Sivaporn Phudtal 2007: Effect of Fat Replacer and Sweetener on Qualities of Coconut Milk Ice Cream. Master of Science (Food Science), Major Field: Food Science, Department of Food Science and Technology. Thesis Advisor: Associate Professor Somjit Surapat, Ph.D. 103 pages.

Coconut milk ice cream is one of the most favorite ice cream in Thailand. It contains coconut milk as the fat source. Coconut milk consists of saturated fatty acids more than 90% which can cause higher cholesterol level in blood. Furthermore, coconut milk ice cream consists of 12-20% sugar, therefore, over consumption can cause diabetes and obesity. Recently, consumers are much more interested in taking care of their health. Therefore, reduced fat and sugar ice cream is an interesting new choice for these consumers. Reduction of fat and sugar contents in ice cream lowers its qualities and acceptance. Utilization of (Remyline AX-DR or waxy rice starch) fat replacer and (maltitol syrup) sugar substitute to improve qualities of ice cream was studied. Concentrations of stabilizers (Cremodan® SE709-M) varied at 0.35 0.40 and 0.45% w/w of control coconut milk ice cream (8% fat w/w). Results showed that viscosity and hardness of ice cream increased while overrun and meltdown decreased with increased Cremodan®. Ice cream with 0.40% Cremodan® showed the highest scores in sensory characteristics and overall acceptance. Then fat in coconut milk ice cream (1% fat w/w) was substituted at 0.5 1.0 1.5 and 2.0% (w/w) with fat replacer (Remyline or waxy rice starch). Results revealed that physical properties and sensory characteristics of reduced fat ice cream were significantly different from the control ($p<0.05$). Ice cream with Remyline had higher viscosity and hardness but lower overrun and meltdown than waxy rice starch at the same concentration. While, reduced fat coconut milk ice cream with 1.5 and 2.0% Remyline did not show any significant difference ($p<0.05$) in flavor intensity and mouthfeel. Anyway, 2.0% Remyline showed the most acceptance and was similar to the control ($p\geq0.05$). Then combination of maltitol syrup and sucrose in the ratio of 2.5:7.5 5.0:5.0 7.5:2.5 10.0:0 (w/w) in reduced fat coconut milk ice cream was studied. Results showed that the combined sugars decreased viscosity and hardness of ice cream while increased overrun and meltdown, and were significantly different from reduced fat ice cream with 10% sucrose ($p<0.05$). Ice cream with 2.5% maltitol syrup and 7.5% sucrose was less sweet but its sensory qualities were highly accepted and significantly different from reduced fat ice cream with 10% sucrose ($p<0.05$).

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