JURNAL PERIKANAN DAN KELAUTAN
Volume 28 No. 1, February 2023: 51-55

e-issn : 2721-8902
p-issn : 0853-7607

Improving the Quality of Smooth Anchovy Nugget (*Stolephorus* sp) with the Addition of Sajiku Flour

Peningkatan Kualitas Nugget Ikan Teri Halus (Stolephorus sp) dengan Penambahan Tepung Sajiku

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Received
10 December 2022

Accepted
3 January 2023

Abstract

Anchovies (*Stolephorus* sp) are fish that have important economic value even though they are small. This fish is rich in nutritional content and has a savory and delicious taste when processed into food. This fish is very liked by various groups even though it has a small size and without bones. This anchovy contains lots of calcium, protein and minerals such as phosphorus and iron that are very useful for increasing the intelligence of children and toddlers, as well as for preventing osteoporosis in pregnant women and the elderly as well as helping in the growth of bones and teeth in infants, toddlers and children. To improve the quality of anchovy nuggets, it is necessary to add certain binders to improve the taste of anchovy nuggets. This study aims to improve the quality of anchovy nuggets by adding a binder in the form of servedku flour and adding to the economic value of refined anchovy so that it is more attractive to the public. There were 3 treatments and 2 repetitions. The treatments were A. Anchovies; A1 = using carrots, A2 = without carrots and treatment B (sajiku flour concentration); B1=100g, B2= 200g. Moreover, Treatment C (cooking temperature); C = 65ºC - 85ºC for 30 minutes. From the results of the study, it can be seen that the water content, protein content and fat content did not show any significant effect.

Keywords: Fish, Flour, Protein, Calcium.

Abstrak

Ikan teri halus (*Stolephorus* sp) merupakan ikan yang memiliki nilai ekonomis penting walaupun berukuran kecil. Ikan ini kaya akan kandungan gizi dan memiliki rasa yang gurih dan enak apabila diolah menjadi suatu makanan. Ikan ini sangat disukai oleh berbagai kalangan meskipun memiliki ukuran yang kecil dan tanpa tulang. Ikan teri halus ini banyak mengandung kalsium, protein, dan mineral seperti fosfor dan zat besi yang sangat berguna untuk meningkatkan kecerdasan anak –anak dan balita, serta untuk mencegah terjadinya osteoporosis pada ibu hamil dan manula serta membantu dalam pertumbuhan tulang dan gigi pada bayi, balita dan anak-anak. Untuk meningkatkan mutu dari nugget ikan teri, diperlukan adanya penambahan bahan pengikat tertentu sehingga dapat meningkatkan citarasa dari nugget ikan teri. Penelitian ini bertujuan untuk meningkatkan mutu nugget ikan teri dengan penambahan bahan pengikat berupa tepung sajiku dan menambah nilai ekonomis dari ikan teri halus agar lebih diminati oleh masyarakat. Ada 3 perlakuan dan 2 kali ulangan.yang dilakukan yaitu perlakuan A. Ikan teri ; A1= wortel, A2 = tanpa wortel, dan perlakuan B (konsentrasi tepung sajiku); B1=100g , B2= 200g. Perlakuan C (suhu pemasakan); C= 65ºC - 85ºC selama 30 menit. Dari hasil penelitian terlihat bahwa kadar air, kadar protein dan kadar lemak tidak menunjukkan adanya pengaruh nyata.

Kata Kunci: Ikan, Tepung, Protein, Kalsium.

1. Introduction

Smooth anchovy (*Stolephorus* sp) is a fish that has important economic value even though it is small in size. This fish is rich in nutritional content and has a savory and delicious taste when processed into food. This fish is very liked by various groups even though it has a small size and without bones. One of the uses of this fine anchovy is the manufacture of fine anchovy nuggets (*Stolephorus* sp). Nuggets are fast food that can be made from various types of fish. According to Hapsari (2002) fish nuggets can be made from mashed or ground fish meat, then mixed with spices and binders, after that it is printed and steamed, then put into beaten eggs and covered with breadcrumbs, put it in the freezer and fried. According to Herliani *in* kaliky (2022) that this fine anchovy (*Stolephorus* sp) contains a lot of calcium, protein and minerals such as phosphorus and iron which are very useful for increasing the intelligence of children and toddlers. In addition, to preventing osteoporosis in pregnant women and the elderly and assisting in the growth of bones and teeth in infants and children. Anchovies can be processed into anchovy nuggets. To improve the quality of these anchovy nuggets, it is necessary to add certain binders that can improve the taste of these anchovy nuggets (Kaliky, 2022). Refined anchovy to make it more attractive to the public

2. Material and Method

2.1. Method

The method used in this study is an experimental or trial method and will be carried out in March 2022.

