THE EFFECT OF TAPIOCA CONCENTRATION ON ORGANOLEPTICS OF TILAPIA FISH BALL

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ABSTRACT

One of the food ingredients that is familiar to the people of Indonesia and contains essential amino acids that the body needs is fish. Fish meat is a source of animal protein that has great potential to meet protein needs, because it has essential amino acids and contains high nutritional value. Therefore, it is necessary to make efforts to process fish meat into processed products that are liked by the community, for example fish balls. This study used a laboratory experiment with different concentrations of tapioca flour in the manufacture of tilapia fish balls. The concentration of tapioca flour used was 10%, 12.5%, 15%. This study looked at the effect of using tapioca flour concentration organoleptically on fish balls. In the AA treatment (10%) the fillet yield was 47%, with the number of meatball grains as many as 13 grains, the average organoleptic value was 8. Treatment B (12.5%) obtained 30% fillet yield, the number of meatballs was 24 grains, average The average organoleptic value is 8.1. Treatment C (15%) obtained 35% fillet yield, the number of meatballs was 18 grains, the average organoleptic value was 7.8.

Keyword : *Tilapia fish, fish balls, tapioca flour, organoleptic of fish meatball*

1. INTRODUCTION

Surimi is processed from fish caught from sea waters In Indonesia, this surimi material is caught by fishermen where the fish is not difficult to catch and does not require special equipment to catch certain fish, the fish made into surimi usually have low economic value but the fish used is sufficient to meet the protein required. need the human body [1]. Surimi is widely used in the market for fish balls, fish balls are widespread throughout Indonesia, fish balls are meatballs that have high selling power and the price of meatballs purchased is quite cheap, so many small children, teenagers, and even adults.

surimi or fish meat fillet, tapioca flour as a meatball thickener and thickener, seasoning as a flavouring for fish balls, all the ingredients in milled and mixed and made into fish ball ingredients then can be cooked. [3]. Fish meatballs that are already popular among the public are expected to increase the level of protein consumption among the middle to small people, the relatively cheap price of meatballs is no longer an excuse not to consume them. But in addition there is a need for supervision from the government where there is a fear of misuse in fish raw materials where the fish used must go through good handling or even the materials used should not exceed 1 x 24 hours because fish balls are high in protein. as well as the high water content in this material has an impact on the shelf life of the material [4].

Processing is one of the efforts to improve the quality and increase the shelf life of a food product. Processing can be the first step to add economic value to food ingredients with low economic value. One of the fishery-based foodstuffs that have low economic value is mackerel and tilapia fish. This seawater and freshwater commodity has a relatively cheap selling price in the market. However, basically fish is a food ingredient that is easily damaged and does not last long so it requires further steps or processes such as being processed into various food products.

Fish ball is one of the processed food products in the form of mashed meat and has been added with various ingredients such as spices and tapioca flour and generally has a round shape [5]. In general, the size of the meatballs is between 25-30 grams, but there are many variations in the size of the meatballs ranging from small to large sizes [6].

Processing Tilapia fish and mackerel into fish balls is one of the efforts to improve the quality of these foodstuffs, increase the economic value and increase the shelf life of foodstuffs made from fishery products. Fish balls are a product that is very popular with people from various circles and can be served in various ways. For this reason, processing puffed and tilapia fish into meatballs is a step that needs to be done.

2. METHODOLOGY

2.1 Place and Time of research

The research was carried out in November 2021 at the Tropical Fisheries and Marine Laboratory PSDKU UNPAD Pangandaran, Cintaratu Village, Parigi, Pangandaran Regency.

2.2 Tools and Materials

The tools used for this research are meatball making tools and organoleptic testing tools for meatballs. Meatball making tools are digital scales, basin, food processor, spoon, cutting board, knife, stove, meatball mold, plate. While the meatball testing tool is a scoresheet. The ingredients used are tilapia fish fillet, meatball seasoning, tapioca flour with various different concentrations.

2.3 Work procedure

1) Clean the mackerel and tilapia then wash thoroughly, take the meat and then weigh as much as 500 g.
2) After the fish is filleted, take only the flesh and remove the skin.
3) Weigh the tapioca flour according to the treatment, 15.0% ice cubes, 2.5% onion, 2.5% garlic, 0.25% pepper powder, and 1% salt.
4) Puree the carp meat using a food processor/blender and add crushed ice, tapioca flour according to treatment, and seasonings.
5) Put the mashed dough into the bowl.
6) Form the dough into a round using a spoon.
7) Bring the water to a boil, then add the meatballs.
8) Wait about 4-6 minutes until the meatballs float.
9) After the fish balls are cooked then drain the meatballs using an oil filter.
10) Fish balls were tested organoleptically.

