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CONSUMER PREFERENCES ON SAGO (METRIXYLON SP) BURGER MODIFICATION: ANALYSIS OF ORGANOLEPTIC CHARACTERISTICS AND RECIPE STANDARDIZATION

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Abstract

Sago palm, a natural product sourced from Simeulue Island, where the majority of the population engages in farming and fishing, is facing a decline in the production of sago flour. To address this issue, the author sought to incorporate sago flour (Metroxylon Sp) into the creation of burger buns, dubbed "Sago Burger." The objectives of this study were to evaluate organoleptic characteristics, establish standard recipes, and analyze consumer preferences. Employing a quantitative research methodology, the study was conducted as an experiment, with five culinary lecturers serving as expert panelists and 30 consumer panelists, aged 18-25 years, participating. The data analysis technique used was a one-way ANOVA test, followed by the LSD test. Based on the organoleptic test results of the expert panelists, it was concluded that sago burgers containing 60 g (20%) of sago flour were the preferred option. Analysis of consumer data using one-way ANOVA revealed that Fcount < Ftable, leading to the rejection of H1 and acceptance of H0, as there was no significant impact of adding sago flour (Metroxylon sp.) on the organoleptic characteristics of sago burgers. Researchers who wish to build upon this study are advised to incorporate vegetable fat and continue to investigate the nutritional content of sago burgers (Metoxylon spp.).

Keywords: *Consumer Preference, Recipe Standardization, Burgers, and Sago Flour (Metroxylon Sp)*

Introduction

Sago is a natural product that is often found in Indonesia and is widely used as an alternative food for people in Indonesia. One of the areas that consumes much sago is Papua, Maluku, Sulawesi, Kalimantan, the Riau Islands, and the Mentawai Islands, with the majority of sago trees in Papua, with a total land area of 1.20 million hectares.

As an alternative food ingredient, sago is a source of carbohydrates needed to reduce the food burden on rice. The sago plant (Metroxylon spp.) has the potential to be developed as a raw material that can be processed in food and other industries. Sago starch can be processed into various traditional products such as noodles, papeda, ongol-ongol, sago plates, and porridge. Sago development in Indonesia aims to optimize resources and the sustainable management of food security and the realization of a sago agro-industry. Important targets to achieve in sago development include increasing sago productivity,

food diversification, and increasing the income of sago farmers. This is because of the enormous potential of sago, even though it has yet to be optimally exploited. Sago flour has yet to develop enough daily to be used as a staple food only, "sago plants can be used as a primary ingredient for making analog rice.

"As technology develops in Indonesia, sago has become a variety of food preparations that are popular with the public, one of which is the use of sago as a raw material for making meatballs" Heryani, S and Silitonga (2017). Simeulue Island is one of the islands in the province of Aceh, where most people are farmers and fishermen with abundant natural resources. One of the natural products often found on Simeulue Island is sago trees. This tree is often found on plantations owned by residents, where it is deliberately planted or grown by itself. However, Bekangan sago flour production is increasingly decreasing owing to the need for more interest among young people, especially on the island of Simeulue, in processed sago products. Sago flour is only produced by individual families or groups (not on an industrial scale).

The processing of sago (Metroxylon Sp) in Simeulue has not been significantly developed; in general, the people of the Simeulue process Sago have been used as food, such as ongol-ongol Sago, gudi-gudi, tabaha, plate sago, dogang, godok-godok Sago, lapek sago, and even used as an adhesive (glue). Sago is still easy to obtain, and the price is much lower because the level of need for sago is not too high.

"Burgers have been known for thousands of years, starting with traders from the Middle East who enjoyed minced goat meat in a restaurant in Hamburg, Germany. Hamburg is a trade center and gathering place for Arab traders" (Hardiman, 2011). "A burger is a type of food in the form of a round bread sliced in half and filled in the middle with seasoned minced meat, then vegetables such as lettuce, tomatoes and onions. "Burger buns or burger buns are made from the same ingredients as bread in general, namely wheat flour and water, and other additional ingredients such as fat, sugar, salt and yeast," Nova.M. (2018:2)

Based on these problems, the author wishes to analyze consumer preferences for processed sago products, namely sago burgers, by trying to combine burger patties made from wheat flour with additional sago flour to increase consumer attraction towards processed sago flour.

