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Substitution of Cassava Peel Flour In Making Siomai Skin

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ABSTRACTS

Cassava peel flour comes from the cassava plant which has several ingredients that are beneficial to the body, including 8.11 grams of protein, 15.20 grams of crude fiber, 0.22 grams of pectin, 1.29 grams of fat, 0.63 grams of calcium. Utilization of cassava peel flour can be developed into a food preparation as a substitute for some of the use of wheat flour, one of which is making siomay skin by using cassava peel flour substitution. The purpose of this study was to determine consumer acceptance of siomay skin products with cassava peel substitution based on color, aroma, texture, taste, and overall impression. This study used experimental methods and RAL design (completely randomized design). The development of siomay skin products with cassava peel flour substitution was carried out by replacing some of the use of wheat flour by substituting cassava peel flour in making siomay skins with 3 treatments, 245 (20% cassava peel flour: 80% wheat flour), 425 (cassava peel flour) 30%: 70% wheat flour), 542 (cassava peel flour 50%: 50% wheat flour). The instrument used to measure consumer acceptance was using a questionnaire with a Likert scale in the form of a checklist and using a semi-trained panel of 20 people. Acceptance analysis is done by analyzing the data that has been collected which is then processed using descriptive analysis with interval class sizes. The results showed that the product with the code 245 was the product with the highest level of acceptance by consumers. Based on the overall results, product 245 is the recommended product for production.

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1. INTRODUCTION

Cassava in Indonesia is the most important crop compared to other tubers. Cassava is one of Indonesia's local sources of carbohydrates which ranks third after rice and corn. This plant is the most potential raw material to be processed into flour (Center for Agricultural Postharvest Research and Development, 2011).

Currently, the development of cassava productivity in Indonesia tends to increase. During 1980-2016 the average growth rate increased by 2.64% per year, namely productivity from 97.51 ku/ha in 1980 to 239.13 ku/ha in 2016. In 2016 it is estimated that there will be a cassava surplus of 327.27 thousand tons and until 2020 it is estimated that there will still be a surplus of 469.29 million tons and 708.31 thousand tons, respectively. In accordance with the latest data, if the cassava harvested area in Indonesia in 2019 is 0.63 million hectares, it can produce approximately 16.35 million tons with common varieties (Center for Agricultural Data and Information Systems of the Ministry of Agriculture for Cassava Production, 2020).

The wider the planting area of cassava (Manihot esculenta Cranz), the more cassava produced. Each kilogram of cassava produces 15 – 20% of cassava peel waste (Muhiddin. et al, 2000). Cassava peel is waste from peeled cassava. Cassava peel is the main food waste in developing countries. So far, cassava peel has only been used for animal feed. Cassava peel is a product with high economic value. Cassava peels can be processed into food products such as dried cassava peels, cassava peel chips, lunkhead, dry can be dried and ground and then made into flour. Good quality cassava peel used as a food product, namely cassava peel which has a sweet taste and good quality. This can be known by choosing a good type of cassava, by looking at the color of the cassava peel, if the cassava peel color is yellowish (butter) it can be ascertained that the cassava has good quality (Salim, 2011).

Nowadays, cassava peel has been used as cassava peel flour. Cassava peel flour is the result of processed cassava peel waste which is very easy to make and uses simple tools. Cassava peel flour is made from cassava husks that have been cleaned first, then boiled, then dried in the sun until completely dry, then pureed and then filtered (Salim, 2011). According to Rukmana (1997) cassava peel contains a lot of nutritional content that can be utilized for the body. The energy and nutritional content of cassava peel in 100 grams of cassava peel waste is 8.11 grams of protein, 15.20 grams of crude fiber, 0.22 grams of pectin, 1.29 grams of fat, 0.63 grams of calcium. Processing of cassava peel flour can be used in the manufacture of wet noodles, dry noodles, and the content of elasticity levels. The level of elasticity found in cassava peel flour comes from the starch in the cassava peel. The cassava peel starch can be obtained by processing the cassava peel into flour, by cleaning the white cassava peel and then drying the cassava peel for approximately 3 days or if using a tool it can be at a temperature of 200°C and with a time of 35 minutes. The starch contained in this cassava peel flour can be used in the manufacture of wet noodles, dry noodles and siomay skins. Siomay is made from siomay skin which is made from wheat flour, water, eggs, and chicken meat which generally contains chicken meat, shrimp, eggs, sesame oil, soy sauce, fish sauce.

Siomay skin has the characteristics of being flexible, supple, and when folded there are no shards (Apriany, 2015). A good siomay skin dough has a bright yellow color, a smooth surface, has cooking tolerance, and is resistant to cracking during freezing (Hou, 2010). Changes in the quality of siomay skin during storage are closely related to the main components in the pasta formulation, namely starch, gluten, and water (Curti et al, 2015). In

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this study, it has the privilege of using siomay skin made from cassava peel flour which is not yet on the market so it has its own peculiarities.

Based on this, the author as a Catering student conducted research by making cassava peel flour himself to determine the maximum level of substitution of cassava peel flour in making siomays, characteristics and acceptability of cassava peel flour used as siomay skin products. Therefore, the authors conducted a study entitled "Substitution of Cassava Peel Flour in Making Siomay Skin".

2. METHODS

The method used in this study is an experimental research design using RAL (completely randomized design) consisting of 3 3 treatments coded 245 (with 20% cassava peel flour substitution), code 425 (with 30% cassava peel flour substitution), code 542 (with 50% cassava peel flour substitution). Data was collected using a hedonic test questionnaire consisting of 5 hedonic acceptability scales, namely 1 = dislike very much, 2 = dislike, 3 = somewhat like, 4 = like, 5 = very much like.