2.4 Data Analysis

This study used a laboratory experiment with different concentrations of tapioca flour in the manufacture of tilapia fish balls. The concentration of tapioca flour used was 10%, 12.5%, 15%. This study looked at the effect of using tapioca flour concentration organoleptically on fish balls. Organoleptic testing of fish balls using a scoresheet based on SNI 7266:2014 [7]. Data were analysis descriptively.

3. RESULTS AND DISCUSSION

Fish meatballs according to SNI 01-3819-1995 [8] are food products in the form of a sphere or other, obtained from a mixture of fish meat (fish meat content is not less than 50%) and starch or cereals with or without the addition of food allowed. According to [9], the fish used must be fresh and have not undergone a quality degradation process, so that the quality of the resulting product is good. Yield results, meatball dough and number of meatballs with the addition of different tapioca flour are presented in Table 1.

Table-1: Yield of fillet, meatball dough, and number of meatballs produced

Treatment	Weight of fish (gr)	Yield of fillet (%)	Weight of dough (gr)	Number of meatballs (grain)
A (10%)	201.34	94.8	118, 97	13
B (12.5%)	473.87	144.52	172.28	24
C (15%)	320	112	136.73	18

The table above shows the results of research on processing fish balls with the main ingredient in the form of tilapia fish (*Oreochromis* mossambicus) with the addition of different concentrations of tapioca flour. Tilapia fish that was given the addition of 10% tapioca flour (A) had an initial fish weight of 201.34 grams, meat weight 94.8 grams, filet yield percentage 47, dough weight 118.97 grams and obtained 13 fish balls. Tilapia fish with the addition of 12.5% tapioca flour (B), the initial weight of the fish was 473.87 grams and after being filleted the weight became 144.52 grams. The filet yield obtained a percentage value of 30%. From the dough weight of 172.28 grams, the number of fish balls was 24 pieces. Tilapia fish with the addition of 15% tapioca flour (C), the initial weight of the fish is 320 grams and after being filet the weight is 112 grams. The filet yield obtained a percentage value of 35%. From the dough weight of 136.73 grams, 18 fish balls were obtained.

In making fish balls, it is done by weighing the initial weight to determine the percentage of filet yield from each treatment. This initial weight will determine the number of fish balls to be produced, the more ingredients used, the more meatballs produced from production, and vice versa when the ingredients used are less, the fish balls that will be produced from the processing will also be small in number. . The addition of additional ingredients such as tapioca flour and ice cubes can also affect the final amount of meatball product produced. According to [10], the effect of adding ice cubes and tapioca flour will affect the weight of the fish ball dough so that the number of fish balls will also depend on the weight of the main ingredient

. *scoresheet* based on SNI 7266:2014. Tilapia fish balls with the addition of different concentrations of tapioca flour had an effect on the appearance, aroma, texture, and taste of fish balls. The organoleptic test results of tilapia fish balls can be seen in Chart-1.

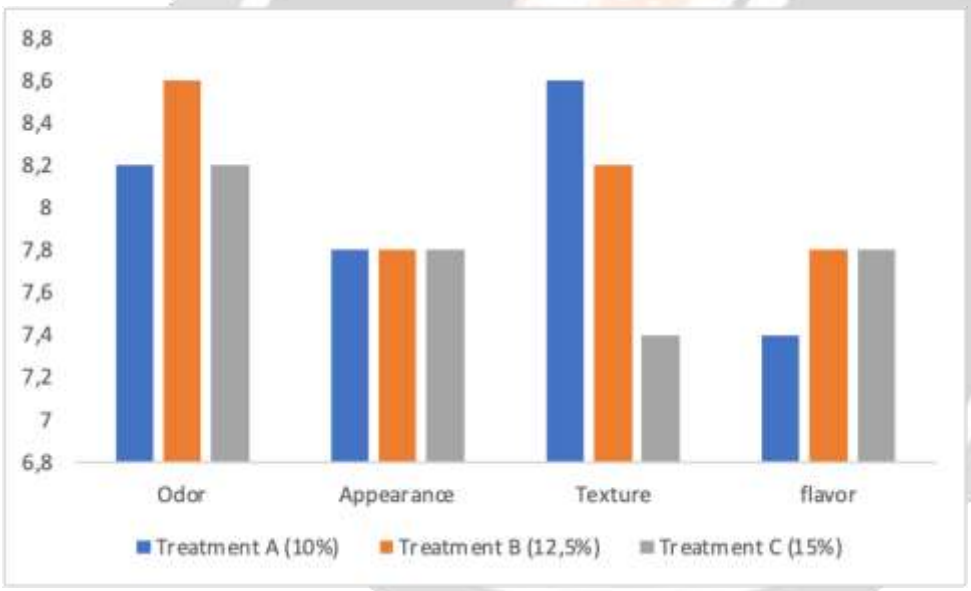

Chart-1: Organoleptic test results of tilapia fish balls with different concentrations of tapioca

