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Graduate Management
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**Department of Food Science and Engineering The Thesis
Submitted for the Degree of M.Sc (Food Biotechnology)**

Production of probiotic coconut milk enriched with date kernel powder

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Abstract

Plant milke substitutes are suspensions of dissolved and dispersed plant material in water phase, which look similar to cow's milk. Plant milk substitutes are used as a basic ingredient in many food products such as plant yogurt, cheese, kefir, butter, ice cream, etc. In this research, an attempt is made to produce a non-dairy probiotic product by enriching coconut vegetable milk. The research variables include date kernel powder at five levels: 0, 0.5, 1 and 1.5% and 2 κ -carrageenan at five levels 0, 0.05, 0.15, 0.1 and 2 and two native strains of *Lactobacillus plantarum* and *Lactobacillus Fermentum* with a ratio of 1:1 had a concentration of 10^4 cfu/ML for each strain and each one separately with a concentration of 10^8 cfu/ML. The tests were designed based on the Central Composite Design (CCD) method by Design expert software. In probiotic coconut milk, the pH value of the samples decreased and the acidity increased with the addition of date kernel powder and probiotic strains. In probiotic coconut milk enriched with date kernel powder, the amount of antioxidants and phenol in the samples increased with the addition of date kernel powder, but the addition of κ -carrageenan and probiotic strains did not have a significant effect on antioxidants and phenol amount. By increasing the percentage of date kernel powder, the amount of L^* decreased, the amount of b^* and a^* increased, and probiotic strains did not affect L^* , a^* , and b^* ($P < 0.01$). κ -carrageenan variable has no effect on a^* and b^* ($P < 0.01$), but it increases L^* . By increasing the percentage of date kernel powder and κ -carrageenan, the viscosity has increased. Also, the addition of probiotic strains and fermentation affects the viscosity. By increasing the percentage of date kernel powder and κ -carrageenan, the viability of probiotics has increased. In probiotic coconut milk, all strains had high survival, but *L. plantarum* showed the highest survival after fermentation. The final samples were evaluated in terms of sensory properties (appearance, flavor consistency, overall acceptability) and the results showed that the use of *L. plantarum* strain, date kernel powder and κ -carrageenan coconut milk caused an unfavorable sensory quality compared to There is no coconut milk in the sample.

Keywords: Plant milk, *Lactobacillus*, Formulation, Sensory evaluatio