MAKING OF MINI MUFFIN JEWAWUT AS MUFFIN INNOVATION FROM LOCAL

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ABSTRACT

Muffins are bakery products originating from the UK and are now widely known by the people of Indonesia. Muffins are classified as quick breads, which are bakery products that are made without going through the fermentation process. Muffins use flour as raw material. The high level of use of wheat flour has caused a high amount of flour imports in Indonesia. According to BPS (2009), during 2009 the amount of flour imported by Indonesia was ± 256 million tons. To overcome this, bakery products that do not use wheat flour are currently being developed but using flour derived from agricultural products in Indonesia, one of which is millet. Millet flour has a high component of dietary fiber content which is 8.21% and low amylose content 6.96% -9.29 (so it is sticky and low development rate). These components can affect the physical properties of mini muffins such as the color, taste, and organoleptic properties of mini muffins. The main ingredients of this mini muffin are medium protein wheat flour and the ingredients for making mini muffins substituted with tepung jewawut are butter, icing sugar, egg, fresh milk, milk powder, baking powder, cinnamon powder, chocolate block. The research design used was a randomized block design (RBD) with a single factor, namely the substitution rate of flour by millet flour with 3 levels, namely 15%, 35%, and 50%. The parameters tested were water, ash, fat, total protein, crude fiber, and carbohydrates by diff with total carbohydrates 51.58% and 51.21% which took 2 replications. The results showed that substitution of millet flour gave a significant effect with $\alpha = 50\%$.

Keywords: mini muffins, wheat flour, millet flour

INTRODUCTION

Biji jewawut have been used as bird feed only, but many developments in local ingredients are processed into flour, one of which is millet seeds processed as millet flour through a 4-hour immersion process which produces the best physical, chemical and organoleptic characteristics with a yield value of 99.94%; kamba density 0.61 g / ml; water content 6.23%; ash content of 1.46% and ALB 1.152%. Jewels contain high fiber foods such as hemicellulose, cellulose, phenolic esters, and dlikoprotein. While other components such as glucan, and pectin are soluble dietary fibers.

Mini muffins are bakery products originating from the UK and are now widely known by the people of Indonesia. Muffins are classified as quick breads, which are bakery products that are made without going through the fermentation process. Mini muffins use wheat flour as the main raw material. High levels of wheat flour use have caused a high amount of flour imports in Indonesia. To overcome this, products are now beginning to be developed using local materials such as millet seeds processed into millet flour.

This substitution of millet flour aims to reduce the use of flour, efforts to diversify mini muffins, increase the empowerment of millet seeds and increase the added value of mini muffins in the form of fiber and vitamins, very suitable for consumption by people who are on a diet program. The substitution rate of millet flour used is 15%, 35%, 50%

RESEARCH AND METHOD

This research was conducted at the Catering Laboratory, Department of Food and Clothing Engineering Education, Faculty of Engineering, Yogyakarta State University. The time of the study was conducted from October 2018 to April 2019**.**

The method used in this study is a type of research and development with the 4D concept. Stage 4D as follows:

a. Define

b. Design

c. Development

d. Disseminate

This stage starts from defining or defining. In maintaining the quality of development products so that they remain in accordance with the characteristics of standard products, the development product formula must still use standard prescription references as controls. In processing the millet muffin mini products, recipes are used from sources that have been studied, then compared with other formulas to determine the standard formula.

Table 1. Standard mini muffin recipe for millet

Ingredients	**Total**
Butter	250gr
Icing sugar	250gr
Egg	4 pcs
Fresh milk	150ml
Milk powder	15gr
Baking powder	15gr
Flour segitiga biru	400gr

Design or design. In determining the product developed, product specifications are needed. Specifications of mini muffin products developed with the name sekoi mini muffin (mini muffin millet). This product is a development product of mini muffins with brownish-brown raw material, round shape with cupcases, a distinctive aroma of mini muffins and millet flour, slightly rough and fibrous texture, slightly sweet taste and serving in mini cupcases. Sample code 310 (reference product) and sample code 311 (product development).

Develop or develop. At this stage, the development of a standard mini muffin recipe with millet flour. The following is a recipe for modifying stage 1 mini muffins in table 2.