Observations on the organoleptic test of tilapia fish balls (*Oreochromis* mossambicus) had different organoleptic average values. In treatment A, the average organoleptic value was 8, treatment B was 8.1 and treatment C was 7.8. The highest aroma value was obtained from treatment B, namely fish balls which had a specific aroma of fish balls and there was no additional annoying odour. The highest texture value was obtained from treatment A, which was compact, quite chewy, and not sticky. The highest taste values were obtained in treatments B and C, i.e. the taste of fish was sufficient and there was sufficient flavour. The appearance value of fish balls in all treatments had the same texture, namely whole round, clean, somewhat neat, type-specific color, brilliant and attractive. According to [10], the delicious taste released by enzymes in fish is influenced by the type of fish used and the addition of additional ingredients in the form of tapioca flour which functions to knead the dough and the addition of ice cubes to make the dough solid. For taste, the addition of spices in the form of pepper and garlic and shallots is added. With the right dose, the flavors that arise will be mixed so that it creates a good taste in the fish ball products that are made. Tapioca flour will affect the taste of the meat, so when too much tapioca flour will cover the taste of the meat so that the resulting meatballs have an unpleasant taste. In kneading, the length of the kneading

process will also affect the texture of the fish balls made. The addition of tapioca flour also affects the color of fish balls. This is due to the polyphosphate content in tapioca flour which can reduce drip loss levels, besides that it can bind water bonds which can prevent protein damage during processing. The spices used in addition to affecting the taste can also inhibit the growth of microbes in fish ball products, in addition to other functions, namely as an antioxidant so that it can reduce rancidity in the meatballs that have been made

. on the type of meat used [11]. Generally, fish processing is carried out with the aim of increasing the yield and economic value of a raw material that has low economic value so that it can be exploited more optimally through fishery processing. Fish meatballs as one of the results of processing fishery products undergo changes during the processing. The process applied to some fishery products that contain protein and other ingredients will cause changes, these changes can be categorized as beneficial and detrimental. Beneficial changes occur if the process is carried out in a controlled manner as desired, while adverse changes occur if

changes that occur in fish balls are divided into two types of changes, namely physical and chemical changes. as a whole which has not changed, then becomes a dough that contains higher water due to a mixture of ice so that it has a low density, the third form is denser because the water content has decreased due to the heating process and the influence of the mixed material in the form of tapioca flour with a round shape according to the shape meatball print. Chemical changes in chemistry generally occur in protein as the highest content in *Maillard* will occur when carbohydrates are heated together with the formation of a brown color in foodstuffs. These reactions are reactions between carbohydrates, especially reducing agents with primary amino groups. These results produce brown food which is usually desired or sometimes used as a sign of quality degradation [11].reaction *Maillard* occurs in a food, the food will experience a decrease in nutritional value, because essential free amino *acids* and amino acid residues, especially lysine, participate in the *Maillard* .reaction is *Maillard* not a serious problem in reducing the nutritional value of foodstuffs.

Factors that affect the elasticity of change and color in fish balls include the effect of adding tapioca flour and decreasing water content. The addition of tapioca affects protein content, aroma before frying, and taste after frying, but has no effect on moisture content, ash content, and color. The interaction of tapioca addition and drying temperature affected the aroma before frying and the taste after frying, but did not affect the water content, protein content, ash content and color. The decrease in water content was influenced by temperature changes. Drying temperature affects the color, aroma before frying and taste after frying, but has no effect on water content, protein content and ash content.

4. CONCLUSIONS

Based on the results of research on making tilapia fish balls with the addition of different concentrations of flour resulted in different yields, number of meatball grains and organoleptic values. In the AA treatment (10%) the fillet yield was 47%, with the number of meatball grains as many as 13 grains, the average organoleptic value was 8. Treatment B (12.5%) obtained 30% fillet yield, the number of meatballs was 24 grains, average The average organoleptic value is 8.1. Treatment C (15%) obtained 35% fillet yield, the number of meatballs was 18 grains, the average organoleptic value was 7.8.

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