ACCEPTANCE OF MINI BLACK PIE SUBSTITUTION BLAC RICE FLOUR

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ABSTRACT

Wheat is a subtropical plant is difficult to grow in Indonesia. The main factors that constrain wheat cultivation in Indonesia is the air temperature and rainfall. The use of excessive grain causes dependence on imports from other countries. Black rice (Oryza sativa L.) is one of the cereals were easily found in Indonesia. The climate is suitable for growing black rice bubidaya facilitate mass. Black rice contains nutrients better than white rice and brown rice. This study aims to [1]to find pie product recipe substitutions black rice flour, [2]get information from community acceptance of the product pie substitution of black rice flour, 3 find sustitusi nutrient content in black rice pie. The method used is the Research and Development with the 4D model (define, design, develop, disseminate). In this study, pie products with the name Mini Black Pie substituted with black rice flour as much as 0%, 25%, 30% and 35%. Fill pie which is generally a fla and sliced fresh fruit will be replaced with a cake. The test results showed that the pie with 35% substitution can be well received by the community.

Keywords: Black rice, black rice flour, pie

INTRODUCTION

Wheat is a subtropical plant is difficult to grow in Indonesia. The main factors that constrain wheat cultivation in Indonesia is the air temperature and rainfall. As a source of food that is widely consumed after rice and maize, wheat usage needs very influential on wheat imports from other countries. The content contained in wheat is superior compared to other cereals, namely a higher protein content and gluten compounds. Gluten is a compound belonging only to wheat and not present in other cereals, which makes the superior power development in wheat flour.

The use of wheat in the processing of food products to be one of the main ingredients are highly favored by many people in Indonesia. The taste of food products made from wheat is more familiar and readily accepted by the tongue of everyone. The stability of flavor also makes wheat became one of the reasons widely used in baked goods and pastries.

Black rice (Oryza sativa L.) is one of the cereals were easily found in Indonesia. Suitable climate makes black rice is grown massively in Indonesia. Black rice has properties that are better than brown rice and white rice. Black rice can increase the body's resistance to diseases, repair damaged liver cells, preventing impaired kidney function, prevent cancer, as antioxidants and prevent anemia. The content contained in the black weight is fiber and a high anthocyanin content, so good for digestion and antioxidants for the body.

Pie pastry is simple product in terms of its ingredients: flour, shortening, water, and salt. Yet success or failure depends on how the shortening and flour are mixed and how the gluten is developed. The key to making pie dough us proper technique, and remember the technique better if you undestand why the work. Generally, pastry dough that is baked then filled with fla and topped with fresh fruit is then covered with pastry dough. In general, sold in the market pie is a pie that is made from flour, butter, and milk.

Producing refined pastry will certainly increase the number of wheat import needs. This leads to dependency on other countries,

then the impact of the lack of utilization of local food.

Based on the background that has been presented, this study will seek pie recipe mini black black rice flour substitution is preferred by the community, and the level of preference and public acceptance of pie substituted with black rice flour. The hope is that the use of black rice more leverage and reduce grain imports.

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METHOD

The method used in this research is the Research and Development. And the model used is 4D. This model was developed by S.Thiagarajan, Dorothy S.Semmel, and Melvyn I.Semmel (1974: 5), the 4D development model consisting of Define (definition phase), Design (design), Develop (development), and Disseminate (deployment) , Methods and models have been aiming to produce products that will be developed and tested for feasibility validation test of public acceptance. 4D stages are as follows:

a. Define
At this stage, to establish and define the product pie will have one of three prescription options. This stage products are rated by one supervisor and three friends one guidance.

Table 1. Reference Products Crust Pie Recipe

material	recipe 1	recipes	recipe 3
Flour	300 gr	200 gr	150 gr
Granulated sugar	3sdm	50	30 gr
Salt	½ tsp	½ tsp	
Unsalted butter	75 gr		75 gr
Egg	1 point		
Ice water	5 tbsp		2 tbsp
Margarine	100 gr	100 gr	
Egg yolk		1 point	1 point
Vanilla Extract		½ tsp	

b. Design
At this stage of the product design chosen reference formulation 3 recipes developed with rice flour substitution with different percentages. Starting

from the 25%, 30% and 35%. Of predetermined formulations will be selected first product to be developed ditahap substitution selected next.

Table 2. Formulation Crust Pie Recipe

Material	Reference recipes	recipe 1	recipes 2	recipe 3
Cake flour	150 gr	112.5 g	105 gr	97.5 g
Black rice flour	-	37.5 g	45 gr	52.5 g
Granulated sugar	30 gr	30 gr	30 gr	30 gr
Unsalted butter	75 gr	75 gr	75 gr	75 gr
Egg yolk	1 point	1 point	1 point	1 point
Ice water	2 tbsp	2 tbsp	2 tbsp	2 tbsp

c. Develop
Develop phase is to develop product development. At this stage the product recipe pie that has been previously developed ditahap elected again so different from the reference product. Products will develop a validation test I and II and Proximate Test, to determine product development has a characteristic similar to the reference product. Validation is done by expert panelists as much as 2 people.

