

# The Modification Formula of Manggaraian Traditional Food “Rebok Sikiseko”

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## The Modification Formula of Manggaraian Traditional Food "Rebok Sikiseko"

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### Abstract

This study aims to determine the effect of comparison of corn flour and grated coconut and the addition of liquid margarine to the characteristics of "rebok sikiseko". The design used is a Completely Randomized Design (CRD) with two factors and two replications, namely first-factor comparison of cornflour and grated coconut which consists of three levels: 3:1; 2:2; 1:3. The second factor is the addition of liquid margarine which consists of 3 levels: 100 ml, 125 ml, 150 ml. Objective observations include water content, protein content, fat content, ash content, carbohydrate content, crude fiber content and subjectively including color, texture, aroma, taste, and overall acceptance. The best research results obtained in the treatment of cornflour and grated coconut 1:3 with the addition of 100 ml margarine produce a water content of 5.73%, protein content of 5.28%, fat content of 29.21%, ash content of 0.54%, fiber content roughly 4.00%, carbohydrate content 59.25%, and subjectively obtained the highest favorite value from panelists.

**Keywords:** "Rebok Sikiseko"; Cornstarch; Grated Coconut; Margarine.

### 1. Introduction

Traditional food is a form of culture that is characterized by regional, specific, diverse and types that reflect the natural potential of each region. Food is not only a means to meet one's nutritional needs. Food is also useful for maintaining human relations, a symbol of the identity of a particular society, and can also be sold and promoted to support tourism that can support a region's income [1].

"Rebok sikiseko" is a traditional food from Manggarai which is made from basic ingredients namely corn starch mixed with grated coconut and granulated sugar, "rebok sikiseko" is processed by roasting to produce a dry and starchy texture. At present the consumption patterns of society are beginning to change, the more widespread modern food is also declining the level of consumption of traditional food among the people. This is due to the number of processed food products so that some people prefer modern foods over traditional foods to be more prestigious to be served with a more tantalizing appearance. As happened with "rebok sikiseko", this traditional Manggarai food began to decline.

This research was conducted to modify and introduce "rebok sikiseko" as a traditional food that is no less competitive with modern food that is currently rife. In the process of modification "rebok sikiseko" used margarine that has been melted first so that "rebok sikiseko" which was originally shaped as flour into solid and can be shaped or printed so that it is easy to consume.

## 2. Materials and Methods

### Time and Location of Research

This research was conducted at the Food Processing Laboratory, Faculty of Agriculture, University of Warmadewa Denpasar and for the analysis partly carried out at the Food Analysis Laboratory of the Faculty of Agricultural Technology, Udayana University. This research was conducted from April 2019 to July 2019.

### Research Material

The raw materials used in the manufacture of "rebok sikiseko" are broken corn purchased at Sanglah Market and then further processed at the Food Processing Laboratory, Faculty of Agriculture, Warmadewa University, granulated sugar, grated coconut, and margarine with the Blue Band brand. While the packaging material uses special jars such as cookie jars. The materials used to analyze include: equates, 10% alcohol, ether, concentrated  $K_2SO_4$  or  $Na_2SO_4$ ,  $CuSO_4$ , Zn,  $H_2SO_4$ , NaOH,  $H_3BO_3$ .

The equipment used in this study were scales, pans, basins, gas stoves, pans, ovens, dough molds, fried spoons, molds, blenders, corn grinding machines. And for analysis using a 250 ml goblet, Erlenmeyer, Kjeldahl flask, weighing bottle, filter paper, Petri cup, pH meter, digital scales and tools for organoleptic testing.

### Research Design

This research is a factorial experiment with a Completely Randomized Design (CRD) consisting of two factorial namely: The first factor is a comparison of grated coconut and cornflour consisting of (3:1), (2:2), (1:3). The second factor is the ratio of liquid margarine which consists of 100 ml, 125 ml, 150 ml, each treatment is repeated 2 times to obtain 18 units of the experiment. The data obtained were then analyzed for variance and if there was a real or very real effect between treatments then it was continued with the LSD test of 5% and 1%.

