

Narumpa Voranantakul 2006: Effect of Rice Products on Physical Properties of Ice Cream. Master of Science (Food Science), Major Field: Food Science, Department of Food Science and Technology. Thesis Advisor: Assistant Professor Somjit Surapat, Ph.D. 81 pages.
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Dairy ingredients in ice cream could be substituted by rice products in order to reduce the capital cost and value added to rice. When skim milk powder (SMP) in ice cream mix was substituted at 20, 40 and 60%(w/w) with rice flour, its physical properties were significantly different from control ($p < 0.05$). Results showed that higher viscosity of ice cream mixes (154, 174 and 194 cP), higher hardness of ice creams (63, 119 and 150 N), and lower overrun (43, 36 and 35%) than control (50 cP, 12 N and 64%), respectively. Ice cream with 40%(w/w) rice flour substituted was the most acceptable. The study of stabilizers revealed that carrageenan gave the highest viscous mix and hardness of ice cream. Guar gum (GG) and carboxymethyl cellulose (CMC) gave lower properties. Using 0.1 and 0.2%(w/w) CMC, viscosity of rice flour ice cream was 64 cP, hardness of ice cream was 19 N and both were not significantly different from the control ($p \geq 0.05$). SMP was substituted by rice milk powder at 20, 40 and 60%(w/w). The physical properties of ice cream changed in similar pattern of rice flour ice cream, i.e. higher viscosity (218, 399 and 1181 cP), higher hardness (22, 41 and 166 N) and lower overrun (45, 48 and 40%). Sensory evaluation of rice milk ice cream showed that overall acceptance did not show any significant difference ($p \geq 0.05$). When different stabilizers used, their physical properties were significantly different from the control ($p < 0.05$), i.e. viscosity from GG was lower than CMC and 0.1%(w/w) GG was the most overall acceptance.

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Student's signature



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