HEDONIC QUALITY OF SEMPRONG CAKE FROM VARIOUS LEVELS OF CATFISH FLOUR ADDITION

Mutu Hedonik Kue Semprong dari Berbagai Tingkat Penambahan Tepung Daging Ikan Patin

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ABSTRACT

Diversification of processed fisheries is very important to attract the interest of the Indonesian people who still have low consumption of fish. The addition of catfish meat flour to semprong cake is expected to increase the nutritional value and attract consumer attention. The aim of this research was to determine the level of addition of catfish meat flour to semprong cakes as the product most preferred by panelists based on hedonic quality which includes aspects of appearance, aroma, texture and taste. This research used an experimental method with four treatments adding catfish meat flour at 0%, 12.5%, 15% and 17.5%. Data analysis using tests friedman, multiple comparison and Bayes. The results of the research showed that the level of addition of catfish meat flour of 15% was the most preferred addition in terms of appearance with a mean value of 8.7 (like), aroma 7.7 (like), and taste 7 (like), while the addition was 12%. was the most liked addition in terms of texture with a mean value of 7.2 (like). It was concluded that the addition of 15% was the most preferred treatment in terms of appearance, aroma and taste and the addition of 12.5% was the most preferred treatment in terms of texture.

Keywords: Meat Flour, Catfish, Preference Level, Proximate, Semprong Cake

ABSTRAK

Diversifikasi olahan perikanan sangat penting untuk menarik minat masyarakat Indonesia yang masih rendah dalam konsumsi ikan. Penambahan tepung daging ikan patin ke dalam kue semprong diharapkan dapat meningkatkan nilai gizi dan menarik perhatian konsumen. Tujuan dari penelitian ini untuk menentukan tingkat penambahan tepung daging ikan patin terhadap kue semprong sebagai produk yang paling disukai panelis berdasarkan mutu hedonik yang meliputi aspek kenampakan, aroma, tekstur, dan rasa. Penelitian ini memanfaatkan teknik eksperimen dengan empat perlakuan penambahan tepung daging ikan patin sebesar 0%, 12,5%, 15%, dan 17,5%. Analisis data menggunakan uji *friedman*, *multiple comparison* dan *Bayes*. Hasil penelitian menyatakan bahwa tingkat penambahan tepung daging ikan patin sebesar 15%

menjadi penambahan yang paling disukai dari segi kenampakan dengan nilai rerata 8,7 (suka), aroma 7,7 (suka), dan rasa 7 (suka), sedangan penambahan sebesar 12% menjadi penambahan yang paling disukai dari segi tekstur dengan nilai rerata 7,2 (suka). Didapatkan kesimpulan bahwa penambahan 15% menjadi perlakuan yang paling disukai ditinjau dari kenampakan, aroma, dan rasa serta penambahan 12,5% menjadi perlakuan yang paling disukai dari segi tekstur.

Kata Kunci: Ikan Patin, Kue Semprong, Proksimat, Tepung Daging, Tingkat Kesukaan

INTRODUCTION

Indonesia's aquaculture production reached 4.38 million tons in the fourth quarter of 2022 (KKP, 2022), but fish consumption is still below target. Indonesia's fish consumption was only 56.48 kg per person per year until October 2023, far below the national target of 60 kg per capita/year for 2023 and 62.05 per capita/year in 2024 (KKP, 2023). Therefore, serious efforts are needed to increase fish consumption in Indonesia.

Diversification of fishery products such as fish meat meal is one solution to increase fish consumption. A dry solid product that can extend the shelf life of fish is fish meat meal (Herman *et al*., 2020). Catfish is suitable for meat meal because of its high protein and fat content (Harmain & Dali, 2017). Fishmeat flour has been used in various food products such as biscuits (Ningrum *et al*., 2017), sago cookies (Nilmalasari & Asih, 2017), and cookies (Nurfajrina & Hastuti, 2021).

Semprong cake is a traditional Indonesian cake in the form of a thin and crispy roll, similar to a wafer or egg roll. This cake is made from a mixture of rice flour, sugar, coconut milk, and eggs, which are low in protein. Semprong cake as a traditional product has a low protein content because the basic ingredients do not contain enough protein (Amirahsari & Ronitawari, 2019). The addition of savory patin fishmeat flour to sweet semprong cakes can create new flavor innovations and influence consumer preferences. The preferred semprong cake usually has a harmonious taste between sweet and savory, a delicious aroma, a crunchy texture, and is not too hard or soft, with an attractive brownish yellow color (Devy, 2011). As a traditional food that is widespread in Indonesia, semprong cake is known by various names such as opak roll in Blitar, dampit in Sunda, japit roll in Lamongan, and sapik cake in Minang (Mahendradatta *et al*., 2021).