### Research Implementation

The study was divided into 2 stages, namely the manufacture of cornflour and making "rebok sikiseko". Before the milling process is carried out in the manufacture of cornflour, the immersion process is carried out. Soaking aims to soften the corn kernels, besides that during the immersion process a spontaneous fermentation process occurs. In the second step, the process of making "rebok sikiseko", making "rebok sikiseko" begins with roasting, each ingredient is roasted for 2 minutes separately corn flour at a temperature of  $110^{\circ}C$  and grated coconut at a temperature of  $90^{\circ}C$ . After the roasting process, the making of "rebok sikiseko" is made. The dough is made. After the ingredients and tools are ready, the margarine is thawed first, 50 gr sugar and roasted corn flour are mixed according to the specified treatment. Then put the mixture into the mold. After the dough has been printed, it is kneaded for 22 minutes with a temperature of  $20^{\circ}C$ . Analysis. After the "sikiseko rebok" is finished, an analysis is carried out to determine the water content, ash content, fat content, protein content, carbohydrate content, and crude fiber.

### Observation Variable

The variables observed in this study include objective observations namely analysis of water content, protein content, fat content, ash content, crude fiber content, and carbohydrate content. While subjective observations include tests of taste, texture, aroma, color and overall acceptance.

### 3. Result and Discussion

#### Objektif Variable

##### Water Content

The lowest water content is obtained at the completion of corn and coconut flour 2: 2 with the approval of 125 ml margarine. While the highest water content is obtained when corn flour: grated coconut 1: 3 with 125 ml high margarine, higher water content when needed by high levels of starch in corn. Corn contains a high amount of starch. The higher the starch content in the ingredients, the higher the binding of the water[2].

Table 1  
Effect of Comparison of Corn and Grated Coconut Flour and Addition of Margarine to Water Content (%) "Rebok Sikiseko"

Treatment	Margarine Addition			
	100 ml	125 ml	150 ml	Average
Cornstarch: Grated coconut				
3:1	5.92	5.30	5.44	5.55a
2:2	4.30	4.02	5.39	4.57a
1:3	5.73	5.21	5.37	5.43a
Average	5.30a	4.84a	5.39a	

Information: The average value followed by the same letter in the same row and column shows no significant difference ( $p>0.05$ ).

##### Protein Content

The lowest protein content was obtained in the treatment of cornflour and grated coconut 2: 2 with the addition of 125 ml margarine. One of the causes of low protein levels in "rebok sikiseko" is the protein content of cornflour which is lower than the protein content of wheat flour which is commonly used in making cookies. In this study, a brief and simple fermentation was carried out on the process of making corn flour for 12 hours. The protein content of fermented corn flour is lower than that of wheat flour commonly used in making cookies[3].

Table 2  
Effect of Comparison of Corn and Grated Coconut Flour and Addition of Margarine to Water Content (%) "Rebok Sikiseko"

Treatment	Margarine Addition			
	100 ml	125 ml	150 ml	Average
Cornstarch : Grated coconut				
3:1	5.27	5.28	5.27	5.27a
2:2	5.28	5.22	5.27	5.25b
1:3	5.28	5.25	5.25	5.26ab
Average	5.27a	5.25b	5.26ab	

Information: The average value followed by different letters in the same row and column shows significant differences ( $p<0.05$ ) to very significant ( $p<0.01$ ).

##### Fat Content

The highest fat content is obtained at the completion of cornflour and 1: 3 grated coconut with 125 ml margarine approval. Enough fat content in "rebok sikiseko" is not released from the use of margarine and grated coconut. Higher than dried grated coconut, the higher the fat content contained in cookies [4].