Table 2. Modified mini muffin recipe for millet stages 2

Ingredients	Total
Butter	250gr
Icing sugar	250gr
Egg	4 pcs
Fresh milk	150ml
Milk powder	15gr
Baking powder	15gr
Flour segitiga biru	200gr
Flour jewawut	200gr
Salt	½ sdm

Tabel 3. Modified mini muffin recipe for millet stage 3

Standard Material	modification 1	Modification 2	Modification 3
Butter 250gr	-	125gr	125gr
Icing sugar 250gr	-	-	-
Egg 4pcs	-	-	-
Fresh milk 150ml	-	-	-
Milk powder 15gr	-	-	-
Baking powder 15gr	-	-	-
Flour protein low 400gr	-	200gr	200gr
Salt	-	½ sdt	-	-
Margarin	-	-	125gr	125gr
Cinnamon powder	-	-	-	¼ sdt
Chocolate block	-	-	-	250gr

Comparison of medium protein wheat flour and millet flour on the product development (modification) of mini muffin millet is medium protein wheat flour: jawawut flour = 50%: 50% taken from a standard recipe of mini millet muffins with medium protein flour 400gr.

Development of millet mini muffin products through several procedures, namely:

a. Validation and revision 1: making standard products.
b. Validation and revision 2: revised standard products.
c. Validation and revision 3: making standard products and modified products.
d. Validation and revision 4.5: based on previous validation entries.
e. The limited scale preference test with 60 rather trained panelists.

Disseminate or spread. At this stage all the mini muffin products on display are as attractive as possible and according to their respective themes. Panelists at the product exhibition are a broad community.

Product Manufacturing and Testing Tool

Table 4. Tools for Making Mini Muffin Products

Type of tool	Tool's name	function
Processing equipment	Stove	Bring out a mini muffin
	Oven	Roasting mini muffins
	Pan	Melt butter and margarine
	Basin	Mix the dough

Processing aids	*Spatula*	Mix the dough
	Chef knife	For chopped chocolate block
	Cutting board	Pedestal cut
	Spoon	stirring
	Piping bag	For container dough dosage
	Scales	To weigh the dough
	Mini cupcases	To print

Testing material and tools of mini millet muffins are as follows:

a. Serving plates or opp plastic packaging and mini cupcases
b. Sensory test sheet
c. Drinking water
d. Pen

Analysis Methods The data used were for validation test data analyzed when sensory panelists were trained to be analyzed with graphs, and preferred test data when untrained panelist sensory tests (exhibits) with percentage.

RESULTS AND DISCUSSION

Validity test results with qualitative descriptive analysis

Tabel 5. Form of Lecturer Validation Test I

Characteristics	Observation result	
	Standard Products	Modified Products
Colour	Brownish yellow	Brownish
Aroma	Sting Butter	Jewawut Flour
Texture	Soft	Rude
Taste	Sweet	Sweet little savory
Whole	Nice	Nice

Repair suggestions: the taste and aroma of butter is too stinging, you need to add a little salt.

Table 6. Form of Lecturer Validation Test II

Characteristics	Observation result	
	Standard Products	Modified Products
Colour	Brownish yellow	Brownish
Aroma	Butter	Typical jemawut flour
Texture	Soft	Bit rough
Taste	Sweet	Enough
Keseluruhan	Nice	Nice

Repair suggestions: butter is replaced with margarine, some gr, millet flour roasted.

A. Sensory Test Results Little panelists are trained.

Taste310

Nilai	Frequency	Percent	Cumulative Percent
1	1	3.3	3.3
2	1	3.3	6.7
3	20	66.7	73.3
4	8	26.7	100.0
Total	30	100.0	

Taste311

Nilai	Frequency	Percent	Cumulative Percent
1	2	6.7	6.7
2	11	36.7	43.3
3	13	43.3	86.7
4	4	13.3	100.0
Total	30	100.0	

Picture 1. Sensory Sensory Test

Based on the results above, it can be seen that the range of taste values given by the panelists in codes 310 and 311 are 1 to 4. The two values most often given by panelists are 3 by 66.7% in code 310 and 43.3% in code 311. Whereas the mean codes 310 are 3.17 and 311 are 2.63 with standard deviation of 0.648 and 0.809, respectively.

