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BENEFITS OF BINDING MATERIALS ON THE TASTE OF TENGGIRI FISH NUGGET *(SCOMBEROMORUS SP)*

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Abstract

Nugget is a processed product from fish that has good nutritional value and is in great demand by various circles of society. Nuggets can be made from all types of fish, both marine and freshwater fish. Fish As a raw material for making fish nuggets, because it has a fairly high amount of protein in fish meat. Protein is needed by the human body to help the growth process, especially in children. Nuggets are also a favorite food that is very popular with children. To produce nuggets with a good texture, the fish used as raw material is white-fleshed fish. One of the fish used in making these nuggets is ternggiri fish (Scomberomorus sp). Nuggets are food made from fish meat that has been mashed and seasoned then steamed and fried. This study aims to increase the taste of mackerel fish nuggets (Scomberomorus sp) various additions of binders and to increase public knowledge in processing fish without reducing its nutritional value. A2 = 80 gr ; Trea tment B (Concentration of Wheat flour): B1= 60gr, B2=80 Gr; Treatment C (steaming temperature); 86º- 95º C for 40 minutes with 2 repetitions. The results obtained for the organoleptic parameters of color, taste,Texture and smell gave good values and these three parameters did not show a significant effect.

Keywords: Flour, binder, Fish, Temperature.

INTRODUCTION

One of the economically important fish used as raw material for making nuggets is mackerel (Scomberomorus sp). Mackerel is included in the pelagic fish which has white flesh so it is very good in the process of forming fish gel. This fish has a fairly high protein content (BBPMHP,2005.). So that when consumed by toddlers and children it can help in the growth process. In addition, this fish has a high omega-3 content, namely 2.6 grams per 100 grams of fish meat (Yayuk,2004). In the manufacture of nuggets, it is necessary to add a binder to add flavor and increase the gelling ability of the fish nuggets. This binder can be changed to wheat flour, tapioca flour, sago flour and others (Kusnan,2011). In addition, the addition of egg whites in the manufacture of nuggets can also improve the texture and gel-forming ability of the fish nuggets.

This study aims to increase the taste of mackerel fish nuggets *(Scomberomorus sp)* with various additional binders and to increase public knowledge in processing fish into mackerel fish nuggets (Scmberomorus sp) without reducing its nutritional value.

METHODS

The method used in this research is the experimental or experimental method. This research was carried out in December 2021 and took place at the THP . laboratory. The tools and materials used in this research are:

• Steaming pot
•wok
• 1 kg of red snapper fillet
•Leek
• 8 cloves of garlic, puree
• 1 tsp pepper powder
• 3/4 tsp stock powder
• 3/4 tsp salt
• 1 Onion
•Flour
• My serving flour
• Panir flour 1 kg
•2 eggs
• 3 tbsp cooking oil
• 2 Carrots grated

The procedure for making meatballs is as follows:

1. Selection of raw materials for mackerel is still fresh.
2. Wash the fish raw materials until clean and remove the skin and fine thorns.
3. The fish is mashed using a blender/ chopper.
4. Puree the spices such as garlic, onions, scallions and salt then mix with the mashed fish meat.
5. Add the grated carrots.
6. The dough is divided into 4 parts
7. Add my serving flour according to the concentration (60gr and 80 gr).
8. Add flour according to concentration (60gr and 80 gr).
9. Put the dough in a pan that has been lined with plastic and given cooking oil.
10. The dough is ready to be steamed

11. Once cooked, remove and cool
12. Cut the dough according to taste
13. Dip in beaten egg.
14. Then coat with breadcrumbs
15. Put in the freezer for about 10 minutes
16. The dough is ready to be fried

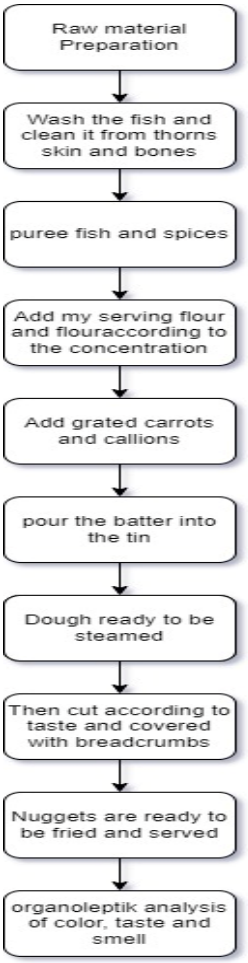

Figure 1. Research flow chart

Data analysis used RAL (Completely Randomized Design) with 3 treatments and 2 replications, followed by a one way anove test to see whether the effect was real or not by using IBM SPSS software version 23. The mathematical formula is as follows:

Yij = + i + ij

Description: Yij = Observation value from the j-th test that received the i-th treatment