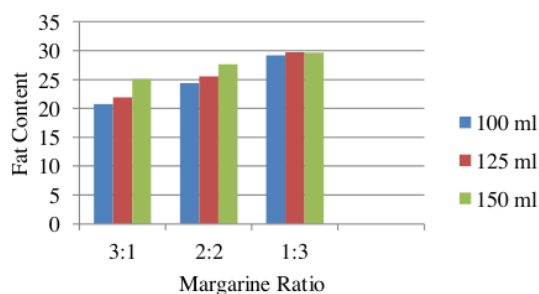


Figure 1  
Graphic Effect of Adding Margarine To Fat Levels "Rebok Sikiseko"

### Ash Content

The lowest "rebok sikiseko" ash content was obtained from the treatment of 3: 1 cornflour and grated coconut with the addition of 100 ml margarine. While the highest levels of "rebok sikiseko" ash were obtained from the treatment of cornflour and shredded coconut 1: 3 with the addition of 150 ml margarine. The higher the ratio of shredded coconut, the higher the ash content produced. This is caused by grated coconut which contains minerals such as phosphorus, calcium, and iron [5]. In the treatment of adding margarine an increase in ash content in "rebok sikiseko" the higher the addition of margarine, the ash content produced is also higher. In accordance with opinion [6], the ash content in cookies comes from raw materials and additives (margarine).

Table 3  
Effect of Comparison of Corn Flour and Grated Coconut and the Addition of Margarine to Ash Content (%)  
"Rebok Sikiseko"

Treatment	Margarine Addition			Average
Cornstarc : Grated coconut	100 ml	125 ml	150 ml	
3:1	0.38	0.58	0.42	0.46b
2:2	0.43	0.46	0.72	0.53b
1:3	0.54	0.78	0.91	0.74a
Average	0.45b	0.60ab	0.68a	

Information: The average value followed by different letters in the same row and column shows significant differences ( $p < 0.05$ ) to very significant ( $p < 0.01$ ).

### Crude Fiber Content

The fiber content in "rebok sikiseko" with the addition of margarine ranged from 2.72 to 4.82%. The higher the addition of grated coconut the higher the levels of crude fiber in "rebok sikiseko". This is due to the higher content of coconut pulp. the crude fiber content of coconut pulp is 11.766% [7].

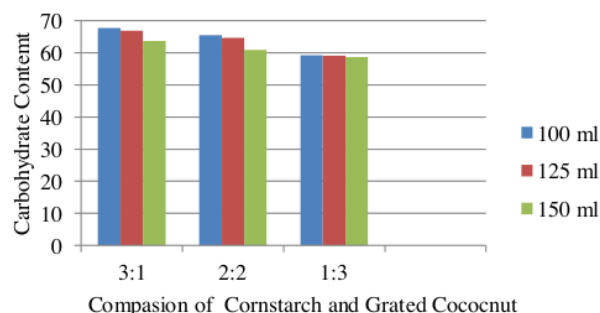
Table 4  
Effect of Comparison of Corn Flour and Grated Coconut and the Addition of Margarine to Crude Fiber (%)  
"Rebok Sikiseko"

Treatment	Margarine Addition			Average
Cornstarch : Grated coconut	100 ml	125 ml	150 ml	
3:1	2.72	4.12	4.48	3.77b
2:2	3.47	4.22	4.42	4.03ab
1:3	4.00	4.82	4.67	4.49a
Average	3.39b	4.38ab	4.52a	

Information: The average value followed by different letters in the same row and column shows significant differences ( $p < 0.05$ ) to very significant ( $p < 0.01$ ).

### Carbohydrate Content

The lowest carbohydrate levels were obtained in the treatment of cornflour and shredded coconut 1:3 with the addition of 150 ml margarine. While the highest water content was obtained in the treatment of cornflour: grated coconut 3:1 with the addition of 100 ml margarine. Carbohydrate content in cookies is calculated by difference and is influenced by other nutritional components, namely protein, fat, water, and ash. In accordance with opinion [8] which states that carbohydrate content is calculated by difference influenced by other nutritional components, namely protein, fat, water, and ash, the higher the other nutritional components, the lower the carbohydrate content and vice versa if the other nutritional components are lower then the carbohydrates are higher.



