

Organoleptic Test of Pulu Mandoti Cookies to Pregnant Women

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Abstract. Pulu Mandoti is a type of fragrant sticky rice originating from Enrekang Regency. This rice has the best quality with high nutritional content, in the form of 73.66% carbohydrates, 6.89% protein, 12.19 µg/g iron (Fe), and 116.42 µg/g calcium. This research aims to determine pregnant women's assessment of the quality of Pulu Mandoti rice cookies through organoleptic tests with 30 pregnant women as panelists. This test uses a questionnaire sheet containing 5 (five) question items. The results of the hedonic assessment range between 1-5, assessment 1 = really dislike, 2 = don't like, 3 = don't like, 4 = like and 5 = really like. Data analysis is descriptive using frequency distribution tables. The research results showed that 83.3% really liked the taste of Mandoti pulu cake, 70% really liked the color of the cake, 63.3% really liked the texture of Mandoti pulu cake, and 50% really liked the color of Pulu Mandoti rice cookies. Based on organoleptic tests, it shows that pulu mandoti cake is generally liked by pregnant women, especially in terms of taste and is very suitable as an alternative additional food for pregnant women.

1 Introduction

Pulu Mandoti is one of the rarest types of fragrant sticky rice. Pulu Mandoti can only grow in mountainous areas with an altitude of 700 meters above sea level. One of the villages that fits these criteria is Sulukanan Village, Baraka District, Enrekang Regency, South Sulawesi, Indonesia [1]. The best quality is in Pulu Mandoti [2]. Based on the results of the Makassar Health Laboratory Center examination in 2021, Pulu Mandoti contains 73.66% carbohydrates, 6.89% Protein, 12.19 µg/g Iron (fe), and 116.42 µg/g Calcium [3] The nutrients contained in Pulu mandoti are a source of calories that the body needs in the daily intake of Indonesian people [4] and is also a variety of food that can help meet the nutritional needs of pregnant women. One of the processed additional food products originating from Pulu Mandoti is Pulu Mandoti cookies. Cookies are a dry food product that is classified as non-perishable and has a relatively long shelf life. Cookies can be an alternative to fulfill food diversity and become a snack [5].

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The results of examinations carried out by researchers in the laboratory found that Pulu Mandoti cookies have the following composition as shown in table 1 below :

Table 1. Composition of pulu mandoti.

No	Parameters	Units	Test Result	Method Specification
1	Fat	%	19.35	Gravimetric
2	Proteins	%	5.20	Kjehdal
3	Carbohydrate	%	47.18	Titrimetric
4	Crude Fiber	%	2.76	Gravimetric
5	Glucose	%	52.42	Titrimetric
6	Vitamin C	µg/g	364.74	Spectrophotometric
7	Vitamin A	µg/g	75.00	Spectrophotometric
8	Iron (Fe)	µg/g	38.02	ICP- MS
9	Potassium (K)	µg/g	2546.50	AAS
10	Calcium (Ca)	µg/g	57.86	AAS

Primary Data 2022 [13]

2 Materials and Methods

2.1 Tools and materials

The tools needed for preparing Pulu Mandoti flour are 1 electric oven, 1 mixing bowl, 1 balloon whisk, 1 sieve, 1 spatula and digital scale.

2.2 Making Pulu Mandoti Cookies

The basic ingredients for making these cookies are first made in the form of flour by:

1. washing the Pulu Mandoti rice, soaking the rice, then draining it, then grinding the rice twice, then roasting it, then sifting it, and the Pulu Mandoti rice flour is ready to be used for cooking.
2. Making cookies, where in the process, put 1 egg yolk and 42 grams of butter into a mixer, then add 42 grams of palm sugar and 17 grams of grated chocolate bar.
3. After the dough comes together, add 100 grams of pulu mandoti, then stir until well mixed using a spatula, then knead until the dough is smooth.
4. Preheat the oven to 120 degrees Celsius for 10 minutes, adjust the heating system up and down, and while waiting for the oven to heat up, mold 12 grams of dough, place it on a baking sheet, and bake at 150 degrees Celsius for 25 minutes.