= General mean value i = Effect of i-th treatment

ij = Effect of the j-th error that gets the i-th treatment

Organoleptic Parameters

samples were cut into cubes with a thickness of about 4 – 6 mm, then the samples were placed in a container (plastic) and ready to be tested by the panelists. Panelists will fill out the questionnaire sheet with the ones that have been prepared

Table 1. Score sheet color parameters

Treatment	Test	
	I	II
my serving flour		
Flour		
cooking temperature		

Information :
4.Golden Yellow
3.Yellow
2. Chocolate
1.Without color

Nugget samples were cut into cubes with a thickness of about 6 mm, then the samples were placed in a container (plastic) and ready to be tested by the panelists. Panelists will fill out the questionnaire sheet with the ones that have been prepared

Table 2. Score sheet taste parameters

Treatment	Test	
	I	II
my serving flour		
Flour		
cooking temperature		

Information :
4.It's delicious
3. Delicious
2. Slightly delicious
1.Not good

Procedure Nugget sample is cut into cubes with a thickness of about 6 mm, then the sample is placed in a container (plastic) and ready to be tested by the panelists. Panelists will fill out the questionnaire sheet with the ones that have been prepared.

Table 3. score sheet odor parameter

Treatment	Test	
	I	II
My serving flour		
Flour		
Cooking temperature		

Information: 4. Nugget's special smell
3.Smell of Fish
2. Medium fish smell
1.No fish smel

Procedure Nugget sample is cut into cubes with a thickness of about 6 mm, then the sample is placed in a container (plastic) and ready to be tested by the panelists. Panelists will fill out the questionnaire sheet with the ones that have been prepared

Table 4. Score sheet Texture parameters

Treatment	Test	
	I	II
My serving flour		
Flour		
Cooking temperatur		

Information : 4. very chewy
3. supple
2. Slightly chewy
1.Not chewy
1.Tidak kenyal

RESULT AND DISCUSSION

Nuggets are everyone's favorite food. To get delicious and good quality nuggets, the fish used must have a good gel-forming ability. The nutritional content of fish depends on the type of fish we choose.

Organoleptic Parameters

Color

From the results of the research in Figure 2 below, it can be seen that the A1C0 and A2C0 treatments using my serving flour have a golden yellow color with a value of 4, this is due to the addition of my serving flour as a binder to the mackerel fish nuggets (*Scomberomorus sp*) giving a better color to the blade. In addition, the length of frying of nuggets also affects the color of the nuggets produced (Evanuarini et al,2011) stating that frying nuggets for 2 minutes produces a better color of fish nuggets**.**

Figure 2. Color parameter graph

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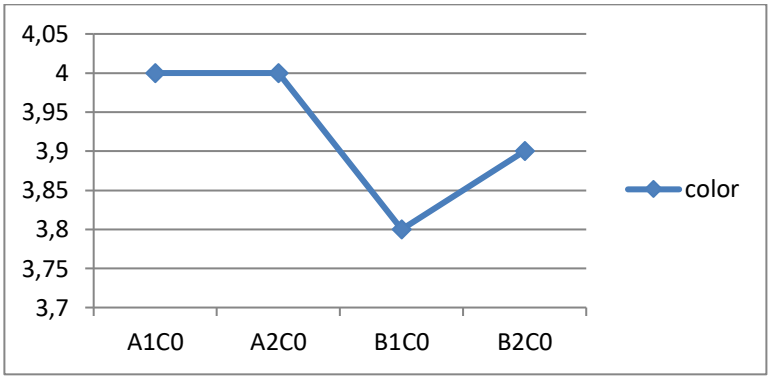
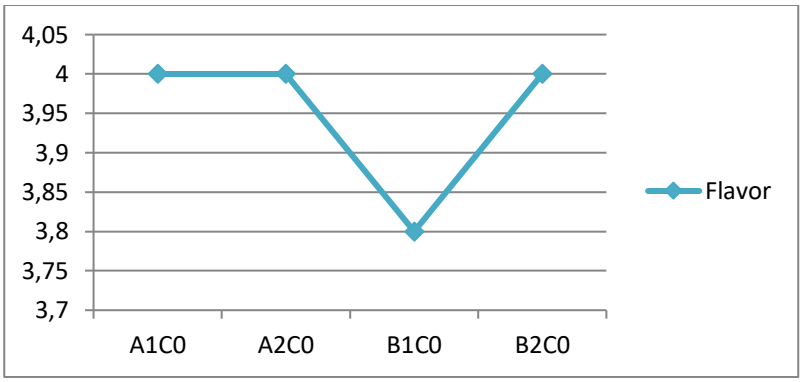


Based on the results of the analysis of variance / ANOVA, it can be seen that the T count (0.06) is smaller than the T table (0.17) so that the three treatments do not have a significant effect on the 0.05 alpha. This is because the color of the meat is also determined by the myoglobin content in fish meat. According to (Sundari et al,2020) the heating process causes myoglobin to be denatured and the color of the meat is not good