2.2. Research procedure

The fine anchovies were washed several times. Then soaked with limejuice and salt for ±10 minutes to reduce the fishy smell. Then it is drained and put in a copper blender to be mashed. Also grind spices such as garlic, shallots, a little salt, pepper, flavoring, and scallions. Then mix the finely ground anchovies with the spices. Then the dough is divided into 4. Each dough is added with carrots and my serving flour according to the concentration. Then put the dough into an 18 cm tin. The bottom of the tin is greased with cooking oil and covered with plastic. Anchovy nuggets are steamed for 30 minutes using a temperature of 65ºC - 85ºC for 30 minutes. After the chewy nugget dough expands, it is immediately lifted and moved. After chilling, finely cut the anchovy nuggets into pieces according to taste, then dip in the egg that has been diluted and coat it with breadcrumbs. Anchovy nuggets can be stored in a container and put in the freezer with a storage temperature of -20 ºC. The final stage of the anchovy nugget is fried and ready to be served.

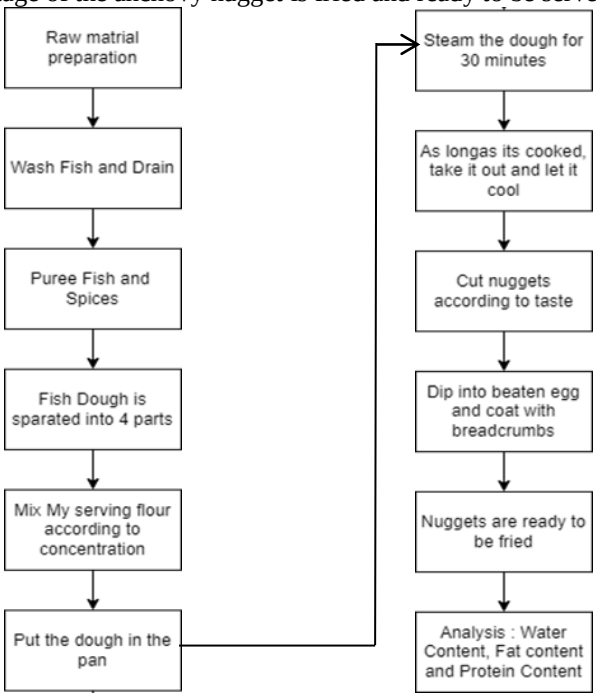

Figure 1. Research FlowChart

2.3. Water content procedure

Weighing bottles and their lids are thoroughly washed and then dried in an oven (dryer) at 110-115^{0}C for 10 hours. Then the weighing bottle is put into the desiccator for 30 minutes using a clamp, then weighed (A). samples of fish meat were weighed in the bottle (closed state) as much as 2 g (B). Then put it in the drying oven

for approximately 16 hours until it reaches a constant weight, take it with a clamp, then put it in a desiccator for about 30 minutes, then weigh it (C). The water content can be calculated as follows (AOAC, 1980).

2.4. Procedure for Protein Levels with the Kjeldal Method

Dextrusion was carried out by adding 1-2 g of sample, 3 g of the dextruction mixture and 20 mL of sulfuric acid in a Kjeldal flask and dextruded until the initially black solution turned clear. After extruding, the Kjeldal flask was cooled and the solution was mixed until homogeneous. Distillation was carried out by inserting the extruded solution into the flask, adding 3 drops of phenolphthalein indicator to the destination, placing the holding solution in a 300 ml beaker containing 50 ml of 2% boric acid and 5 drops of tashiro indicator. Gradually the packaged NaOH solution is poured into the distillation flask and the distillation is carried out. Distillation is ended when the distillate dripping at the end of the cooling column reacts neutrally to red litmus, the color of the holding solution changes to green. The distillate is then distilled using 0.1 N HCl solutions until the color of the solution changes back to pink, and then proceed as follows (AOAC, 1980)

