that of *Lm. fermentum* FS48.1 completely inhibited *S. typhimurium* within 12 h. In addition, synbiotics of *Lm. fermentum* FS2.2 and *Lp. plantarum* FS46.2 completely inhibited *S. typhimurium* within 24 h. Notably, the combination of *Lm. fermentum* FS49.2 and *Lp. plantarum* FS46.2 completely inhibited *S. typhimurium* within 12 h and *E. coli* within 24 h, indicating the potential use as a double strain synbiotic.

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