This study aims to determine the level of addition of patin fish meat flour to semprong cake as the product most preferred by panelists based on hedonic quality, including aspects of appearance, aroma, texture, and taste. This study is expected to contribute to the development of traditional foods that are not only rich in nutritional value but also favored by consumers.

METHODS

Place and Time

This research was conducted for three months from February to April 2024. The nutritional content testing of semprong cake was conducted at the Laboratory of the Technical Implementation Unit for Testing and Implementing the Quality of Fishery Products (PPMPP) of the Fisheries and Marine Service of West Java Province, Cirebon Regency. In the Laboratory of Fishery Product Processing Technology, it is used to make semprong cake and patin fish meat flour.

Tools

The tools needed for this study include containers, basins, spoons, spatulas, semprong molds, brushes, pans, mixers, cutting boards, measuring cups, stoves, ovens, sieves, and stationery.

Materials

The materials used in this study include fresh catfish, catfish meat flour, sago flour, rice flour, eggs, sugar, margarine, coconut milk, and sesame seeds.

Research Design

This study used an experimental method, where the treatment group was divided into four groups. The division of these groups was based on variations in the weight of rice flour, namely:

A   : control (without catfish flour)
B   : addition of 12.5% catfish flour
C   : addition of 15% catfish flour
D   : addition of 17.5% catfish flour

The determination of the treatment concentration in this study was based on previous studies exploring the addition of fish flour to various food products. Ningrum *et al*., (2017) found that the addition of 15% catfish flour in biscuits was the best, while Nilmalasari & Asih (2017) and Nurfajrina & Hastuti (2021) found that 20% catfish flour in sago cookies and cookies was the most preferred. Research by Haq *et al*., (2021) also showed that 15% anchovy flour in semprong cakes gave the best results. In addition, preliminary tests showed that the addition of patin fish flour to semprong cakes with a concentration of 15% was the most preferred formulation.

Based on previous research and preliminary tests that have been carried out, the concentration range of 2.5% above and below 15%, namely 12.5% and 17.5%, is thought to determine the most optimal formulation and produce the most preferred product. This concentration was chosen to determine more precise results. A total of 20 semi-trained panelists from the Faculty of Fisheries and Marine Sciences, Padjadjaran University became the number of repetitions carried out in the four treatments.

Research Procedure

Making patin fish meat flour

According to Putri *et al*. (2022), the process of making patin fish meat flour begins with cleaning the fish parts, such as fins, guts, tail, and head. To remove the fishy smell, soak the fish in a mixture of lime for thirty minutes. After that, the fish is steamed for thirty minutes at a temperature of 85 to 90°C. After being separated from the skin and bones, the fish meat is squeezed to remove the oil. The fish meat is then dried in an oven for six hours at a temperature of 80°C.

Making semprong cakes

The formulation used is based on Wati (2013). Starting by mixing various ingredients in a bowl. The ingredients that are included in the first stage are rice flour, sago flour, eggs and powdered sugar. Then shake with a mixer. After that add sesame seeds, margarine, and coconut milk. Next, stir the mixture again until well mixed. Once thoroughly mixed, pour 20 grams of dough into the semprong cake mold, then clamp and cook for two minutes at 100°C. Next, roll the browned semprong cake into a tube shape using chopsticks. The following components are needed to make semprong cake listed in Table 1.

Table 1. Cake Ingredients with Various Levels of Added Catfish Flour

Ingredient	Treatment			
	A	B	C	D
Rice flour (g)	225	225	225	225
Sago flour (g)	40	40	40	40

Ingredient	Treatment			
	A	B	C	D
Catfish meal (g)	0	28	33.75	39.37
Eggs (g)	175	175	175	175
Sugar (g)	150	150	150	150
Margarine (g)	40	40	40	40
Coconut milk (ml)	200	200	200	200
Sesame seeds (g)	40	40	40	40

Data Analysis

The data obtained during organoleptic testing is in the form of quantitative data, namely data that is analyzed statistically (Sugiyono, 2009). Quantitative research utilizes numbers in its process, starting from data collection, data estimation, to presentation of results. (Arikunto, 2006). The data was analyzed using the Friedman test to determine the impact of catfish flour added to semprong cakes on their level of preference. The multiple comparison test is intended to determine the differences between treatments of adding catfish flour to semprong cakes. Furthermore, to decide the best treatment of adding catfish flour to semprong cakes using the Bayes method.