Colour310

Value	Frequency	Percent	Cumulative Percent
2	2	6.7	6.7
3	20	66.7	73.3
4	8	26.7	100.0
Total	30	100.0	

Colour311

Value	Frequency	Percent	Cumulative Percent
2	1	3.3	3.3
3	15	50.0	53.3
4	14	46.7	100.0
Total	30	100.0	

Picture 2. Color Panelis Test

Based on the results above, it can be seen that the range of taste values given by the panelists in codes 310 and 311 are 1 to 4. The two values most often given by panelists are 3 by 66.7% in code 310 and 50.0% in code 311. Whereas the mean Code 310 is 3.20 and 311 is 3.43 with standard definition of 0.551 and 0.568, respectively.

Aroma310

Value	Frequency	Percent	Cumulative Percent
1	2	6.7	6.7
2	3	10.0	16.7
3	12	40.0	56.7
4	13	43.3	100.0
Total	30	100.0	

Aroma311

Value	Frequency	Percent	Cumulative Percent
1	1	3.3	3.3
2	3	10.0	13.3
3	17	56.7	70.0
4	9	30.0	100.0
Total	30	100.0	

Picture 3. Color Panelis Test

Based on the results above, it can be seen that the range of taste values given by the panelists in codes 310 and 311 are 1 to 4. The two values most often given by panelists are 3 by 40.0% in code 310 and 56.7% in code 311. Whereas the mean Code 310 is 3.20 and 311 is 3.13 with standard definition of 0.887 and 0.730, respectively.

Texture310

Value	Frequency	Percent	Cumulative Percent
1	2	6.7	6.7
2	10	33.3	40.0
3	13	43.3	83.3
4	5	16.7	100.0
Total	30	100.0	

Texture311

Value	Frequency	Percent	Cumulative Percent
1	2	6.7	6.7
2	10	33.3	40.0
3	14	46.7	86.7
4	4	13.3	100.0
Total	30	100.0	

Picture 4. Texture Panelis Test

Based on the results above, it can be seen that the range of taste values given by panelists in codes 310 and 311 is 1 to 4. At both values the most given by panelists is 3 by 43.3% in code 310 and 46.7% in code 311. Whereas the mean codes 310 are 2.70 and 311 are 2.67 with standard deficits of 0.837 and 0.802 respectively..

Overall Character 310

Value	Frequency	Percent	Cumulative Percent
1	1	3.3	3.3
2	4	13.3	16.7
3	18	60.0	76.7
4	7	23.3	100.0
Total	30	100.0	

Overall Character 311

Value	Frequency	Percent	Cumulative Percent
2	10	33.3	33.3
3	17	56.7	90.0
4	3	10.0	100.0
Total	30	100.0	

Picture5. Overall Characteristic Panelis Test

Based on the results above, it can be seen that the range of taste values provided by the panelists in codes 310 and 311 are 1 to 4. In both the most given values by panelists are 3 by 60.0% in code 310 and 56.7% in code 311. Whereas the mean Code 310 is 3.03 and 311 is 2.77 with standard definition of 0.718 and 0.626, respectively.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Tekstur311	30	1	4	2.67	.802
Tekstur310	30	1	4	2.70	.837
Aroma310	30	1	4	3.20	.887
Aroma311	30	1	4	3.13	.730
Rasa310	30	1	4	3.17	.648
Taste311	30	1	4	2.63	.809
Colour310	30	2	4	3.20	.551
Colour311	30	2	4	3.43	.568
Overall Character 310	30	1	4	3.03	.718
Overall Character 311	30	2	4	2.77	.626
Valid N (listwise)	30				

Picture 6. Look according to each description

From the results of analysis in the Food and Agricultural Technology Test Laboratory, this millet mini muffin product has several nutritional content, namely water (%) UL1: 16.34 UL2: 16.52; abu (%) UL1: 2,78 UL2: 2,90; fat (%) UL1: 21.59 UL2: 21.77; total protein, fk: 6.25 (%) UL1: 7.71 UL2: 7.61; crude fiber (%) UL1: 0.66 UL2: 066 and carbohydrate by diff (%) UL1: 51.58 UL2: 51.21.

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