Porndara Ketthongkam 2015: The Production of Simulated Egg Yolk for Kanom Thong Yoad. Doctor of Philosophy (Tropical Agriculture), Major Field: Tropical Agriculture, Faculty of Agriculture. Thesis Advisor: Assistant Professor Anchanee Utaipatanacheep, D.Sc. 128 pages.

The objectives of this study were to 1) study the effects sodium carboxymethyl cellulose (CMC), Carrageenan and milk powder on simulated egg yolk production, 2) compare the chemical and physical properties, and sensory quality of Kanom Thong Yoad prepared from basic recipe and simulated egg yolk recipe, 3) study the chemical, physical, microbial and sensory shelf-life changes of Kanom Thong Yoad during storage at room temperature (30^0C) and chilled temperature (4^0C). The data were analyzed by the analysis of variance and the difference tests using Duncan's New Multiple Range test (DMRT)

The result was found that simulated egg yolk for Thong Yoad could be produced from 75 g. fresh egg white, 3 g. egg white powder combined with soy protein isolate, water, CMC, carrageenan, milk powder, sunflower seed oil, and egg-yellow pigment at levels of 2.6, 64, 1.3, 1.3, 3.9, 13 and 2.6 % of egg white, respectively. The lecithin was adjusted into 2 levels, 13% and 19% of egg white for emulsion stability. Kanom Thong Yoad produced from basic recipe and simulated egg yolk with 13% and 19% of lecithin composed of cholesterol as following : 15.29±0.35, 1.76±0.10 and 1.8±0.11 mg/100g., respectively. Protein contents were 13.73±1.30, 10.61±1.01, and 8.83±0.90%, respectively and the hardness values were 2511.85±10.76, 1420.76±9.59, and 1287.06±11.45 g, respectively. The results of acceptance tests from 100 customers showed that Thong Yoad from simulated egg yolk with 19% of lecithin had the highest score for color, oder, firmmer, and over all acceptance with the statistical significant difference from the other two products ($p \leq 0.05$). The shelf-life studies of the basic formula and the Kanom Thong Yoad produced by the simulated egg yolk containing 19% lecithin indicated that the former's shelf-life at 30^oC and 4^oC were 3 days and 4 weeks, respectively. While the shelf-life of the latter at 30^oC was 7 days as determined by total plate count and only 4 days when assessed by sensory evaluation. At 4^oC, this experimental product could be kept for 8 weeks. After keeping the basal samples at both 30^oC and 4^oC, the values of L*, hardness, fracturability, springiness, cohesiveness, gumminess and chewiness were significantly decreased ($p \leq 0.05$). Total acid from titration and TBA were significantly increased ($p \leq 0.05$), while the a_w at 30^oC was significantly increased ($p \leq 0.05$), but that at 4^oC was not significantly decreased ($p > 0.05$). For the shelf-life of the sample product from simulated egg yolk with 19% of lecithin at 30^oC showed that L* and b* values were significantly decreased ($p \leq 0.05$). All the texture characteristics detected by means of LLOYD TA 500, including a_w and TBA were significantly increased ($p \leq 0.05$). The result was also shown that at 4^oC, this experimental product provided the significantly increase values of cohesiveness, gumminess, resilience and TBA ($p \leq 0.05$). Kanom Thong Yoad made from the simulated egg yolk with 19% of lecithin which was developed in this study combined with 32% of Thong Yoad flour could provide the longer shelf-life, the higher score of acceptance and the lower cholesterol content (88%) than the basic recipe.

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