RESULT
Hedonic Test Results of Semprong Cake Appearance

The hedonic test results of semprong cake appearance are presented in Figure 1.
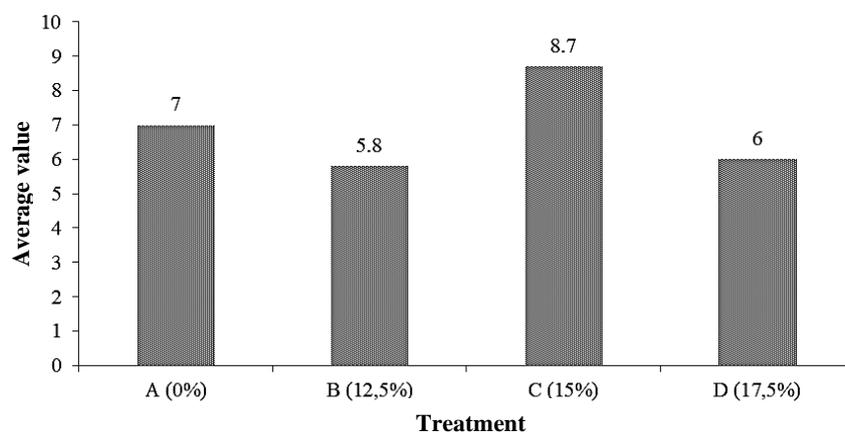

Figure 1. Hedonic Test Results of Semprong Cake Appearance
Description: (1) Very dislike; (3) Dislike; (5) Neutral; (7) Like; (9) Very like

Based on the test of the appearance of semprong cake, the average value of the panelists' preference score was between 6.0 and 8.7 for treatments A (0%), B (12.5%), C (15%), and D (17.5%). Treatment C (15%) got the highest average value, while treatment B (12.5%) got the lowest average value. Therefore, treatment C (15%) was the most preferred treatment. From the results of the Friedman test, it was found that there was an effect of adding patin fish meat flour to semprong cake. Treatment C was significantly different from treatments A (0%), B (12.5%) and D (17.5%).

Hedonic Test Results of Semprong Cake Aroma

The hedonic test results on the aroma of semprong cake are presented in Figure 2.
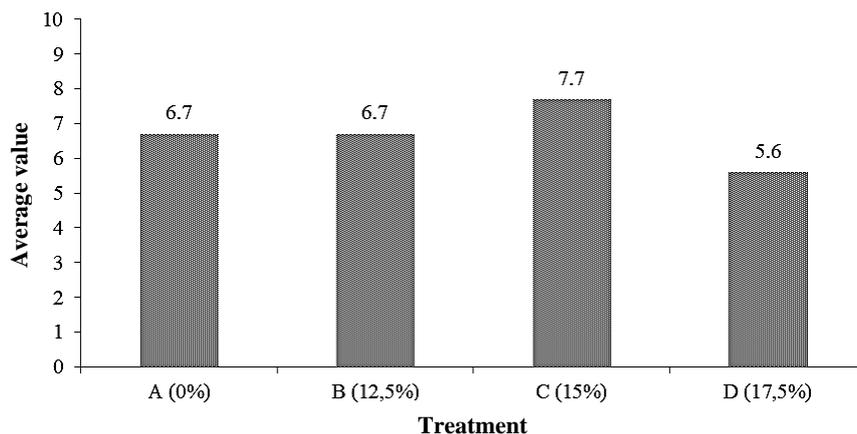
Figure 2. Hedonic Test Results of Semprong Cake Aroma
Description: (1) Really dislike; (3) Dislike; (5) Neutral; (7) Like; (9) Really like

The average value of the panelists' preference scores for the aroma of semprong cake with treatments A (0%), B (12.5%), C (15%), and D (17.5%) ranged between 5.6 and 7.7. Treatment C (15%) got the highest average value, while treatment D (17.5%) got the lowest average value. Based on the Friedman test, the addition of patin fish meat flour did not affect the level of preference for the aroma of semprong cake.

