World Academy of Science, Engineering and Technology
International Journal of Nutrition and Food Engineering
Vol:13, No:03, 2019

Antioxidant Activity of Probiotic Lactic Acid Bacteria and Their Application in Fermented Milk Products

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Abstract : Lactic acid bacteria (LAB) are the most common type of microorganisms that had been used as probiotics also known for many beneficial health effects. The antioxidant activity of LAB is associated with numerous health-protective effects. This research aimed to investigate the antioxidant activity of lactic acid bacteria isolated from Thai sour pork sausage for their application in fermented milk products. Antioxidant activity determined by DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging assay showed that the isolate FN33-7, as 1 of 8 isolated exhibited scavenging activity in intact cell 5-7%, and supernatant 13-16%, intracellular cell free extract 42-48% respectively. This isolate was identified using 16S ribosomal DNA sequence analysis as Lactobacillus plantarum. The effect of milk fermented with L. plantarum FN33-7 on microbial count, pH and syneresis was assessed during refrigerated storage period of 28 days. The strain showed increased viability, pH level decreased, while syneresis increased. These results are similar to dairy products fermented with commercial starter cultures. Additionally, microstructure analysis of fermented milk by fluorescent microscopy showed that curd structure appeared to be dense and less porous in this fermented milk than commercial yogurt. The results of this study indicated that L. plantarum FN33-7 was a good probiotic candidate to be used in cultured milk products to reduce the risk of diseases caused by oxidative stress.

Keywords : Lactobacillus plantarum, probiotics, free radical, antioxidant, oxidative stress, fermented milk products
Conference Title : ICPFF 2019 : International Conference on Probiotics and Functional Foods
Conference Location : Miami, United States
Conference Dates : March 11-12, 2019