

Piyathida Kerdchouay 2008: Utilization of Whey Protein Concentrate and Maltodextrin in Low Fat 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. 78 pages.

Reducing fat in ice cream decreases quality of ice cream, especially texture and flavor. Ingredient modification is one of the ways that can improve sensory evaluations and physical properties of ice cream. Whey protein concentrate (WPC), stabilizer/emulsifier and maltodextrin included in low fat coconut milk ice cream mix formulations were studied. Coconut milk ice cream (8% fat w/w) with varying sugar and skim milk powder (SMP) contents were preliminary studied. Results showed that melting rate and pH values of ice cream increased with higher sugar contents and lower SMP contents. Coconut milk ice cream with 11% sugar and 10% SMP had the highest acceptance score and this formulation was used for further study to reduce fat in ice cream to 2% (w/w). The physical properties of low fat coconut milk ice cream (2% fat w/w) which replacing skim milk powder with WPC at 0.5 1.0 and 1.5% (w/w) did not give significant differences ($p \geq 0.05$) from those with no adding WPC except decreased pH values and melting rate. However, low fat coconut milk ice cream with 1.0% WPC had the highest sensory acceptability score and this formulation was used to study effects of stabilizer/emulsifier on qualities of low fat coconut milk ice cream. Flow behaviors of ice cream mixes with increasing Cremodan 709-M concentration were closer to non-Newtonian behavior than those with increasing Cremodan 734-M and low fat coconut milk ice cream with 0.45% and 0.65% Cremodan 709 had the highest acceptance scores. Results showed that adding maltodextrin in low fat coconut milk ice cream with lower Cremodan 709-M content affected its physical properties significantly ($p < 0.05$), i.e., pH value, consistency index (K) and overrun (%) but higher in flow behavior index (n) and hardness than those without maltodextrin. Panelists gave the highest acceptance score to ice cream with 1.5% DE 5 and 2.0% DE 10 maltodextrin but the former one had lower cost of production.

Student's signature

Thesis Advisor's signature

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