Hedonic Test Results of Semprong Cake Texture
The results of the hedonic test on the texture of semprong cake are presented in Figure 3.
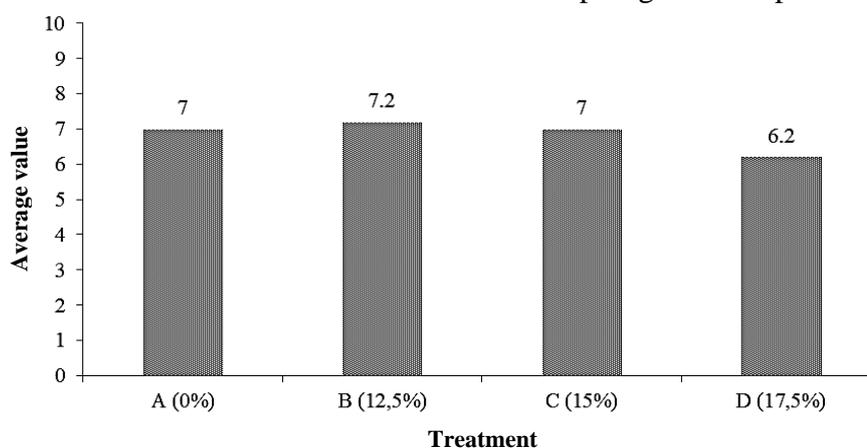

Figure 3. Hedonic Test Results of Semprong Cake Texture
Description: (1) Very dislike; (3) Dislike; (5) Neutral; (7) Like; (9) Very like

The hedonic test results state that treatment B on the texture of semprong cake obtained the highest average value (12.5%), while treatment D obtained the lowest average value (17.5%). The Friedman test indicates that the addition of patin fish meat flour does not affect the level of liking for the texture of semprong cake, so a multiple comparison test was not conducted.

Hedonic Test Results of Semprong Cake Taste
The results of the hedonic test on the taste of semprong cake are presented in Figure 4.
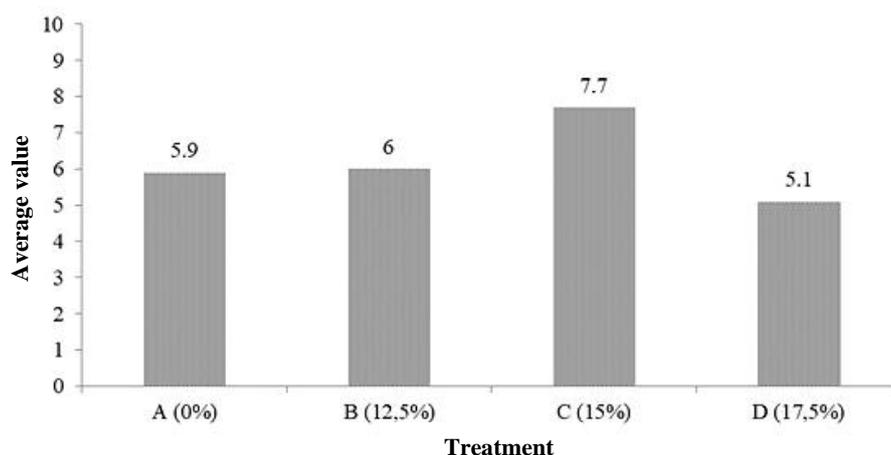
Figure 4. Hedonic Test Results of Semprong Cake Taste
Description: (1) Very dislike; (3) Dislike; (5) Neutral; (7) Like; (9) Very like

The results of the hedonic test on the taste of semprong cake with treatment C having the highest average value (15%), and treatment D having the lowest average value (17.5%). The results of the Friedman test showed that the addition of patin fish meat flour affected the level of consumer preference for the taste of semprong cake. The results of the multiple comparison test showed that treatment A (0%) did not show a significant difference with treatments B (12.5%) and D (17.5%), but showed a significant difference with treatment C (15%).

DISCUSSION

Appearance is the first aspect assessed by panelists when trying a product before assessing other characteristics such as aroma, taste, and texture (Nurwin *et al*., 2019). Product appearance greatly helps consumers in attracting visual attention. Based on the hedonic test of the hedonic test results of the appearance of semprong cakes (Figure 1), an average value of between 6.0 and 8.7 was obtained. The highest value was obtained in treatment C (15%) and the lowest in treatment B (12.5%). Semprong cakes with treatment C (15%) have a yellowish color with a little brownish, so the color is not too bright. This is due to protein denaturation that occurs through the Maillard process, which produces a brownish color in the product (Hidayat *et al*., 2014). The Friedman test indicates that the addition of catfish meat flour affects the panelist's assessment of the appearance of semprong cakes. Further tests with multiple comparisons showed that treatment A (0%) was not significantly different from treatment B (12.5%) and treatment D (17.5%), but was significantly different from treatment C (15%). The addition of catfish flour to the product affected the color, which became darker with increasing concentration. This is in line with the research of Putri *et al*. (2022) which found that the more catfish flour used, the more brownish the color of the sticks became, and the addition of tilapia flour to fish flakes caused the color to become darker (Safitri *et al*., 2023).

