Title : Development of Molecular Technique for Detection of *Bifidobacterium* spp.

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ABSTRACT

The detection of *Bifidobacterium* in functional foods and probiotic products is important to confirm the presence of the microorganism in accordance with product claims, which affects product credibility and consumer confidence. Therefore, this study aimed to develop a molecular biology method for detection of *Bifidobacterium* spp. Bifidobacterium-specific primers were designed based on 103 sequences in the NCBI database. Primers were then tested using polymerase chain reaction with reference *Bifidobacterium* species and other 15 strains belonging to the genera *Streptococcus, Lactobacillus, Lentilactobacillus and Bacillus*. The results showed that two primer pairs targeting the 16S rRNA and D-Xylulose 5-Phosphate/D-Fructose 6-Phosphate Phosphoketolase (*xfp*) genes were specific to the *Bifidobacterium* genus. Optimal conditions were achieved at annealing temperatures of 61–65°C, with a detection limit of 10^2 CFU/mL in milk. In conclusion, the developed primers have potential as a suitable tool for screening and quality control to confirm the presence of *Bifidobacterium* spp. in functional foods and probiotic products.

Keywords: *Bifidobacterium*, 16S rRNA gene, *xfp* gene, Molecular detection, Quality control, Probiotics

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(Associate Professor Dr. Thararat Chitov)