2.5. Procedure Fat content with Soxhlet Extraction Method

Testing begins with the preparation of filter paper with a size of 11.7 x 14.5 cm. The filter paper is dried first in an oven with a temperature of 100-105^{o}C for 1 hour, and then cooled in a desiccator for 15 minutes after which the filter paper is weighed. The meatball sample weighed ±1.5 g (A), then the sample was placed in the middle of the filter paper, then the filter paper was folded. The sample on the filter paper is dried in an oven with a temperature of 100–105^{o}C for 4-6 hours, weighed and heated again to constant. After constant, the samples were put into the desiccator for ± 15 minutes, and then weighed (B). The next process is that the sample is put into the Soxhlet apparatus with the fat solvent added as much as ±2.5-3 times the volume of the extraction flask. This process was carried out for ± 6 hours. After 6 hours, the samples were removed from the apparatus and allowed to air for ±30 minutes in open air, then in the oven for ± 1 hour. Put it in a desiccator for 15 minutes then weigh again (C). The weight is considered constant when the difference in weighing does not exceed 0.2 mg.

$$\% \text{ Fat Content} = \text{Weight B} - \text{Weight C} / \text{Weight A} \times 100\%$$

2.6. Data analysis

Data analysis used RAL (Completely Randomized Design) with three treatments and two repetitions, followed by a one-way anove Test to see whether there was a real effect using SPSS software version 23 IBM.

3. Result and Discussion

Nuggets are a favorite food that is liked by everyone. To get nuggets with a good texture and good taste, it is necessary to add certain ingredients that function as binding agents and as a flavor enhancer of the fine anchovy nuggets, so that these nuggets are more preferred by consumers.

3.1. Chemical Analysis

3.1.1. Water content

From the research results in Figure 2, it can be seen that the value of the water content in the A1B1C treatment has a high water content value of 4.2, this is because in this treatment there is the addition of carrots so that it can affect the water content of the nuggets. According to Adiningsih (2012) that the greater the concentration of carrots used, the impact it will have on increasing the water content. So that the resulting nugget product has a soft and delicious texture. The nuggets taste good because the carrots have given the nuggets a sweet taste. According to (Tala, 2009) fiber has the ability to absorb more water, so the water content of the fine anchovy nuggets increases.

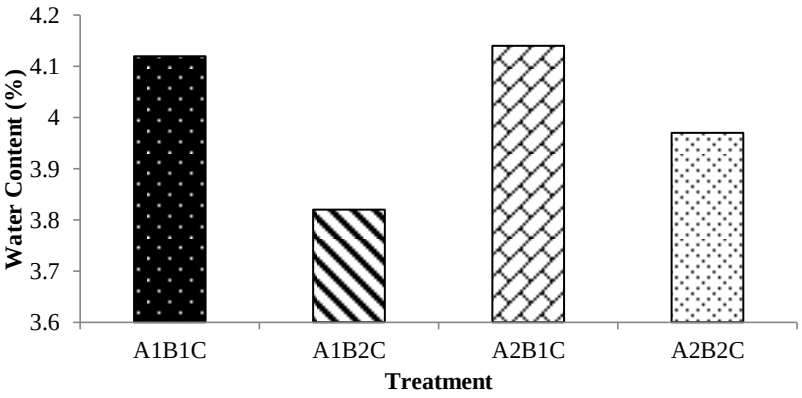

Figure 2. Histogram of Water Content

Based on the results of the analysis of variance/ANOVA, it was found that F Count (0.273) was smaller than F Table (0.325) at an alpha of 0.05, so that it did not show any significant effect of each treatment. The increase in water content was also due to the addition of tapioca starch as filler as well as a binder, so that the flour gave a softer texture because it binds water that causes the water content to increase (Muchtadi, 2002).

3.1.2. Fat level

Based on the research results in Figure 3, the histogram shows that the highest fat content value was in the A2B1C treatment of 4.15. This was due to the addition of the concentration of 100 g serving flour so that the fat content of fine anchovy nuggets (*Stolephorus* sp) increased. The increase in fat content is also caused by the addition of flour that contains fat and fat from the fish itself so that the fat content of fine anchovy nuggets (*Stolephorus* sp) Increase.