Method

This research is classified as an experimental research using quantitative methods. Zaenal Arifin (2020:3) "Experimental research methods are used to find the effect of certain treatments." In this research, the treatment used was the addition of sago flour (Metroxylon Sp) in making burger patties (sago burgers). The subjects of this research were five USK FKIP Culinary lecturers as expert panelists, and the 30 consumer panelists were teenagers ranging from to 18-23 years on the USK campus with different backgrounds. The object of this study was burger patties, which were modified by adding sago flour (Metroxylon SP).

The proposed hypothesis was analyzed using an ANOVA test at a confidence level of 95%. If the results of the ANOVA test show significant differences, then the LSD test is continued to determine which groups have significant differences (Sudjana, 1982). In this study, one-way ANOVA was carried out to observe the color, aroma, texture, and taste of sago burgers (Metroxylon spp.).

Result and Discussion

The research results are the results of data collection that have been thoroughly compiled, including objectives, problems, and hypotheses entirely and systematically. A

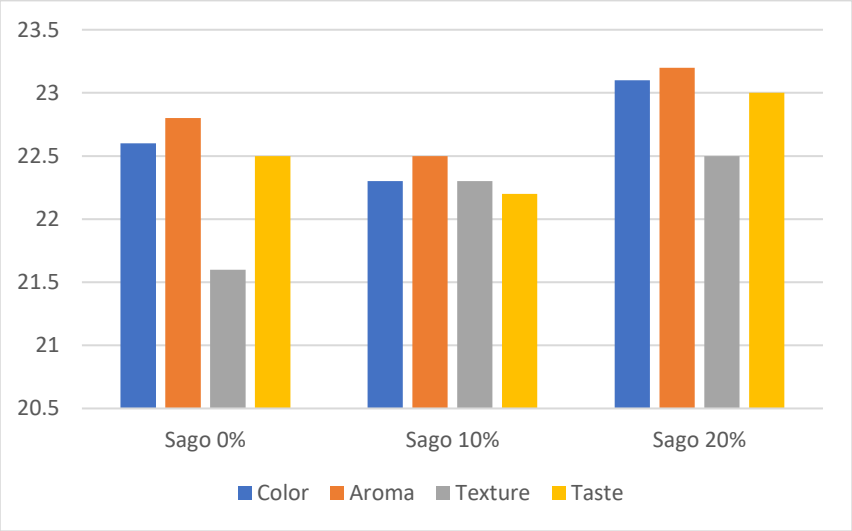
standard recipe for food that meets specific criteria expected by the recipe maker in terms of ingredients, dosage, amount of preparation, and quality. "A standard recipe is a recipe that clearly describes the processing procedures for the food ingredients used, standard measurements, fundamental price, cooking method, and expected quality (Wiyasha, 2006:3).

In this case, the observation test was carried out by five culinary lecturers as experts in assessing sago burger products using the observation test method (sensory evaluation) to determine the standard recipe for sago burgers. The results of expert panelists' observation tests on sago burgers (Metrixylon Sp) with the addition of sago flour (0%), (10%), and (20%), which focus on characteristics (color, aroma, texture, and taste), are shown in Table 1. and Figure 1.

Table 1 Sago Burger Expert Panelist Observation Test Results (0%, 10%, and 20% Sago Flour)

No	Rated Aspect	Treatment			Average
		0% Sago	10% Sago	20% Sago	
1	Colour	22,6	22,3	23,1	22,7
2	Aroma	22,8	22,5	23,2	22,8
3	Texture	21,6	22,3	22,5	22,1
4	Taste	22,5	22,2	23	22,6
	Total	89,5	89,3	91,8	90,2
	Average	22,4	22,3	22,9	22,5

The results of expert panelists' observation tests on the organoleptic characteristics (color, aroma, texture, and taste) of sago burgers (Metroxylon Sp) showed that the highest value was in sago burgers with the addition of 20% sago flour with the following values: the highest value was color with a value of 23, 1, the highest score for aroma with a score of 23.2, the highest score for texture with a score of 22.5, and the highest score for taste with a score of 23.