This recipe has been patented by the Ministry of Law and Human Rights in a HAKI certificate in 2023 [6].

3 Method

This study approach employs an organoleptic test, which evaluates a product's color using visual perception, taste using taste perception, texture using touch perception, and smell or aroma using smell perception. This test used 30 panelists from pregnant women who were taken by accidental sampling at the Tamalanrea Makassar Health Center for two days on 27 – 28 February 2023. The panelists who provided assessments on the Pulu Mandoti cookies were untrained panelists. Untrained panelists are panelists who do not have high or medium sensitivity like expert or trained panelists, untrained panelists only respond like they like or want to use a product [7]. The results obtained were subjected to frequency distribution analysis using the Statistical Package for the Social Science (SPSS) test.

4 RESULTS



Fig.1. Pulu mandoti rice.



Fig.2. Pulu mandoti cookies.

Pulu Mandoti cookie product needs to be analyzed sensorially. Sensory analysis in its development will always follow developments in statistics and computing. The combination of qualitative and quantitative data can enable sensory predictions to be more accurate and in line with real situations [8]. This sensory analysis can be carried out in various ways, one of which is the hedonic test which is part of the organoleptic test. The hedonic test (liking test) was carried out on 30 panelists. Panelists provide their responses regarding whether they like or dislike a product.

The hedonic test is an organoleptic test carried out to determine the panelists' responses to their likes and dislikes of the product being tested. The panelists' liking level is determined using a hedonic scale [9] The hedonic scale is not only a categorical scale, but can also be converted into a numerical scale. The hedonic scale can be expanded or narrowed according to the scale range desired by the researcher. This level of preference is called the hedonic scale. The following is the hedonic scale used in this research:

Table 2. Hedonic scale.

Hedonic Scale				Numerical scale
Color Taste Aroma Texture	Color Taste Aroma Texture	Color Taste Aroma Texture	Color Taste Aroma Texture	
Really like	Really like	Really like	Really like	5
Like	Like	Like	Like	4
Do not like it much	Do not like it much	Do not like it much	Do not like it much	3
Do not like	Do not like	Do not like	Do not like	2
Very dislike	Very dislike	Very dislike	Very dislike	1

Each of the 30 panelists was given one sample, which was tested for their level of preference based on four test criteria or parameters: color, aroma, taste, and texture. These aspects were the focal points of observation in the research. This test helped identify in more detail the material variables used or processes related to certain sensory characteristics of the product [10]. Color was included in the organoleptic test assessment category. It was one of the first sensory components that the panelists could see, and it played an important role as a direct attraction factor for both panelists and consumers. The following is a table showing the frequency distribution of color parameters :

Table 3. Frequency distribution based on color parameters.

	Frequency	Percent	Valid Percent	Cumulativ e Percent
Do not like it much	3	10.0	10.0	10.0
Like	6	20.0	20.0	30.0
Really like	21	70.0	70.0	100.0
Total	30	100.0	100.0	10.0

Based on table 3 above, it shows that 10% of the 30 panelists did not like the color of Pulu Mandoti Cookies, 20% liked the color of Pulu Mandoti Cookies and 70% really liked the color of Pulu Mandoti Cookies, so it was concluded that the organoleptic results for the color of Pulu Mandoti Cookies were preferred by pregnant women.

Table 4. Frequency distribution based on aroma parameters.

	Frequency	Percent	Valid Percent	Cumulative Percent
Do not like it much	2	6.7	6.7	6.7
Like	13	43.3	43.3	50.0
Really like	15	50.0	50.0	100.0
Total	30	100.0	100.0	

Based on table 4 above, it shows that 6.7% of the 30 panelists did not like the aroma of Pulu Mandoti Cookies, 43.3% liked the aroma of Pulu Mandoti Cookies and 50% really liked the aroma of Pulu Mandoti Cookies. So it is concluded that the organoleptic results of the aroma of Pulu Mandoti Cookies are liked by pregnant women.

