Nonglak Ngampeerpong 2014: Development of Reduced Sugar Roselle Jam Product. Master of Science (Agro-Industrial Product Development), Major Field: Agro-Industrial Product Development, Department of Product Development. Thesis Advisor: Assistant Professor Pisit Dhamvithee, Ph.D. 142 pages.

The aim of this research were to study the effect of drying methods on the roselle qualities and to develop the roselle jam from the dried roselle. Two methods of drying (tray dry method at 50, 60 and 70 ^{O}C and microwave vacuum oven at 1920, 2160 and 2400 watts) were conducted. The results showed that the microwave vacuum oven had less drying time compare to tray dry method. The Lewis's and Page's model were used to describe the drying characteristics of dried roselle. The result showed that Page's model (R^2 = 0.95-0.97, RMSE = 0.08-0.11) was appropriated for describing the drying characteristics of dried roselle than those Lewis's model. The dried roselle from microwave vacuum oven had more the higher rehydration rate, anthocyanin content and antioxidant activities than the tray dry method. At 1920 watts of microwave vacuum oven was the suitable condition for maintaining the anthocyanin content (5280.11 mg/100g dried roselle). Laddering interview technique was used to investigate the consumer behaviour including product attribute, consequent and value. A hundred participants were enrolled to answer the health and nutrition questionnaire, then cluster analysis was used to classify all participants into 3 groups. Three groups were found in this study and all groups were interesting in sugar substitution by sweetener and antioxidant properties of plant. Group 2 had the highest scores of question about health and nutrition. Types of sweetener and their levels were carried out by mixture design (7 formulars). Also, 7 formulas were used to evaluate anthocyanin content and sensory evaluation. The results showed that formula 1 (175.44 g sugar, 0.133 g stevioside and 0.066 g sucralose per 500 g jam) had highest scores of overall liking (6.8). As a result of Preference mapping, it was found that stability, spread ability, adhesiveness and appearance were the key attributes of roselle jam. The formular 3 were chose because it had low sugar content and high anthocyanin. For texture development, the high methoxyl pectin and low methoxyl pectin 3 levels (0.8, 1.0 and 1.2%) were carried out. It was found that it had no significant different ($p > 0.05$) in term of anthocyanin content. However, 1.2% of high methoxyl pectin jam was highest score of overall liking. For consumer test (n=150), the overall liking score had slightly over to like moderately and provide information of healthy jam to consumer and determine by McNemar's test ($p \leq 0.05$). In addition, qualities of roselle jam during storage for four months were studied. The results showed that anthocyanin content was decreased when temperature and time of storage were increased ($p \leq 0.05$).

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