Picture 1. Expert Panelists' Observation Results on the Characteristics (Color, Aroma, Texture, Taste) of Sago Burger (Metroxylon Sp)
(Source: Primary Data, 2023)

Annotation:
(0%) = Without adding sago flour (Metroxylon Sp)
(10%) = With the addition of sago flour (Metroxylon Sp), 30 gr
(20%) = With the addition of sago flour (Metroxylon Sp), 60 gr

Table 2 Sago Burger Consumer Acceptance Test Results (0%, 10%, and 20% Sago Flour)

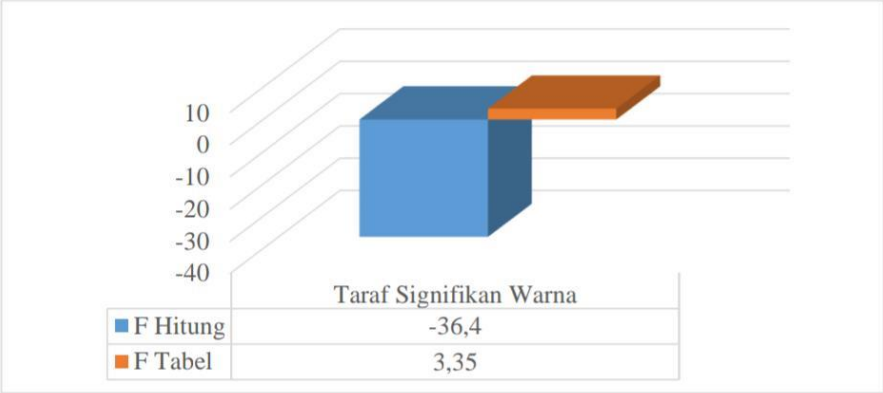
No	Rated Aspect	Treatment			Average
		0% Sago	10% Sago	20% Sago	
1	Colour	4	3,8	3,9	3,9
2	Aroma	3,8	4,1	3,7	3,9
3	Texture	4,3	4	3,3	3,9
4	Taste	3,7	4,1	3,9	3,9
Total		15,8	16	14,8	15,5
Average		3,9	4	3,7	3,9

(Source: Primary Data, 2023)

Annotation:
(0%) = Without adding sago flour (Metroxylon Sp)
(10%) = With the addition of sago flour (Metroxylon Sp), 30 gr
(20%) = With the addition of sago flour (Metroxylon Sp), 60 gr

The acceptance test (hedonic scale) of the sago burger product (Metroxylon Sp) was administered to 30 consumer panelists with a rating scale of 5 (immensely dislike, dislike, neutral, like, and very like). It focuses on assessing color, aroma, texture, and taste. One-way ANOVA test data processing technique. The following average values were obtained from consumer acceptance tests of sago burgers (Metroxylon sp.):

Based on the results of the ANOVA test, to determine the significant level of acceptance of sago burger color, it is known that Fcount = -36.4, and Ftable = 3.35, so that Fcount < Ftable, then the addition of sago flour (Metroxylon Sp) to the sago burger product does not have a significant influence on the color of sago burgers. The average consumer value of color is shown in Figure 2.



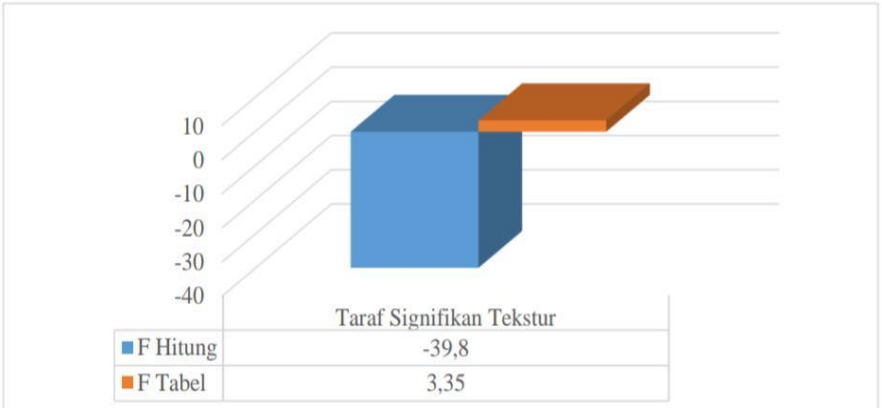
Picture 2. Significant Levels of Consumers Regarding the Color of Sago Burger (Metroxylon Sp)
(Source: Primary Data, 2023)

Based on the results of the ANOVA test, we determined a significant level of acceptance for the aroma of sago burgers. It is known that Fcount = -36.6, and Ftable = 3.35, so that Fcount < Ftable; the addition of sago flour (Metroxylon SP) to the sago burger product does not have a significant influence on the aroma of sago burgers. The average value of consumers regarding aroma is shown in Figure 3.

