The Addition of Mackerel Flour to Telur Gabus Cake

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Abstract—This research purpose is to determine the level of addition of mackerel meat flour which produces the most preferred level of organoleptic preference for telur gabus cake. The research method used was experimental with 4 treatments, namely the level of addition of 0% fish meat flour (without addition, as a control), 5%, 7.5%, and 10% tapioca flour used in making telur gabus cake. Observations were made on the level of organoleptic preference of telur gabus cake, including appearance, scent, texture, and taste. The level of organoleptic preference is done by the hedonic test. The scale used is 1 (strongly dislike) 3 (dislike), 5 (ordinary), 7 (like) and the highest score is 9 (really like) using 15 semi-panelists. The data obtained from the results of organoleptic testing of telur gabus cakes from various treatments of the level of addition of mackerel meat flour were analyzed descriptively comparatively. Based on the research results, it was concluded that the level of addition of mackerel meat flour which resulted in the most preferred level of organoleptic preference for telur gabus cake was the addition level of 7.5%. The description of the telur gabus cake produced has a golden yellow color, a savory taste, a distinctive scent of telur gabus cake, and a crunchy texture.

Keywords— Descriptive, Golden yellow, Scent, Texture, Traditional.

I. INTRODUCTION

Telur gabus cake is a traditional meal that is a type of snack favored by Indonesian people (Ramadhani and Murtini, 2017). The distinctive feature of this snack is its crunchy texture, dominant oval shape, smooth surface, and delicious taste. The main ingredient used in making telur gabus is tapioca flour which is rich in carbohydrates, amylose, and amylopectin (Jayanti *et al*, 2017) but poor in protein. According to Lubis (2013), every 100 grams of tapioca flour contains 0.59% protein. Based on the research results of Ramdani and Murtini (2017), the nutritional content of snakehead egg cake is 1.62% ash content, 3.48% protein content, 30.42% fat content, and 60.45% carbohydrates.

An effort to increase the protein content of telur gabus cake is to add fish meat flour to the formulation. Fish meat flour is a product made from whole fish meat by separating the fat and water content from the fish body (Fatmawati and Mardiana, 2014). Processing of fish-based fish protein powder can be an alternative additional raw material. Fish meal has a long shelf life and is more flexible in its utilization (Dewita and Syahrul, 2014).

According to Afianti and Indrawati (2017), the addition of fish meal flour to a dry product can increase the level of preference for texture, taste, color, and scent. Thus, the addition of fish meals as a mixture for making telur gabus

cakes is very prospective to be done to increase the level of liking.

One of the fish meat flours that can be used as an additional ingredient in making telur gabus cake is mackerel fish meat flour. Mackerel meat is rich in antioxidants, coenzyme Q10, and omega-3 fatty acids which can prevent cancer. According to Junianto *et al* (2023), mackerel fish meal has an organoleptic description of yellowish-cream color, slightly pungent aroma, and smooth texture. This research aims to determine the level of addition of mackerel meat flour which produces the most preferred level of organoleptic preference for telur gabus cake.

II. REASEARCH METHOD

The research method used was experimental with 4 treatments, namely the level of addition of fish meat flour 0% (without addition, as control), 5%, 7.5%, and 10% of tapioca flour used in making telur gabus cake. The research was conducted at the Fishery Product Processing Laboratory, Faculty of Fisheries and Marine Science, Padjadjaran University. Research activities include the preparation of tools and materials, research procedures, organoleptic tests, and analysis of research results.

The tools used were a scale, bowl, grated cheese, mixer, spoon, pan, spatula, container, and stove. Meanwhile, the ingredients used in making telur gabus cake include tapioca flour, mackerel flour, grated cheese, butter, chicken eggs, salt, and cooking oil.

The steps of making telur gabus cake with the addition of mackerel flour must be done as follows:
1. Prepare tools and ingredients.
2. Weigh 400 grams of tapioca flour, then divide it into 4 parts of 100 grams each.
3. Weigh the mackerel flour, and divide it into 3 parts of 5%, 7.5%, and 10%.
4. Put 4 eggs into a basin, then mix using a mixer. Add 160 g grated cheese, 2 tablespoons butter, and 1 tablespoon salt. Mix until well blended.
5. Combine dry dough and wet dough in 1 container, then mix until smooth.
6. Shape the dough into an elongated shape
7. Put the dough that has been formed into the cold oil into the pan, after all the dough goes in then turn on low heat on the stove
8. Let the dough stand until it floats and looks sturdy, then fry until evenly cooked

9. If it is already golden-yellowed, remove the telur gabus cake then drain and the telur gabus cake is ready to serve

Organoleptic testing was carried out on telur gabus using a hedonic test (favorability test of appearance, aroma, texture, and taste), to determine the level of consumer acceptance of the telur gabus produced. The research was conducted using a hedonic scale. Consumer favorability scores ranged from 1-9, namely: lowest 1 (strongly dislike) 3 (dislike), 5 (normal), 7 (like) and the highest value 9 (really like) using 15 panelists. Data obtained from organoleptic testing of telur gabus cakes from various treatments of the level of addition of mackerel meat flour were analyzed descriptively comparative.