Analysis The data that has been collected for the Hedonic Test is processed using Descriptive Analysis due to comparing the results of each indicator. Furthermore, the results of the data that have been processed are then presented in graphical form. As for Consumer Attractiveness, the author uses Descriptive Analysis with interval class sizes.

3. RESULTS AND DISCUSSION

The product development stage begins with collecting 3 siomays skin recipes which will later be used as the basic recipe for making siomay skins with cassava peel flour substitution. The results of the 3 siomay skin recipes can be seen in table 3.1 as follows:

Table 3.1

Ingredients	Amount
Flour	120 gr
Warm water	65 ml
Tapioca	2 gr
Egg	1
Salt	½ tsp

After getting the siomay skin recipe, the stages of product development to get the desired product by the author have been carried out with 5 trials. In the manufacture of the first product, the author made an original product from siomay skin that has not been substituted with cassava peel flour. The resulting product is good and in accordance with siomay skin in general. After making the original product, the author made a second product using 100% cassava peel flour in the dough, and the results obtained were that the product could not be formed at all and could not blend. Then the author made a third product by using a substitute with 50% cassava peel flour, but the results obtained were that the siomay skin dough lacked starch which made the dough difficult to form, besides that the dough tasted bitter and had a dark color. Furthermore, in the fourth product development, the author tried to change the percentage by using 30% cassava peel flour substitution, but

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the results obtained were that the dough was still slightly unified but could be formed, and the resulting bitter taste was gone. Then the author again conducted the fifth trial using 20% and the results obtained were that the resulting siomay skin could be well shaped, had a light brown color, and did not cause a bitter taste when consumed.

The author also found obstacles during the experimental process of making siomays skin with cassava peel flour substitution, namely in the second and third experiments, namely the substituted siomay skin dough could not blend perfectly, which was due to the lack of wheat flour starch in the dough so that the dough could not be shaped and produced bitter taste. Furthermore, in the fourth experiment, the author improved the processing of siomay skins by substituting cassava peel flour by changing the ratio of the percentage of cassava peel flour and wheat flour, but the results obtained were still a little less united but the dough could be formed and the resulting bitter taste was no longer there is.

In the fifth experiment, the author tried to improve the processing of siomay skins by substituting 20% cassava peel flour, which is by replacing the percentage ratio of cassava peel flour with wheat flour, and the results obtained the dough can blend perfectly, then the dough can be formed with easy, then there is no bitter taste in the dough.

Product Development Results:

Tablel 3.2

Siomay Skin Formula with Cassava peel Flour Substitution

Product Code		
245	425	542
		
Siomay skin material substitute for cassava peel flour		
24 gr Cassava peel flour	36 gr Cassava peel flour	60 gr Cassava peel flour
		
96 gr flour	84 gr flour	60 gr flour
2 gr Tapioca	2 gr Tapioca	2 gr Tapioca
65 ml warm water	65 ml warm water	65 ml warm water
1 egg	1 egg	1 egg
½ tsp salt	½ tsp salt	½ tsp salt

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In table 3.2, it can be seen that there are differences in the formulas between the three products that have been made. Based on the trial of the three siomay skin products with cassava peel flour produced, they have differences in their characteristics, which can then be seen in table 3.3.

	Product Code		
Indicator	**542**	**425**	**245**
Color	Siomay's skin color is dark brown to almost black	Siomay's skin color is slightly dark brown and no longer looks blackish.	Siomay's skin color is lighter than light brown.
Scent	The aroma of cassava peel flour is too strong so it is like the aroma of coffee	The smell of cassava peel flour is not too strong	The aroma produced is like siomay skin in general
Taste	The resulting taste is bitter	The resulting taste is not too bitter	The resulting taste is not bitter and neutral
Texture	The texture obtained is not smooth	The texture you get is already smooth and soft	The texture obtained is smooth and soft
Appearance	Appearance is not attractive because the resulting color looks dark	The appearance has started to be attractive because the resulting color is not too dark	Attractive appearance

In this study, the product coded 542 was the product with the highest number of substitutions for cassava peel flour, namely 50%, which caused a dark color, the skin was easily broken because cassava peel flour contained a little starch, then the texture was not smooth and gave off a coffee-like aroma. . Meanwhile, if the added substitution is reduced, it will produce good quality siomay skin, as in the product with code 425 with 30% substitution and product with code 245 with 20% substitution.

Based on the data obtained from 20 semi-trained panelists, the product with code 245 (siomay skin with 20% cassava peel flour substitution) has a score of 396, for the product with code 425 (siomay skin with 30% cassava peel flour substitution) has a score of 346, then for products with ode 542 (siomay skin with 50% cassava peel flour substitution) has a score of 314. From these results for two products with code 245 and product code 425 are included in the accepted category because they have a score between 340-420, while for with a code of 542 it is included in the category of quite acceptable because it has a score between 260-340. The score is obtained from the final total score of 5 hedonic test categories with 20 semi-trained panelists.

4. CONCLUSION

Based on the research that has been done by the author, the hedonic test to 20 semi-trained panelists can be concluded that the siomay skin product with 20% cassava peel flour substitution is the product that shows the highest level of preference based on the

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categories of color, taste, texture, and aroma. Then the siomay skin product with 30% cassava peel flour substitution is a product that shows the second level of preference among the three products. As for the cassava peel product with 50% substitution, it is the product that shows the lowest score based on the overall category. The results of the acceptability analysis, the product with the substitution of cassava peel flour by 20% is the product with the largest acceptability score of 396 and is included in the accepted category. Then the product with the substitution of cassava peel flour by 30% is included in the accepted category with a score of 346, while the product with the substitution of cassava peel flour by 50% becomes the product with the lowest score with a score of 314 and is included in the category of moderately acceptable.

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