Table 3. Recipes Product Development

Material	recipes		recipe	
	Skin	Stuffi	Skin	Stuffin
Wheat flour	150 gr	100gr	97.5 g	100 gr
Black rice flour	-	-	52.5 g	-
Granulated sugar	30 gr	-	30 gr	-
Unsalted butter	75 gr	-	45 gr	50
Egg yolk	1 point	3	1 point	3 eggs
Ice water	2 tbsp	-	2 tbsp	-
Margarine	-	100	30 gr	50
Chocolate	-	125	-	-
White Chocolate	-	-	-	125 gr
Egg whites	-	2	-	2 eggs
Sugar	-	125	-	125 gr
Milk powder	-	25 gr	-	25 gr
Charcoal	-	-	1 g	-

d. Disseminate
The last stage is the stage of trials conducted Dissaminate sensory after validation I and II were conducted by Expert Panelists and has

improved product making it more feasible at present to the consumers at large. At this stage the product will have limited acceptance testing is carried out by semi-trained panelists 30-40 (students) and broad public acceptance test (Final Project Hospitality Exhibition) in less than 80 panelists.

Place and time of research
Place of research conducted at the Laboratory of the Department of Technical Education Boga Boga and Clothing Faculty of Engineering, Yogyakarta State University starting from January 2019- May 2019.

Research tools
Basin, mixer, oven, spatula, small pie molds, scales, bowl.

RESULTS AND DISCUSSION

Research carried out aims to find the recipe Mini Black Pie are preferred by the community and the nutrients contained in the product. After going through the stages of research to reference recipes and recipe formulation is determined, then generate the data in Table 4 as follows:

Table 4. Mini Black Pie In A Few Comparisons

Pretentase	flavor	Color	Texture	Smell
25%	Corres pondi ng	rather accordance	somewh at appropri ate	Corres pondin g
30%	Corres pondi ng	somewhat appropriate	Somewh at appropri ate, slightly gritty texture	Corres pondin g
35%	Corres pondi ng	Look pale and brown turbid	Sandy but still acceptab le	Corres pondin g

From the results of Table 4, we can conclude that the highest substitution as much as 35% can still be accepted by the panelists sensory

properties although there is a slight difference. So elected substitute as much as 35% of black rice flour in the manufacture Pie.

After the design stage then proceed to the next stage of validation yatitu I and II. And the results of the validation test in the present ditabel 5 below:

Table 5. Results of Validation

Characteristics	Reference products	Product Development
Color	3	4
Smell	4	4
Texture	4	4
Flavor	4	4
Over all	3.75	4

Validation Test Data from Table 5, the expert panelists judged that the product is worth the limited scale tests to stage the semi-trained panelists.

Stages after a validation test is the test of a semi-trained panelists of 30 panelists. The test results are shown in Table panelists limited to 6 below:

Table 6. Test Results Semi Trained Panelist

characteristics	Reference products	product Development
Color	3:03	3.43
Smell	3:23	2.76
Texture	3:23	3
Flavor	3.2	3.1
Over all	3.16	3

The test results of semi-trained panelists outlined in Table 6 it can be concluded colors pie in product development has a higher value than the reference product for product development of black different from the products usually are yellowish brown. Aroma product development of lesser value because there are aromas of black rice and charcoal that are less familiar. Tesktur reference product has a high value because it is not substituted Leih with black rice flour. Flavor product development gets a value greater than the reference product. Overall product development

can be accepted by the panelists semi-trained and have a value that is not teraput away with the reference product.

Having done the test phase semi trained sensory panelists then product development in the proximate test with a sample of 100 grams. Proximate test is testing the nutrient content of a food, such as water, ash, fat, total protein, crude fiber, and carbohydrates. Proximate test is used as reference content on the nutritional value of food packaging labels. The test results are presented in tables 7 proximate the following:

Table 7. Test Results Proximate

Anaslis	Deuteronomy I	replay II
Water	7.65%	7.75%
Ash	0.84%	0.82%
protein	7.31%	7.22%
Fat	30.14%	29 27%
crude fiber	Signed	Signed
Carbohydrate	54.06%	54.94%

- Signed: undetectable

The final stage of product testing is the testing of untrained panelists of 80 panelists. Sensory testing results are presented in Table 8 as follows:

Table 8. Test Results Panelists Untrained

characteristics	product Development	Criteria
Color	3:57	Accepted
Smell	3:53	Accepted
Texture	3:55	Accepted
Flavor	3.63	Accepted
Over all	3.66	Accepted

Presentation of the results of untrained sensory test table it can be concluded that the product Mini Black Pie can be accepted by people of color, aroma, texture, flavor, and overall.

CONCLUSION

Based on the results of the research process has been implemented then:
1. Define phase, the selected first reference recipes are recipes to 3
2. Stage design, the substitution of 35% of black rice flour into the highest acceptable substitutes for sensory of color, aroma, texture, flavor.
3. In the semi-trained panelists test as many as 30 product development Mini Black Pie can be received well.
4. In untrained panelists test as many as 80 people product Mini Black Pie can be received by the general msyarakat well.

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