

# **SENSORY CHARACTERISTIC AND NUTRITIONAL CONTENT ONDE-ONDE KETAWA WITH JALEJO FLOUR (A MIXTURE OF CORN, SOYBEAN AND MUNG BEAN)**

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## **ABSTRACT**

*Corn, soybean and mung bean are known as source of vegetable nutrition, and combined in one composite material, they become a good source of complete essential amino acid. However, it is not yet widely used in market. The Jalejo is able to be used in various bakings, one of them is Onde-onde Ketawa ('Laughing Onde'). Onde-onde Ketawa is a distinctive Indonesian snack with unique round shape covered in sesame, fried to make the surface crack and resembles laughing expression. The ingredients are flour, egg, sugar, oil, water, baking powder and baking soda, and sesame. This research is intended to find out sensory characteristics, particularly panellists reactions, to the substitution of this snacks' ingredients with Jalejo. The writer used experiment method with standard recipe as a reference with 100% flour, compared with three executions: 75% Jalejo and 25% flour; 50% Jalejo and 50% flour; and 100% Jalejo. Research showed the 75% Jalejo combination was the panellists' most favourable, and 50% Jalejo combination most likely had the same characteristics as the one with 100% flour.*

**Keywords:** *Jalejo Flour, Onde-onde Ketawa, Sensory Characteristics*

## **INTRODUCTION**

Jalejo is composite material consists of three ingredients: corn, soybean and mung bean. While combined and processed together as flour, they provide more benefits.

Jalejo is rich in essential substance needed by human body (Ministry of Farming and Agriculture, 2008). Currently Jalejo has not yet been widely used but it is able to be processed or baked to make onde-onde ketawa cookies. Aside from its nutrition, Jalejo is also mentioned as one of food security substances set by the government (Ministry of Farming and Agriculture, 2008).

Onde-onde ketawa ('Laughing Onde') is known as one of Indonesian traditional snacks. Different from other types of snacks, it is made of flour, egg, sugar, oil, water, baking powder, baking soda, and sesame. Ingredients are mixed together, weighed and shaped in round, then dipped in water and rolled on sesame, and fried until cracked (Alamsyah, 2008). Objective of this research is to find out sensory characteristics, particularly panellists reaction, to onde-onde ketawa with Jalejo as substitution.

## RESEARCH METHODOLOGY:

Tools and Ingredients for research

Tools for this research are Rinnai gas stove, Oxone cooking scale, Phillips hand mixer, Tupperware plastic containers and Maxim non-sticky fryer.

Ingredients for this research are medium Bogasari flour with brand Segitiga Biru, sugar, egg, baking powder, baking soda, sesame, oil, and ready-to-serve Jalejo made by the Ministry of Farming and Agriculture.

## How to Make Onde-onde Ketawa with Jalejo

This onde-onde ketawa is made with recipe in Ragam Kue Tradisional Saji (2006). First, all ingredients should be prepared and weighed, water and sugar mixed and heated then cooled. Next is to mix and strain flour, baking powder, baking soda, then add this to the egg batter, stir with wooden spoon until it is easy to be shaped. Each shape will have to weigh 10gr, and then rounded with hands.

Shaped dough then dipped in water, rolled in sesame, fried in heated oil until cracked and turned brownish. Drain from the pan to reduce excessive oil.

Table 1 shows the experiment design of onde-onde ketawa using Jalejo

Sample	Flour (%)	Jalejo (%)
1	100	0
2	50	50
3	25	75
4	0	100

## Sensory Characteristics

Next step is to understand sensory characteristics of the panellists, particularly their receive upon cookies made of Jalejo as substitution. Here panellists' preference levels and descriptive were tested. Then, data was analysed using ANOVA, continued with LSD and DMRD with  $\alpha=0,05$  to figure significant difference among samples. Data is analysed using SPSS 20.

## RESULTS AND DISCUSSION

### Panellists' Preference upon Onde-onde Ketawa with Jalejo

Level of colour preference in products with flour (as control) had the highest rate (3.82), which means panellists liked them. The Jalejo 50% mixture had 3.64 which indicate this composition's colour is quite preferred by panellists. Meanwhile, level of colour preference for 75% mixture of Jalejo and 100% Jalejo were the same, 3.50. Statistically there were significant difference between level of colour preference in onde-onde ketawa with flour as control and 50%

Jalejo mixture, while in 75% mixture of Jalejo and 100% Jalejo has no significant difference.

Level of aroma preference in products with 100% Jalejo was 3.62 which stated panellists' favourite. In products with flour as control, the score was 3.58 which as well showed panellists' favourite. For products with 75% mixture of Jalejo, the score showed 3.54 which means it was less preferred, and for products with 50% mixture of Jalejo the score showed 3.10. In statistics, there were significant distinction from level of aroma preference in products with 100% flour and 100% Jalejo. The highest rate of aroma preference was 3.62 (products with 100% Jalejo) while the lowest rate was 3.10 (products with 50% Jalejo).