Picture 3. Significant Levels of Consumers Regarding the Color of Sago Burger (Metroxylon Sp) (Source: Primary Data, 2023)

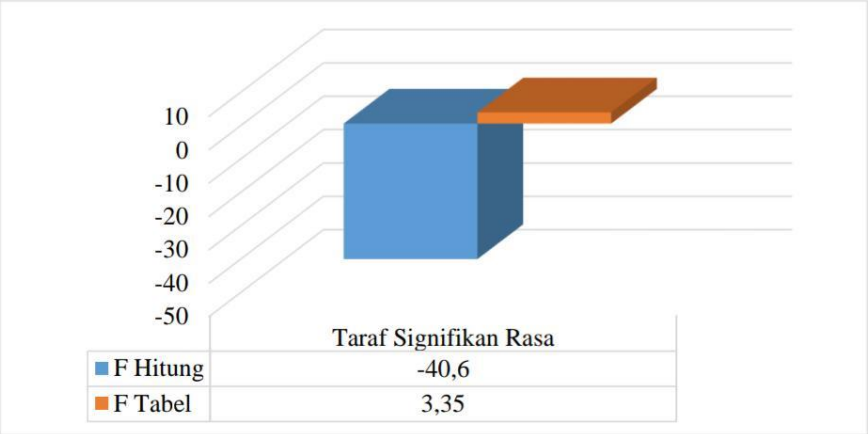
Acceptance Test (Hedonic Scale) on the Texture of Sago Burger (Metroxylon Sp)

Based on the results of the ANOVA test, to determine the significant level of acceptance of the sago burger texture, it is known that Fcount = -39.8, and Ftable = 3.35, so that Fcount < Ftable, then the addition of sago flour (Metroxylon Sp) to the sago burger product does not have a significant influence on the texture of sago burgers. The average consumer value of texture is shown in Figure 4.



Picture 4. Significant Levels of Consumers Regarding the Color of Sago Burger (Metroxylon Sp) (Source: Primary Data, 2023)

Based on the results of the ANOVA test, to determine the significant level of acceptance of sago burgers' taste, it is known that Fcount = -40.6, and Ftable = 3.35, so that Fcount < Ftable, then the addition of sago flour (Metroxylon Sp) to the sago burger product does not have a significant influence on the taste of sago burgers. The average consumer value of taste is shown in Figure 5.



Picture 5. Significant Levels of Consumers Regarding the Color of Sago Burger (Metroxylon Sp)
(Source: Primary Data, 2023)

The research results show that The expert panelists chose sago burgers with the addition of 60 g of sago flour (20%) with an average color value of 23.1, aroma of 23.2, texture of 22.5, and taste of 23.

The expert panelists chose sago burgers with the addition of 60 g (20%) of sago flour because, in terms of color, it is browner, giving a different impression than burger buns in general. The brown color in question is the color after the addition of 60 g of sago flour (20%). Staple ingredients of sago burger dough. This creates a darker brown color than that of regular burger buns. According to (Alya: 2009:91), color is the radiance obtained by the eye from light reflected by an object it hits. In this case, the color in question is the color resulting from adding sago flour (Metroxylon Sp) to the sago burger product. The more sago flour added, the deeper the brown color.

Expert Panelists chose the sago burger with the addition of 60 g (20%) of sago flour because, in terms of aroma, it still resembles the aroma of bread in general with the typical aroma of fermented bread, even though 60 g of sago flour (20%) has been added to the total essential ingredients of sago burger dough, which means that the addition of sago flour does not change the aroma of sago burger patties. According to Fajri and Ratu (2008:81), aroma is a subjective smell that is very difficult to measure because every human being has sensitivity and preference. The aroma referred to here is the addition of sago flour to the sago burger products.

The expert panelists chose sago burgers with the addition of 60 g of sago flour (20%) because the sago burger bun has a slightly rough and heavy texture, which is similar to the texture of wheat bread. So, it gives a different impression to the burger patties, which means that adding 60 grams (20%) of sago flour can change the texture of the sago burger patties. According to Nurwachidayah et al.: 2015:90-91), texture is the hardness and softness of a product perceived by the sense of touch and taste. The texture in question is that of sago burger bread (Metroxylon spp.).

The expert panelists chose the sago burger with the addition of 60 g of sago flour (20%) because, in terms of taste, the sago burger has a slightly sweet taste, which comes from the natural taste of sago flour, but is not dangerous for people with diabetes. The addition of sago flour slightly adds a sweet taste to sago burger buns. According to Drummond and Brefere: 2010:10), taste is a way to differentiate food that can be consumed, based on the taste captured by the sense of taste. The taste in question is the taste of sago burger patties that have sago flour added.

