Salinda Sedtha 2015: Product Development of Corn Pudding from Tapioca Starch and Kappa-Carrageenan. Master of Science (Agro-Industrial Product Development), Major Field: Agro-Industrial Product Development, Department of Product Development. Thesis Advisor: Mrs. Thepkunya Harnsilawat, Ph.D. 138 pages.

This research aimed to develop the corn pudding from tapioca starch (TS) and kappa-carrageenan (kCAR) as a new lactose-free product for people who affected by lactose intolerance. According to the product survey and consumer survey, consumers interested in lactose-free product, sweet corn flavour and the use of sweetener in the product. The study of the effect of total polysaccharides (2 and 3 %w/w) showed that when total polysaccharide increased, peak viscosity, trough, breakdown and final viscosity values were also increased ($p \leq 0.05$). Considering the effect of TS and kCAR ratio (10:0, 9.5:0.5 and 9:1), it found that the higher content of kCAR in the ratio resulted in the decrease of peak viscosity, trough, breakdown and final viscosity values ($p \leq 0.05$). The addition of 10 % sucrose increased all pasting property values ($p \leq 0.05$) and also decreased L* but increased a*, b* and Chroma ($p \leq 0.05$). Moreover, the increasing of total polysaccharides, the substitution of TS by kCAR and the addition of sucrose increased the gel strength and decreased the syneresis of product ($p \leq 0.05$). The sensory analysis showed that the most preferred formula was the formula that consisted of TS:kCAR in 9:1 ratio. The developed formula consisted of 86.9 %w/w sweet corn juice, 10 %w/w sucrose, 2.7 %w/w TS, 0.3 %w/w kCAR and 0.1 %w/w salt. The effect of polydextrose in the sugar-free formula was studied and found that the increasing of polydextrose increased all the pasting property values ($p \leq 0.05$), decreased L*, Hue but increased a*, b* and Chroma and also increased in gel strength ($p \leq 0.05$) but no significantly affected in syneresis. The most preferred sugar-free formula was the 10% polydextrose added. The formula consisted of 86.9 %w/w sweet corn juice, 10 %w/w polydextrose, 2.7 %w/w TS, 0.3 %w/w kCAR, 0.1 %w/w salt and 0.0167 %w/w sucralose. The chemical compositions are as follow; 79.64-80.06% moisture, 15.76-16.39% carbohydrate, 1.89-2.10% fiber, 1.26% protein, 0.43-0.44% ash, and 0.38-0.39% fat. Products could store for 10 days at 0-4 °C which the total microbial and total yeast/mold were under the Thai Community Product Standards. Developed products were accepted by 91% of informed consumers.

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