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HEDONIC QUALITY OF KEMBANG GOYANG CAKE WITH VARIOUS LEVELS OF PANGASIUS MEAT FLOUR ADDITION

Mutu Hedonik Kue Kembang Goyang Dengan Berbagai Tingkat Penambahan Tepung Daging Ikan Patin

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ABSTRACT

The level of fish consumption in Indonesia based on data from the Ministry of Maritime Affairs and Fisheries (KKP) still has not reached the government's target, one way to increase fish consumption in Indonesia is to make a variety of processed fish products, known as product diversification. This study aims to determine the optimal percentage of patin fish meat flour addition in making rocking flower cake, in order to produce the most preferred product. The research was conducted from February to April 2024 at the Fishery Product Processing Technology Laboratory, Joint Building of Fisheries and Agriculture, Faculty of Fisheries and Marine Science, Padjadjaran University, and the Services Laboratory of UPTD Testing and Application of Fishery Product Quality (Pengujian dan Penerapan Mutu Produk Perikanan/ PPMPP) Cirebon, West Java Provincial Marine and Fisheries Agency. The method used was an experimental method with variations in the levels of catfish meat flour in rocking flower cakes, consisting of four treatments (0%, 7.5%, 10%, and 12.5%), with 20 semi-trained panellists as replicates to determine the level of liking for the product. Observations were made through organoleptic tests. The results showed that the addition of 10% catfish meat flour resulted in the highest level of liking from the panellists, with a rating of 7 (preferred) for appearance, aroma, and texture, and 8 (preferred) for taste.

Keywords: Favourability level, Pangasius Catfish, Kembang Goyang Cake, Fish Meat Flour

ABSTRAK

Tingkat konsumsi ikan di Indonesia berdasarkan data Kementerian Kelautan dan Perikanan (KKP) masih belum mencapai target pemerintah, salah satu cara untuk meningkatkan konsumsi ikan di Indonesia adalah dengan melakukan variasi produk olahan ikan, atau yang dikenal sebagai diversifikasi produk. Penelitian ini bertujuan untuk menentukan persentase optimal penambahan tepung daging ikan patin dalam pembuatan kue kembang goyang, guna menghasilkan produk yang paling disukai. Penelitian dilaksanakan dari Februari hingga April 2024 di Laboratorium Teknologi Pengolahan Hasil Perikanan, Gedung Bersama Perikanan dan Petanian, Fakultas Perikanan dan Ilmu Kelautan Universitas Padjadjaran, serta Laboratorium

Jasa UPTD Pengujian dan Penerapan Mutu Produk Perikanan (PPMPP) Cirebon Dinas Kelautan dan Perikanan Provinsi Jawa Barat. Metode yang digunakan yaitu metode eksperimental dengan variasi kadar tepung daging ikan patin pada kue kembang goyang, terdiri dari empat perlakuan (0%, 7,5%, 10%, dan 12,5%), dengan 20 panelis semi terlatih sebagai ulangan untuk mengetahui tingkat kesukaan terhadap produk. Pengamatan dilakukan melalui uji organoleptik. Hasil penelitian menunjukkan bahwa penambahan tepung daging ikan patin sebesar 10% menghasilkan tingkat kesukaan tertinggi dari panelis, dengan penilaian 7 (disukai) untuk kenampakan, aroma, dan tekstur, serta 8 (disukai) untuk rasa.

Kata Kunci: Ikan Patin, Kue Kembang Goyang, Tepung Daging Ikan, Tingkat Kesukaan

INTRODUCTION

Fish is one of the animal food sources that has great potential in Indonesia. Although fish can be the main source of protein to improve community nutrition, the level of fish consumption in Indonesia, based on data from the Ministry of Maritime Affairs and Fisheries (KKP), has not yet reached the government's target of 60 kg per capita in 2022. This is due to the lack of public understanding of the nutritional benefits of fish for health, as well as limitations in fish processing and preservation technology that can increase the variety and availability of fish for community consumption (Djunaidah, 2017). One way to increase fish consumption is through diversification of processed fish products, which can be enjoyed by various groups, including children, adults, and the elderly. Examples of diversified fishery products include fish balls, fish nuggets, fish samosas, and fish amplang (Suwarti & Rahayu 2015).