Tabel 5. Frequency distribution based on taste parameters.

	Frequency	Percent	Valid Percent	Cumulative Percent
Like	5	16.7	16.7	16.7
Really like	25	83.3	83.3	100.0
Total	30	100.0	100.0	

Based on table 5 above, it shows that 16.7% of the 30 panelists liked Pulu Mandoti Cookies and 83.3% really liked Pulu Mandoti Cookies, so it was concluded that the organoleptic results for the taste of Pulu Mandoti Cookies were very popular with pregnant women.

Table 6. Frequency distribution based on texture parameters.

	Frequency	Percent	Valid Percent	Cumulative Percent
Like	11	36.7	36.7	36.7
Really like	19	63.3	63.3	100.0
Total	30	100.0	100.0	

Based on table 6 above, it shows that 11% of the 30 panelists liked the texture of Pulu Mandoti Cookies and 63.3% really liked Pulu Mandoti Cookies. So it is concluded that the organoleptic results of the texture of Pulu Mandoti Cookies are liked by pregnant women.

5 Discussion

Panelist acceptance is obtained from the scores given by the panelists. rom the color hedonic (scale) test. aroma. taste, taste & holistic acceptance of 1 sample obtained the output that :

5.1 Color

Color is the first impression that appears and is assessed by the panelists. According to Winarno (1997) color is the first organoleptic parameter in presentation. Attractive colors will invite the tastes of panelists or consumers to taste the product [11]. This is in line with the results of the study which showed that 10% of 30 panelists did not like the color of Pulu Mandoti Cookies, 20% liked the color of Pulu Mandoti Cookies and 70% really liked the color of Pulu Mandoti Cookies, so it was concluded that the organoleptic results for the color of Pulu Mandoti Cookies were preferred by pregnant women.

5.2 Aroma

The aroma spread by cookies is a very strong attraction and is able to stimulate the sense of smell, thus awakening the appetite. The emergence of food aromas is caused by the formation of volatile compounds as a result or reaction due to the work of enzymes or can also be formed without the help of enzyme reactions. Then the aroma component is closely related to the concentration of the aroma component in the vapor phase in the mouth. This concentration is also influenced by the volatile properties of the aroma itself. Another factor is the natural interaction between nutritional components in the meal such as carbohydrates, protein and fat and the very relative acceptance of the panelists [12]. The aroma of cookies has its own characteristics because pulu mandoti is a fragrant sticky rice, so of the 30 panelists 43.3% like it, and 50% really like the aroma of pulu mandoti cookies.

5.3 Flavor

The factor that really determines whether a product is accepted by consumers or not is taste. The taste of food is a mixture of taste and smell responses. Taste parameters are different from aroma and involve more of the five senses of taste. Taste is influenced by several factors including chemical compounds, concentration, temperature and interactions with other flavor components [13]. Pulu Mandoti cookies were enjoyed by 36.7% of the panelists, and they were very liked by 63.3% of them.

5.4 Texture

Texture, the sensation of pressure perceived while biting, chewing, and swallowing food, or through touch, plays a crucial role in our appreciation of ingredients. Texture is a characteristic of a material as a result of a combination of several physical properties which include size, shape, quantity and elements of material formation that can be perceived by the senses of touch and taste, including the senses of taste and sight [14]. Pulu Mandoti cookies were enjoyed by 36.7% of the panelists, and they were very liked by 63.3% of them.

6 Conclusion

Based on organoleptic tests, it shows that Pulu Mandoti cookies are generally liked by pregnant women, especially in terms of taste and are very suitable as an alternative additional food for pregnant women.

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