Flavor

Based on the results of the study in Figure 3 below, it can be seen that the flavor values for the A1C0, A2C0 and B2C0 treatments have increased with an average value of 4.0, while the lower flavor values are in the B1C0 treatment, this is because in this treatment the addition of wheat flour with a concentration of 60 gr resulted in the nuggets still having a fish taste, while the addition of my serving flour and wheat flour in other treatments caused the nuggets to taste better. According to (Suryaningrum, 2009) In food there are components such as fat, protein and carbohydrates that can affect the taste of the food. the**.**

Figure 3. Flavor parameter graph

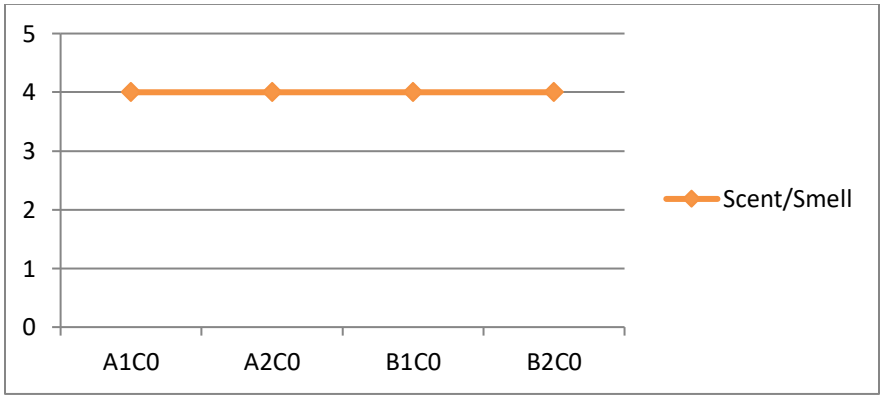


From the results of the analysis of the ANOVA diversity analysis at alpha 0.05, it can be seen that the calculated F (0.035) is smaller than the F table (0.064) so that it does not show a significant influence from the three treatments. This is because mackerel fish contains amino acids (Glutamate) so that it gives a savory taste to fish nuggets with the addition of different concentrations of binders (Suryaningrum et all,2011).

scent/smel

Based on the results of the research in Figure 4 below, it can be seen that the aroma/smell parameter has a high value for the 3 treatments, namely 4.0. This is due to the distinctive aroma of the nuggets, which is produced by the addition of various concentrations of binder, namely my serving flour and wheat flour and spices and the high cooking temperature causes the nuggets to have a fishy odor to disappear (Abubakar,2011) thereby adding to the delicacy of the nuggets**.**

Figure 4. Scent/smell parameter graph

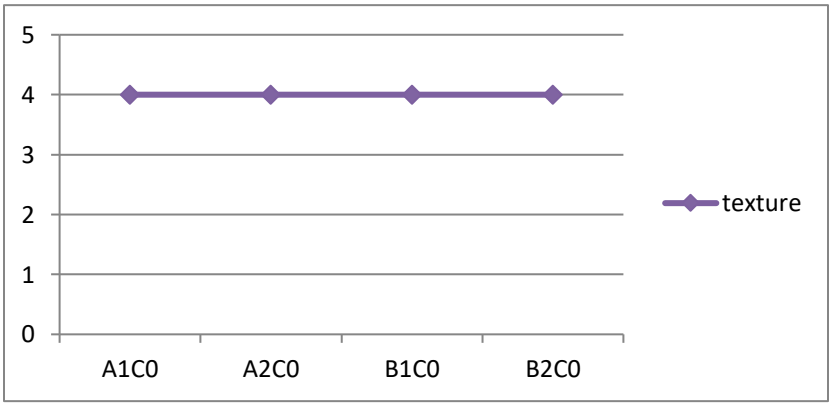


Based on the analysis of variance (ANOVA) test, it can be seen that the calculated F value (0.276) is smaller than F table (0.425) at an alpha of 0.05 so that the 3 treatments did not show a significant effect from the three treatments. Mackerel fish nuggets give a very good aroma/smell so that it can increase people's preference for these nuggets. ((Gustiarni et all,2013)

Texture

Based on the results of the study in Figure 5, the texture parameter graph below shows that the three treatments below have a good texture value of 4.0. The good texture value is caused because the addition of a binder has caused the texture of fish nuggets that were not good at first to be better, so that it is liked by the community. The good texture value is due to the faster frying (Evanuari, 2017)

Figure 5. Texture parameter graph



From the results of the research on the diversity test / ANOVA, it can be seen that the calculated F (0.41) is smaller than the F table (0.55) so it does not give a significant effect on the three treatments above at 0.05 alpha. Good texture on nuggets This mackerel fish resulted in this mackerel fish nuggets being accepted by the panelists and the public.

CONCLUSION

From the research above, it can be concluded several things as follows:

1. The addition of a binder with a large concentration will produce a good smell, taste and texture. The resulting color is also good
2. Provide additional information to the community about making mackerel fish nuggets without reducing their nutritional value

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