III. RESULT AND DISCUSSION

A. Apperance

The results of the organoleptic test with the appearance liking test method from 15 panelists obtained an average value of 4.6 to 7 while the highest median value was 7 and the smallest was 5. The highest level of liking on appearance was obtained from the level addition of 10% mackerel meat flour, with an average value of 7. The description of the telur gabus cake product obtained has a brownish-yellow color. The lowest level of liking was obtained from the level addition of 0% mackerel meat flour (no addition, control) with an average value of 4.6. The product description of telur gabus cake obtained has a slightly brownish color. The results of the assessment of the level of favorability of the appearance of telur gabus cake from each treatment are listed in Table I

TABLE I. The average level of liking for the appearance of telur gabus cake

Mackerel Flour Treatment (%)	Median	Average
0	5	4.6
5	5	5.3
7.5	7	6.9
10	7	7

Based on TABLE I, each treatment produces a different level of appearance, the more fish flour added the more favorable it is. The color description is getting brown. This is because fishmeal contains high protein. Protein reacts with reducing sugars from carbohydrates to produce a brown color known as the Maillard reaction (Ridhani *et al.*, 2021). The appearance of food ingredients is a sensory attribute that affects the quality and acceptance of food products. Color is a very important sensory attribute and must always be considered because it has a direct influence on the quality of a product (Simanungkalit *et al.*, 2018).

B. Scent

Acceptance of a food product is determined by the scent factor. Scent assessment aims to determine the palatability of food ingredients based on the sense of smell. The scent of food products mostly comes from spices added to the dough (Rochima *et al.* 2018). The results of the assessment of the level of favorability of the scent of telur gabus cake from each treatment are contained in TABEL II.

The average value of the aroma of telur gabus cake from 15 panelists ranged from 5.4 to 5.9 with a median of 5, which means that the aroma of telur gabus cake produced is between neutral to favored by panelists. The highest average value of aroma is in the treatment without the addition of mackerel meat flour. The additional aroma that appears in fried products is due to the presence of cooking oil (Ariani *et al.* 2017). This is because in fried products there has been partial evaporation of volatile components and the formation of natural flavors due to changes in the structure of fats, proteins, and carbohydrates.

TABLE II. The average level of liking for the scent of telur gabus cake

Mackerel Flour Treatment (%)	Median	Average
0	5	5.9
5	5	5.5
7.5	5	5.9
10	5	5.4

C. Texture

Texture is a sensation of pressure that can be observed by mouth or by touching the surface of the skin, and consistency in the form of thickness, hardness, or smoothness of the surface of the material can be determined through organoleptic tests (Pertiwi *et al.*, 2021). According to Simamora (2020), the texture of telur gabus is characterized by crispy, smooth, not hollow inside and dry rather brittle. The results of the assessment of the level of favorability of the texture of the telur gabus cake from each treatment are listed in Table III.

TABLE III. The average level of liking for the texture of telur gabus cake

Mackerel Flour Treatment (%)	Median	Average
0	5	5.7
5	5	5.3
7.5	7	6.6
10	7	6.5

The results of the organoleptic test of the texture of 15 panelists showed that the level of preference for the texture of telur gabus was the highest, namely the addition of 7.5% mackerel flour with an average value of 6.6 and the lowest level of preference, that is the addition of 5% mackerel flour with an average value of 5.3. The level of addition of mackerel meat flour can reduce crispness. The texture of telur gabus cake hardens due to increased protein content so that it can inhibit the gelatinization process.

D. Taste

Taste is an important factor on which consumers base their decisions on the acceptability of a product. If a product has a bad taste, then the product will not be accepted by consumers even though the color and aroma are good (Justitie *et al.*, 2019). The results of the assessment of the level of liking for the taste of telur gabus cake from each treatment are listed in Table IV.

TABLE IV. The average level of liking for the taste of telur gabus cake

Mackerel Flour Treatment (%)	Median	Average
0	7	6.2
5	7	6.1
7.5	7	6.9
10	7	6.5

The average results of the assessment of 15 panelists on the taste of telur gabus cake ranged from 6.1 to 6.9 with a

median of 7. The highest level of liking for the taste of telur gabus cake was obtained from the treatment of adding 7.5% mackerel flour with a delicious and savory taste. The higher or lower the addition of mackerel flour makes the lower the average value of taste because the resulting taste will be too savory or not taste savory.

IV. CONCLUSION

Based on the results of the research, it is concluded that the level of addition of mackerel meat flour that produces the most favorable organoleptic level of telur gabus cake is the level of addition of 7.5%. The resulting telur gabus cake description has a golden yellow color, savory taste, distinctive scent of telur gabus, and a crispy texture.

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