Aroma plays an important role in food because it affects the level of consumer acceptance of the food (Trisyani & Syahlan, 2022). Aroma is produced from a combination of various components that work together to create a distinctive smell, not just from one component (Rieuwpassa *et al*., 2023). Based on the results of the hedonic test on the aroma of semprong cakes, the average value ranged from 5.6 to 7.7. The highest value was found in treatment C (15%) and the lowest in treatment D (17.5%). Semprong cake with treatment C (15%) has a distinctive and savory fish aroma. Consumers want semprong cakes with a fragrant aroma (Devy, 2011). The addition of coconut milk and sesame seeds reduces the fishy aroma in semprong cakes, so that the cakes are still preferred by panelists (Haq *et al*., 2021). In addition to the fragrant aroma of coconut milk and sesame seeds, the catfish meat flour used is also not

too fishy, so it is still preferred by panelists. This happens because the fish that will be made into flour has been soaked in lime. Soaking fish in lime juice is effective in reducing the fishy odor in fish by neutralizing the trimethylamine (TMA) compound through reaction with citric acid, so that the fishy aroma is reduced (Safitri *et al*., 2023). The Friedman test showed that the addition of catfish meat flour did not affect the level of panelists' preference for the aroma of semprong cakes, so that the further test stage with multiple comparisons was not carried out.

Texture is the sensation of pressure felt in the mouth when food is bitten, chewed, and swallowed, or felt by touching the fingers (Pitunani *et al*., 2016). The results of the hedonic test on the texture of semprong cakes showed an average value between 6.2 and 7.2, where treatment B (12.5%) obtained the highest value and treatment D (17.5%) obtained the lowest value. The texture of semprong cakes with treatment B (12.5%) is not too hard and crunchy, so it is not easily brittle. The texture of semprong cakes is influenced by the percentage of patin fish flour added to the dough. The more patin fish flour added, the harder and less crunchy the texture of the semprong cake becomes, thus reducing the level of preference for the texture. An increase in the hardness value indicates that the texture of the product is less crunchy (Istinganah *et al*., 2017). Research by Ningrum *et al*. (2017) also supports this, stating that the use of larger amounts of patin fish flour in biscuits produces harder products because fish flour does not contain gluten, so the dough does not expand. The Friedman test showed that the addition of catfish flour did not affect the panelists' preference for the texture of the semprong cake, so the further test stage with multiple comparisons was not carried out.

Taste is a key factor that determines the level of consumer acceptance of a food product (Rieuwpassa *et al*., 2023). Based on the results of the hedonic test on the taste of semprong cake, an average value of between 5.1 and 7.7 was obtained, with the highest value in treatment C (15%) and the lowest in treatment D (17.5%). Semprong cake with treatment C (15%) has a savory and sweet taste. According to Devy (2011), consumers generally like semprong cakes that have a savory taste and are not too sweet. The addition of catfish flour in higher concentrations produces semprong cakes with a distinctive fish taste due to the dominance of fish flour protein. Sari *et al*. (2019), found that the distinctive taste of catfish can be an attraction for panelists, in line with Rohmah's research (2017) which calls this taste sweet whitefish. Analysis using the Friedman test showed that the addition of patin fish meat flour affected the level of panelists' preference for the taste of semprong cake. Further tests with multiple comparisons showed that treatment A (0%) was not significantly different from treatment B (12.5%) and treatment D (17.5%), but was significantly different from treatment C (15%).

CONCLUSION

The results of the study on the level of addition of patin fish meat flour to semprong cakes can be concluded that semprong cakes with the addition of patin fish meat flour of 15% are the most preferred treatment by panelists in terms of appearance, aroma and taste. The addition of patin fish meat flour of 12.5% is the preferred treatment in terms of texture. Although it affects the appearance and taste, the addition of patin fish meat flour does not have a significant impact on aroma and texture. Diversification of semprong cakes with patin fish meat flour increases nutritional value without reducing consumer acceptance.

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