Catfish is one of the sources of protein that is widely used in Indonesia. Catfish is known for its fresh and thick meat, has an attractive texture, contains few bones and skin, and has a not too strong aroma (Pahlawan et al. 2017). The nutritional content of catfish is very good for the body and is a favorite for some people. Catfish meat is easy to digest and contains 68.8% protein, 5.8% fat, 3.5% ash, and 51.3% water (Pahlawan et al. 2017). Currently, the catfish processing industry in Indonesia still relies on traditional methods, where the processing process is relatively simple so that almost everyone can do it, including fried fish, grilled fish, and by-products such as dried fish, crackers, and amplang.

To increase the utility value of catfish as an ingredient in processed products, one way is to process catfish meat into flour. According to Sumarto (2022), fish meat flour is a dry solid product produced by removing liquid and some or all of the fat contained in fish meat. Patin fish meat flour has a higher nutritional value than vegetable flour, especially in terms of its protein content. Due to its high protein content, patin fish meat flour can be used as an additional ingredient in food products that have a low protein content.

Kue kembang goyang is a popular snack known for its sweet and savory taste, as well as its dry and crispy texture, made from ingredients such as rice flour, tapioca flour, eggs, sugar, salt, water, and thick coconut milk (Pujilestari et al., 2021). Nutritional analysis shows that 100 grams of kue kembang goyang contains 51.88% carbohydrates, 5.18% protein, 2.36% fiber, 0.11 mg Vitamin B15, 1.12 mg Vitamin E, and 342.8 calories of energy (Arief & Pujiharti, 2022). This low nutritional content indicates the need for additional ingredients to increase the nutritional value of kue kembang goyang.

The addition of patin fish meat flour can affect the level of preference for a product such as kue kembang goyang. In previous studies, it has been done on the addition of patin fish meat flour to dry cake products such as fried dumplings, crackers, dry noodles, and others. The results of the products that were given the addition of patin fish meat flour showed an effect on the level of product preference. Thus, research is needed on the addition of patin fish meat flour in making kembang goyang cakes to determine the effect on the level of preference of kembang

goyang cakes so as to obtain the most preferred product.

METHODS

Place and Time

This research was conducted in February - April 2024 at the Laboratory of Fisheries Product Processing Technology, Joint Building of Fisheries and Agriculture, Faculty of Agriculture, Padjadjaran University.

Tools and Materials

The tools used in this study were knives, stoves, pans, digital scales, cutting boards, blenders, sieves, electric ovens, kembang goyang molds, whisks, measuring cups, frying pans, gas stoves, sieves, and basins. The materials used in making kembang goyang cakes are catfish, rice flour, tapioca, salt, eggs, coconut milk, water, and cooking oil.

Research Design

This study used an experimental method consisting of four treatments and twenty replications according to the panelists used. The four treatments for adding catfish meat flour to making kembang goyang cakes are as follows:

1. Treatment A : Addition of 0% catfish meat flour (control) from rice flour.
2. Treatment B : Addition of 7.5% catfish meat flour from rice flour.
3. Treatment C : Addition of 10% patin fish meat flour from rice flour.
4. Treatment D : Addition of 12.5% patin fish meat flour from rice flour.

Data obtained from organoleptic observations were analyzed using non-parametric statistics, Friedman test and Bayes test. Meanwhile, proximate observation data were carried out on control and most preferred kembang goyang cakes, then analyzed descriptively comparatively.

Research Procedure

Making patin fish meat flour

This method refers to (Sari et al. 2020) modification. Fresh patin fish is cleaned by washing, removing scales, and internal organs. Furthermore, the fish is steamed in a pan at a temperature of 80°C for 10 minutes (Santoso & Litaay, 2013). After steaming, the patin fish is drained and left to cool, then the meat is mashed by shredding it into smaller pieces. The next process is pressing or squeezing the mashed fish meat using a filter cloth. After that, drying is carried out using an oven at a temperature of 50°C for about 5 hours, followed by grinding using a blender. The resulting flour is then sieved using a 100 mesh sieve to obtain flour with fine and uniform grains.

