

Isolation and Identification of Probiotic Lactic Acid Bacteria with Cholesterol Lowering Potential and Their Use in Fermented Milk Product

Authors : Preeyarach Whisetkhan, Malai Taweechoatipatr, Ulisa Pachekrepapol

Abstract : Elevated level of blood cholesterol or hypercholesterolemia may lead to atherosclerosis and poses a major risk for cardiovascular diseases. Probiotics play a crucial role in human health, and probiotic bacteria that possesses bile salt hydrolase (BSH) activity can be used to lower cholesterol level of the host. The aim of this study was to investigate whether lactic acid bacteria (LAB) isolated from traditional Thai fermented foods were able to exhibit bile salt hydrolase activity and their use in fermented milk. A total of 28 isolates were tested for BSH activity by plate method on MRS agar supplemented with 0.5% sodium salt of taurodeoxycholic acid and incubated at 37°C for 48 h under anaerobic condition. The results showed that FN1-1 and FN23-3 isolates possessed strong BSH activity. FN1-1 and FN23-3 isolates were then identified for phenotype, biochemical characteristics, and genotype (16S rRNA sequencing). FN1-1 isolate showed 99.92% similarity to *Lactobacillus pentosus* DSM 20314(T), while FN23-3 isolate showed 99.94% similarity to *Enterococcus faecium* CGMCC1.2136 (T). *Lactobacillus pentosus* FN1-1 and *Enterococcus faecium* FN23-3 were tolerant of pH 3-4 and 0.3 and 0.8% bile. Bacterial count and pH of milk fermented with *Lactobacillus pentosus* FN1-1 at 37°C and 43°C were investigated. The results revealed that *Lactobacillus pentosus* FN1-1 was able to grow in milk, which led to decrease in pH level. Fermentation at 37°C resulted in faster growth rate than at 43 °C. *Lactobacillus pentosus* FN1-1 was a candidate probiotic to be used in fermented milk products to reduce the risk of high-cholesterol diseases.

Keywords : probiotics, lactic acid bacteria, bile salt hydrolase, cholesterol

Conference Title : ICPFF 2019 : International Conference on Probiotics and Functional Foods

Conference Location : Miami, United States

Conference Dates : March 11-12, 2019