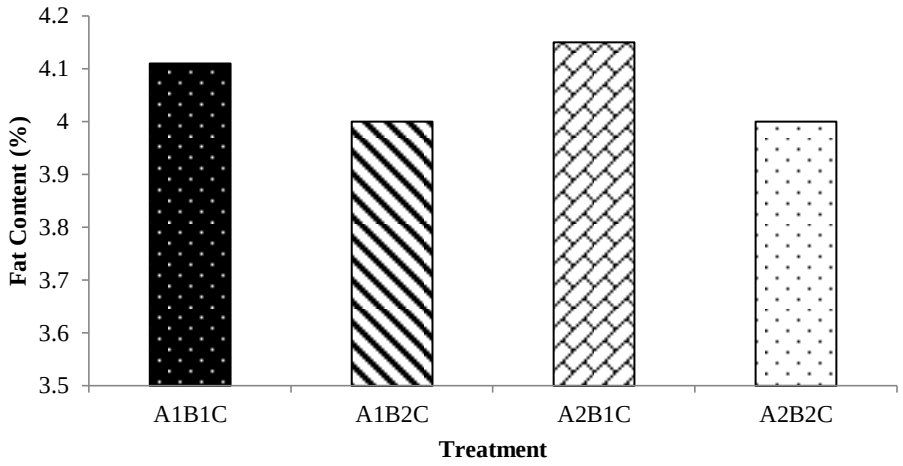

Figure 3. Histogram of Fat Content

From the results of the anove analysis of variance, it can be seen that at alpha 0.05, the calculated F value (0.353) is smaller than the F table value of 0.432) so that it does not show a significant effect on all treatments. this is caused because the more flour my serving is added, the higher the fat content. The fat content also affects the protein content in the fine anchovy nuggets. Because the function of protein is to emulsify fat and bind water (Setyowati, 2002).

3.1.3. Protein Content

Based on the results of the study, it can be seen that in the histogram of Figure 4 below, the highest protein content value is in the A2B1C treatment, which is 15.7%. The increase in protein content was due to the addition of 100 g of tapioca flour with a concentration of 100 g, thereby increasing the value of protein content. Due to the use of ingredients with high protein content, it can increase the protein content of the ingredients (Winarno *et al.*, 2004). Refined also has its own protein content.

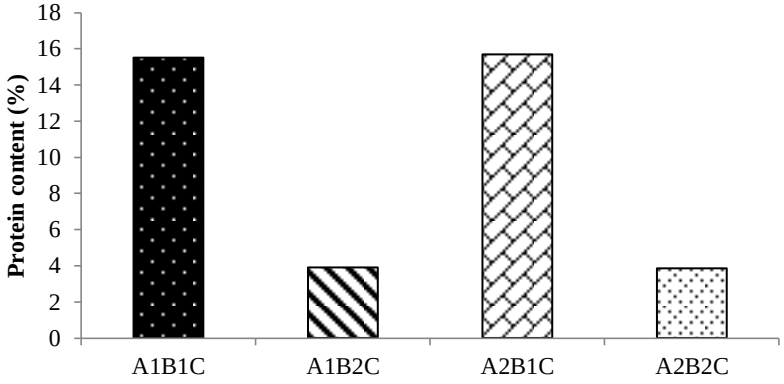

Figure 4. Histogram of Protein Content

The results of the ANOVA diversity test show that at alpha 0.05, F count (0.12) is smaller than F table (0.33) so that it does not have a significant effect on each treatment. The more flour added, the higher the protein content. According to (BSN, 2002.) That the protein content of nuggets is at least 12%. So the protein content of fine anchovy nuggets is in accordance with the protein content of SNI nuggets.

4. Conclusion

From the results of the above research, it can be concluded as follows: 1) the water content of fine anchovy nuggets (*Stolephorus* sp) increases with the addition of carrots and my serving flour, carrots have fiber and can bind water as well as flour. 2) fat content and protein content increased in the A2B1C treatment due to the use of 100 g of tapioca flour so that the fat and protein levels increased.

5. Suggestion

From the results of this study, it is suggested to carry out further research by looking at other physical and chemical parameters.

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