PROCESSING OF BANANA BARS WITH INULIN AS EMERGENCY FOOD

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ABSTRACT

There have been many disasters happened in Indonesia and as a consequence, many families had to stay in temporary camps. One of the problems related to this situation is providing an adequate, convenient, and nutritious foods for the refugees to maintain their health status in good condition especially for the first few days until the stable food come. According to Zoumas et al (2002), emergency food product must contain 10-15% protein, 35-45% fat, and 40 to 50 percent carbohydrate. One of the examples of an emergency food product is a snack bar. The objective of this study was to obtain the best formulation, baking temperature and time to produce banana bars acceptable by sensory evaluation and contained energy that meet emergency food requirements. This research consisted of three steps. First step was to produce banana and tempe flour as the primary ingredients of the banana bars, second step was to obtain the best formulation and baking parameters to produce acceptable bars based on sensory evaluation, and the third step was reformulation to adjust the macronutrient content of the banana bars and physico-chemical analysis of the products. The first step of the research resulted in banana and tempe flour similar to those obtained by other researchers. The second step produced formula II containing 28.57% banana and tempe flour, 42.86% glutinous rice flour and margarine, 57.14% sugar, 5.71% inulin, and 22.86% water and baking parameters of 100°C for 20 minutes followed by baking at 140°C for 40 minutes. Using the formula and baking parameters above, banana bars was analyzed for proximate analysis, however, the results indicated that the macronutrient of protein did not meet the requirement of emergency food product. Therefore, a reformulation was conducted to produce desired product in step three. In the third step, four formulations containing banana flour, tempeh flour and inulin were evaluated for proximate analysis, physical, microbiological and sensory evaluation. Because of the reformulation, baking temperature and time was also adjusted. Based on the overall attribute of sensory evaluation, formula A and D was not significantly different and both of them were the most preferred product by panelists. The formulation resulted in products containing energy of 111.72 calories and 110.60 calories. Macronutrient content of formula A didn’t meet the requirement of emergency food product, but macronutrient content of formula D meet the requirement of emergency food product. So, formula D was evaluated in other evaluation. Evaluation of banana bars made with formula D suggested that the water activity was 0.308 in 30.3°C. Texture analysis of the banana bar showed that product had peak force of (+) 1921.3 g force; 0.870 mm that showed the value of hardness. The banana bar produced was crunchy, crispy, and did not form crumb. The colour of the product was golden brown and analysis of the product showed L value of 47.75 %, a value of +9.68, b value of +24.43 and ‘Hue value of 68.38. The microbiological result shows that all of the formulation has a Total Plate Count of < 2.5 x 10^2 col/gr and Total Mold of < 1.5 x 10^2 col/gr which were lower than that required for cookies 1 x 10^6 col/gr for Total Plate Count and 1 x 10^5 col/gr for Total Mold.

Keywords : emergency food, snack bars, banana, tempeh, inulin