The results showed that the standard recipe for sago burgers with the addition of 60 g of sago flour (20%) was 190 g of high-protein wheat flour, 60 g of sago flour, 12 g of

active dry yeast, 50 g of eggs, 30 g of sugar, 1 g of salt, 100 g of UHT milk, 50 g of margarine, and 35 g of water. A standard recipe is A standard recipe serves as a guideline for making a product of quality that has been tested and researched. (Gisslen, 2018:103). A standard recipe is a collection of instructions, measurements, and ingredients for preparing a dish.

The research results show that consumers prefer sago burgers with the addition of 30 g of sago flour (10%), with average values of 3.8, 4.1, 4, and 4.1. Consumers choose sago burgers with 30 g of sago flour (10%) because, in terms of color, it is not too brown, giving the impression of bread in general. According to (Alya: 2009:91), color is the radiance the eye obtains from light reflected by an object it hits. In this case, the color in question is the color resulting from adding sago flour (Metroxylon Sp) to the sago burger product. The more sago flour added, the deeper the brown color.

Consumers choose sago burgers with the addition of 30 g (10%) of sago flour because in terms of aroma, it remains like the aroma of bread in general with the typical aroma of bread fermentation even though 30 g of sago flour (10%) was added to the total essential ingredients of sago burger dough, which means that the addition of sago flour does not change the aroma of the sago burger patties. According to Fajri and Ratu: 2008:81), aroma is a subjective smell that is very difficult to measure, because every human has its own sensitivity and preferences. The aroma referred to here is the addition of sago flour to the sago burger products.

Consumers choose the sago burger with the code AK 99 because the sago burger bun has a slightly rough and heavy texture, similar to the texture of wheat bread, but still soft. Therefore, it gives a different impression to the burger patties, which means the addition of 30 g (10%) of sago flour can change the texture of sago burger patties. According to Nurwachidayah et al.: 2015:90-91), texture is the hardness and softness of a product perceived by the sense of touch and taste. The texture in question is that of sago burger bread (Metroxylon spp.).

Consumers choose sago burgers with 30 g (10%) of sago flour because the sago burger has a slightly sweet taste, which comes from the natural taste of sago flour but is not dangerous for people with diabetes. This is because sago flour slightly adds a sweet taste to the sago burger patties. According to Drummond and Brefere: 2010:10), taste is a way to differentiate food that can be consumed, based on the taste captured by the sense of taste. The taste in question is the taste of sago burgers with added sago flour.

Conclusion

Organoleptic characteristics of sago burger (Metroxylon spp.) based on observation tests on color, aroma, texture, and taste of sago burger with no addition of sago flour (0% sago), addition of 30 g sago flour (10%), and addition of 60 g sago flour (20%). Based on the organoleptic test results, the expert panelists preferred sago burgers with the addition of 60 g of sago flour (20%) with a brownish burger color, a typical fermented bread aroma, a slightly rough but still soft burger texture, and a slightly sweet taste of sago burgers.

The standard recipe for sago burgers with 60 g sago flour (20%) was 190 g high-protein wheat flour, 60 g sago flour, 12 g active dry yeast, 50 g eggs, 30 g eggs, 1 g salt, 100 g UHT milk, 50 g margarine, and 35 g water.

Consumer preferences for sago burgers, based on consumer acceptance tests for color, aroma, texture, and taste, from sago burgers with no addition of sago flour (0% sago), the addition of 30 g sago flour (10%), and the addition of 60 g sago flour (20%). Consumer panelists preferred sago burgers with 30 g sago flour (10%). The color of the burger was not brown. The burger smells typical fermented bread; the texture is soft and slightly rough, and the taste is slightly sweet. From the results of the analysis of data received

from consumers, H1 was rejected and H0 was accepted because there was no significant effect of adding sago flour to sago burger patties on the acceptability and organoleptic characteristics (color, aroma, texture, and flavor) of sago burgers. The results of consumer data research using a one-way ANOVA test show that Fcount < Ftable, so H1 is rejected and H0 is accepted.

The objective was to reduce the quantity of sago flour in sago burger products (Metroxylon Sp) so that they become softer while adding milk flour and animal fat to the same product. Researchers who wish to conduct further research in this area may find this study to be useful as a reference. It is essential to pay attention to the dosage of the ingredients and properties of the materials used to ensure that future research can continue to calculate the nutritional content of sago burgers (Metroxylon spp.).

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