In terms of texture, products with 75% Jalejo were much preferred by the panellists with score 3.27, while 100% Jalejo products had higher score, 3.38. The 50% Jalejo mixture was relatively liked with score 3.16

and the product control (100% flour) had 2.08 as score. Statistically, there were no significant difference between 75%, 50% and 100% Jalejo, but there were notable difference between products with 100% flour and other samples.

In terms of taste, products with 75% Jalejo were more preferred by the panellists with score 3.67. While in products with 100% Jalejo, the score was 3.52. Products with flour (as control) were given 3.04. In statistics, there were notable difference between products with 100% flour and 100% Jalejo.

Eventually, in terms of overall preference, the highest score went to onde-onde ketawa with 75% Jalejo and the lowest went to onde-onde ketawa with 100% flour. In statistics there were no significant differences between onde-onde ketawa using 75%, 50% and 100% Jalejo, however there was a notable preference in onde-onde ketawa with 100% flour.

**Table 2 Results of Preference Test: Substitution of Flour with Jalejo in Onde-onde Ketawa Recipe**

Product	Average of Test Result				
	Colour	Aroma	Texture	Taste	Overall
100% flour	3,82 <sup>a</sup>	3,58 <sup>a</sup>	2,08 <sup>b</sup>	3,04 <sup>a</sup>	2,90 <sup>a</sup>
75% jalejo	3,50 <sup>a</sup>	3,54 <sup>b</sup>	3,74 <sup>c</sup>	3,76 <sup>b</sup>	3,82 <sup>c</sup>
50% jalejo	3,64 <sup>a</sup>	3,10 <sup>a</sup>	3,16 <sup>a</sup>	2,86 <sup>a</sup>	3,00 <sup>a</sup>
100% Jalejo	3.50 <sup>b</sup>	3,62 <sup>b</sup>	3,38 <sup>b</sup>	3,52 <sup>b</sup>	3,46 <sup>b</sup>

Remarks:

- Tested to 50 untrained panellists  $\alpha=5\%$
- Same code in same column shows no significant difference
- Range of score: 1=very poor, 2=poor 3=average 4=good 5=very good

### Sensory Characteristics of Onde-onde Ketawa Cookies

Sensory characteristics of onde-onde ketawa was taken from sensory characteristics test

to find out level of difference from characteristics and intensity of products,

using scoring method. The descriptive test in and taste from onde-onde ketawa. this research included colour, aroma, texture

**Table 3 Results of Substitution Difference Test between Flour and Jalejo in Onde-onde Ketawa Recipe**

Produk	Sensory Characteristics Score			
	Colour	Aroma	Texture	Taste
100% flour	2,96 <sup>a</sup>	3,20 <sup>b</sup>	4,16 <sup>d</sup>	2,84 <sup>a</sup>
100% jalejo	2,98 <sup>a</sup>	2,74 <sup>a</sup>	2,90	3,76
75% jalejo	3,26 <sup>a</sup>	2,90 <sup>ab</sup>	1,84	3,40 <sup>ab</sup>
50% Jalejo	3,10 <sup>a</sup>	3,02 <sup>ab</sup>	2,60	3,34

Remarks:

- Tested to 50 untrained panellists  $\alpha=5\%$
- Same code in same column shows no significant difference
- Range of score:  
 Colour: 1= deep yellow, 2=yellow, 3=brownish yellow, 4=brown, 5=deep brown  
 Aroma: 1=strong jalejo aroma, 2= jalejo aroma, 3=relative jalejo aroma, 4=no jalejo aroma, 5=definitely no jalejo aroma  
 Texture: 1= definitely not hard, 2= not hard, 3=relative hard, 4=hard, 5=very hard  
 Taste: 1=definitely no jalejo taste, 2=no jalejo taste, 3=relative jalejo taste, 4=jalejo taste, 5=strong jalejo taste

### CONCLUSION

From research and discussion, conclusions made are:

1. Onde-onde ketawa with flour, when substituted with 75% Jalejo, could generate more preferred products by the panellists
2. Flour made products whiter/paler than products made with Jalejo. Whiter colour was preferred by the panellists
3. Level of preference in taste was higher in products with 75% Jalejo
4. From the sensory test, panellists liked the aroma of onde-onde ketawa with 100% Jalejo, while in terms of texture, more preferred onde-onde ketawa was the ones with 75% Jalejo.

5. In terms of nutrition, energy contained in 75% Jalejo products were higher 432gr/calorie then the same products using flour, and energy contained in products with flour were less higher 416gr/calorie

### SUGGESTION

Suggestions made are:

1. Culinary experts are encouraged to try Jalejo as substitution, not only in the making of onde-onde ketawa, but also in other types of modern or traditional cookies/cakes
2. Advanced research to find fibre content and antioxidant effect in onde-onde ketawa with Jalejo is needed

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