Making Kembang Goyang Cake with Patin Fish Meat Flour

This method refers to Hidayah (2019) with modifications. The process of making kembang goyang cake begins by mixing ingredients such as rice flour, tapioca, patin fish meat flour, eggs, coconut milk, and water. Then, the kembang goyang mold is heated in oil first before being dipped into the dough. The dough that sticks to the mold is then dipped into hot oil at a temperature of about 100°C, while being shaken to release it from the mold. The frying process is carried out for about 1 minute until the kembang goyang cake is brownish yellow. Once cooked, the kembang goyang is removed and drained before serving.

Observation Parameters

The parameters observed in this study were the level of organoleptic preference for the appearance, aroma, texture, and taste of kembang goyang cake. The assessment of the level of

organoleptic preference was carried out using the hedonistic test method using 20 semi-trained panelists.

RESULT

Appearance

Appearance is an important factor that panelists consider in assessing food products (Maligan et al. 2018). Appearance is one of the most important organoleptic parameters, because if panelists are satisfied with the appearance of a product, they tend to look at other organoleptic aspects such as aroma, texture, and taste (Rochima et al. 2015). The results of the panelists' assessment of the level of preference for the appearance of kembang goyang cakes from four different treatments can be seen in Table 1.

Table 1. Average Level of Preference for the Appearance of Kembang Goyang Cakes Various Treatments of Adding Patin Fish Meat Flour

Treatment with Addition of Catfish Meat Meal (%)	Median	Average Appearance
0	7	7,0 a
7,5	7	7,1 a
10	7	7 ,2a
12,5	7	6,9 a

Description: Values followed by the same letter vertically show no significant difference in the multiple comparison test at the 5% level.

Based on non-parametric statistical analysis using the Friedman test, it shows that the addition of patin fish meat flour in different formulations in kembang goyang cake does not have a significant effect on the level of preference for the aroma of the cake. The results of the panelist assessment showed that the highest average value for the aroma of kembang goyang cake was in the treatment without the addition of patin fish meat flour (0%). Meanwhile, the lowest average value for the aroma of kembang goyang cake was in the treatment with the addition of patin fish meat flour as much as 12.5%.

Taste

Taste is the tongue's response to the stimulation given by food. This parameter greatly determines whether a food product is liked or not by consumers. The results of the panelist assessment of the level of preference for the taste of kembang goyang cake from four different treatments can be seen in Table 3.

Table 3. Average Level of Preference for Kembang Goyang Cake Taste Various Treatments for Adding Patin Fish Meat Flour.

Treatment with Addition of Catfish Meat Meal (%)	Median	Average Taste
0	7	7,3 ab
7,5	7	7,2 a
10	8	7,7 b
12,5	5	6,0 a

Description: Numbers followed by the same letter vertically show no significant difference in the multiple comparison test at the 5% level.

Based on non-parametric statistical analysis using the Friedman test, it shows that the addition of patin fish meat flour in different formulations in kembang goyang cake has a significant effect on the level of taste preference of the cake. Therefore, a multiple comparison test was conducted. The results of the multiple comparison test showed that the treatment with the addition of patin fish meat flour of 0%, 7.5%, and 12.5% did not show a significant difference to the 10% treatment. However, the treatment with the addition of patin fish meat flour of 10% showed a significant difference with the 7.5% and 12.5% treatments.

The results of the panelist assessment showed that kembang goyang cake with the addition of 10% patin fish meat flour had the highest average taste value. While kembang goyang cake with the addition of 12.5% patin fish meat flour had the lowest average taste value.

Texture

Texture is one of the important parameters in food products that is assessed using the sense of touch to determine the panelists' acceptance of the texture of the kembang goyang cake. The results of the panelists' assessment of the level of texture preference from four different treatments can be seen in Table 4.

Table 4. Average Level of Texture Preference for Kembang Goyang Cake Various Treatments of Adding Patin Fish Meat Flour.

Treatment with Addition of Catfish Meat Meal (%)	Median	Average Texture
0	7	7,4 ab
7,5	7	7,4 a
10	7	7,7 b
12,5	7	6,4 a

Description: Numbers followed by the same letter vertically show no significant difference in the multiple comparison test at the 5% level.