Figur 2  
Effect of Comparison of Corn and Grated Coconut Flour With Addition of Margarine To Carbohydrate Levels "Rebok Sikiseko"

### Subjective Variable

#### Taste

The highest taste organoleptic test results obtained from the treatment of cornflour and shredded coconut 1:3 with the addition of 100 ml liquid margarine have the taste most preferred by panelists because it has a savory taste. The addition of margarine can improve the taste of a food product. The addition of margarine can improve the taste of a food product. Margarine has fat and protein contents that cause a savory taste in cookies [9].

#### Texture

The lowest level of panelist preference was obtained from the comparative treatment of 3:1 cornflour and grated coconut with the addition of 100 ml margarine. Whereas the highest organoleptic texture testing was found in the comparative treatment of 3: 1 cornflour and grated coconut with the addition of 150 ml margarine. Cookie's texture is influenced by fat and amylose content. The existence of fat in cookies, will break down its structure and then coat the starch and gluten to produce crispy biscuits. The low acceptability of the comparative treatment of 3: 1 cornflour and grated coconut with the addition of 100 ml margarine is due to high levels of cornflour. In accordance with the statement [10] that the higher the ratio of cornflour, the organoleptic value of cookies also decreases.

#### The Scent

The lowest level of panelist preference was obtained from the comparison treatment of cornflour and shredded coconut 1:3 with 125 ml margarine added. Whereas the highest organoleptic aroma test was found in the comparative treatment of 3:1 cornflour and grated coconut with the addition of 100 ml margarine. The treatment of high corn flour addition has an aroma that



is more preferred by the panelists than the control treatment. While the treatment with the addition of margarine that is too high is less preferred by panelists. This is because fat is one of the important components in making cookies because it functions as an aroma enhancer and therefore the aroma of corn flour is covered by the presence of margarine and butter [11].

### Color

The lowest level of panelist preference was obtained from the ratio treatment of cornflour and shredded coconut 1:3 with the addition of 100 ml margarine. While the highest organoleptic scent testing was found in the ratio of cornflour and shredded coconut 1:3 with 125 ml margarine added. The color of the biscuits comes from the color of the raw material used [12] and the Maillard reaction during roasting. The Maillard reaction is a reaction between reducing sugars and primary amino groups that produce a brown nitrogen polymer or melodic, which is often desired or a sign of a decline in product quality [13].

### Overall Perception

Based on the analysis of variance showed that the effect of the comparison treatment of cornflour and grated coconut with the addition of margarine had an insignificant effect ( $p > 0.05$ ) on the overall acceptance of "sikiseko rebok" and was acceptable to panelists. The average value of panelist preferences on overall reception ranged from 4-6 ie ordinary to like. The highest level of panelist preference was obtained from the treatment of cornflour and 1:3 grated coconut with the addition of 100 ml margarine.

## 4. Conclusion

The treatment of cornflour and grated coconut 1: 3 with the addition of 100 ml margarine, produced the best characteristics of "sikiseko rebok" with a water content of 5.73%, protein content of 5.28%, fat content of 29.21%, ash content of 0.54%, 4.00% crude fiber content and 59.25% carbohydrate content. Characteristics of "rebok sikiseko" modification that is acceptable to panelists obtained from the treatment of cornflour and grated coconut 1: 3 with the addition of 100 ml margarine, obtaining the highest preference value from the panelists is 5.20% with the best characteristics of "rebok sikiseko" with a water content of 5.73%, protein content 5.28%, fat content 29.21%, ash content 0.54%, crude fiber content 4.00% and carbohydrate content 59.25%.

To produce "sikiseko rebok" that can be accepted by consumers, it is recommended to reduce the use of too much margarine in order to maintain the original taste of "rebok sikiseko". Further research needs to be done to determine the shelf life of "rebok sikiseko" modified with the addition of margarine.

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