Based on non-parametric statistical analysis using the Friedman test, it shows that the addition of patin fish meat flour in various kembang goyang cake formulations has a significant effect on the level of preference for the texture of the cake. Therefore, a multiple comparison test was conducted. The results of the multiple comparison test showed that the treatment with the addition of patin fish meat flour of 0%, 7.5%, and 12.5% did not show a significant difference compared to the 10% treatment. However, the addition of patin fish meat flour of 10% showed a significant difference compared to the addition of 7.5% and 12.5%.

The results of the panelist assessment showed that kembang goyang cake with the addition of 10% patin fish meat flour had the highest average texture value. Meanwhile, kembang goyang cake with the addition of 12.5% patin fish meat flour had the lowest average texture value.

DISCUSSION

The results of the organoleptic appearance test of the kembang goyang cake showed that the lowest appearance value of the kembang goyang cake was found in the treatment of adding 12.5% patin fish meat flour, which had a brownish color. The higher the concentration of the addition of patin fish meat flour, the appearance of the kembang goyang cake became less preferred by the panelists so that the level of panelist preference for the resulting kembang goyang cake decreased. This is in accordance with Pratiwi's statement (2013) that the color change in the experimental fish sticks was influenced by the color of the additional ingredients, where the use of more fish meat flour would produce a browner color after the dough was fried.

This happens because patin fish meat flour contains protein and sugar that undergo Maillard reactions when heated, which can cause the appearance of the kembang goyang cake to become increasingly brownish. The Maillard reaction occurs when reducing sugar reacts with the amine group of protein or amino acids. The result of this reaction is the formation of a brown compound known as melanoidin. The accumulation of brown pigments indicates that the Maillard reaction has occurred in foods containing both protein and carbohydrates (Bastos et al. 2012).

The results of the organoleptic aroma test of kembang goyang cake showed that the lowest aroma was in the 12.5% treatment, this was due to the addition of patin fish meat flour, which has been proven that the addition of patin fish meat flour as much as 12.5% can reduce the level of liking kembang goyang cake by having the lowest preference value. The combination of adding patin fish meat flour to kembang goyang cake produces a distinctive fish aroma so that panelists need to adapt to the aroma of kembang goyang cake which is given the addition of patin fish meat flour. According to research conducted by (Asih & Arsil, 2020), adding more fish flour to the product resulted in a decrease in the level of liking for the resulting aroma. This is because the aroma of the choux pastry changes to the aroma of dry fish due to the use of more fish flour in the process of making the product, causing the level of liking to decrease.

The results of the organoleptic taste test on kembang goyang cake showed that the 10% treatment was the treatment most preferred by the panelists because the kembang goyang cake in this treatment had a fairly strong taste of patin fish meat flour, but still maintained the savory taste typical of kembang goyang cake. According to (Aryani & Norhayani 2011), the components that form the taste in food ingredients are related to their protein content; the higher the protein content, the resulting product tends to have a more savory taste. This is in line with research conducted by Istianti (2005), which showed that a savory taste can be produced through the process of protein hydrolysis into amino acids, especially glutamic acid, which provides a strong distinctive taste.

The results of the organoleptic texture test on kembang goyang cake showed that the addition of 10% patin fish meat flour was the addition most preferred by the panelists. However, the addition of more than 10% such as in the 12.5% treatment will reduce the level of preference for the texture of kembang goyang cake. This is in line with research conducted by (Andarwulan et al. 2011), which states that protein has hydrophilic properties that can increase the product's ability to absorb water. This water absorption is influenced by the presence of carboxyl groups in the protein, which can cause the product to have a harder or less crispy texture if the protein content is high. Another study by (Ningrum et al. 2017) showed that the use of large amounts of catfish flour in food products can produce products with a hard texture. This is due to the lack of gluten content in fish flour, which prevents the dough from expanding optimally.

CONCLUSION

Based on the research results, it can be obtained that the percentage of the addition of patin fish meat flour to the kembang goyang cake product that is most preferred organoleptically is the 10% treatment which has a preference level value for appearance, aroma, and texture, namely 7 (preferred) and taste, namely 8 (preferred).

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