



Chemical Composition of Fish Head Flavor Crackers

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

This study aims to determine the chemical composition of fish flavor crackers. This research was carried out in the laboratory of the Integrated Basic Science Program at Padjadjaran University in January 2020. The method used in this research was the experimental method. The parameters observed in this study were moisture content, ash content, protein content and fat content in the most favourite flavor powder crackers (10%) with control (0%). Data from the measurement of chemical composition in crackers were analyzed by a comparative descriptive. Based on the result of this study it was found that fish head flavor crackers had of moisture content of 4.17%, ash content of 2.94%, protein content of 0.40%, and fat content of 14.16%.

Keywords: Fish flavour, crackers; chemical composition.

1. INTRODUCTION

Crackers are products that have been integrated with the people of Indonesia. Crackers have a sensational crispy and savory taste that makes the food consumed together with crackers more

delicious. Besides being able to give a sensational enjoyment on cracker food can also be consumed as a snack at an affordable price. Before becoming a product that is consumed by the public it is necessary to do a proximate test that is the

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nutritional content and acceptance through organoleptic testing [1].

The purpose of proximate tests is to determine the nutrient content contained in the crackers addition fish head flavour powder of the 10% treatment is the most liked treatment and the addition of treatment fish head flavour of tenggiri as checklist [2].

The result of the research from Amran [3] on the addition fishhead flavour powder of tenggiri to the acceptability level crackers with treatment 0%, 7,5%, 10% and 12,5% showed that all treatments were acceptable to panelis, the most favourite was treatment of 10%. The chemical composition of fishhead tenggiri flavour powder is not known so Proximate tests are needed to determine the chemical composition of crackers.

2. EXPERIMENTAL DETAILS

2.1 Manufacture of Tenggiri Fish Head Flavor Powder

The heads of fish as much as 3 kg are weighed and cleaned with running water. The clean head is mixed with herbs and water in a ratio (1:2) then boiled for 120 minutes with a boiling temperature of 85°C – 100°C. The broth resulting from the decoction is separated from the head and maltodextrin is mixed as much as 15% of the volume of broth produced and then stirred until a paste is formed. Flavor paste is applied on a baking sheet to be carried out the drying process and then put into the oven with a temperature of 75°C for ± 1 hour to dry. The dry flavor layer is blended with a blender and sieved to produce a finer powder.

2.2 Manufacture of Crackers

All ingredients for making crackers which include tapioca flour, flour, salt, garlic, and flavor powder are mixed and stirred while adding hot water until the dough is smooth. The dough that has been formed is smooth and steamed for 60 minutes. After steaming the mixture is cooled for 18 hour in a refrigerator. The cracker dough is thinly sliced with a thickness of 2-3mm then dried for 2-3 days. After dry, the crackers are fried and served.

2.3 Research Methods

Proximate tests were carried out in the laboratory of the integrated basic science programs of the Padjadjaran University. The method used in this research was an experimental method by

determining the chemical composition of the most preferred flavor powder crackers (10%) and control (0%) based on the results of the test of the degree of pleasure that had been done by [3].

2.4 Observed Parameters

2.4.1 Protein content

Analysis of protein content by the Kjeldahl method according to [4], the formula used was as follows,

$$\text{Protein Content (\%N)} = \frac{(A - B) \times N \text{ HCl} \times 14}{C} \times 100\%$$

Description:

A = HCl for sample titration (ml)
 B = HCl for blanco titration (ml)
 C = Sample weight
 N = Standard HCl normality used
 14= Nitrogen atom weight
 %N x Conversion factor = 6,25

2.4.2 Moisture content

Analysis of moisture content by the oven method according to [4], the formula used was as follows,

$$\text{Moisture Content (\%)} = \frac{B1 - B2}{B} \times 100\%$$

Description :

B = Sample weight
 B1 = Weight (sample + cup) before drying (gram)
 B2 = Weight(sample + cup) after drying(gram)

2.4.3 Ash content

Analysis of ash content by the oven method according to [4], the formula used was as follows,

$$\text{Ash Content (\%)} = \frac{\text{Ash weight (g)}}{\text{Sample weight (g)}} \times 100\%$$

2.4.4 Fat content

Analysis of fat content by the Gravimetry method according to [4], the formula used was as follows,

$$\text{Fat Content (\%)} = \frac{\text{Fat weight (g)}}{\text{Sample weight (g)}} \times 100\%$$

Description :

$$\text{Fat weight} = (\text{Pumpkin weight} + \text{fat}) - \text{Pumpkin weight}$$

2.5 Data Analysis

Data from the measurement of chemical composition in crackers are analyzed by a comparative descriptive method by comparing the chemical composition of the most preferred flavor powder crackers (10%) with the value of Indonesian national standard crackers.

3. RESULTS AND DISCUSSION

3.1 Moisture Content

The results of the moisture content test at 0% and 10% treatments are presented in Fig. 1,

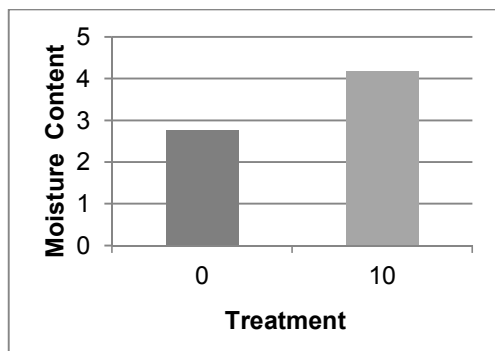


Fig. 1. Moisture content

Based on the results of the moisture content in Fig. 1, crackers obtained from the 0% treatment (control) had a moisture content of 2.76% and crackers obtained from the 10% treatment had a moisture content of 4.17%. The increase in water content in the crackers is influenced by the effect on the texture and development of the crackers when they are fried. The high water content makes the crackers not crunchy [5].

According to SNI 01-2713-1999, the maximum level of cracker water is 11%, the analysis results show that the crackers with the addition of flavor powder meet the SNI criteria.

3.2 Ash Content

Ash is an inorganic residue obtained after the process of removing organic materials contained in an ingredient [6]. The results of testing the ash content in crackers with 0% and 10% treatment are presented in Fig. 2.

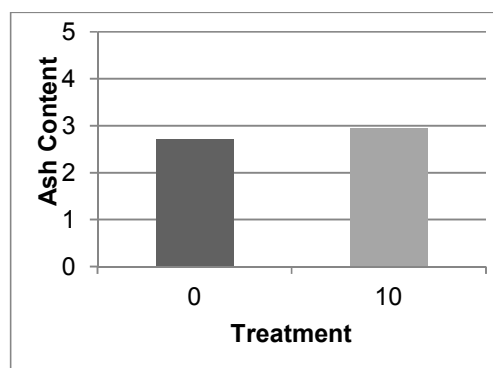


Fig. 2. Ash content

Data from the ash content test results showed an increase in ash content in crackers, increase the taste of tenggiri fish head. Seen from the data above, the taste of the mackerel fish head raises the ash content. Crackers with control settings (0%) have a concentration of 2.72% and crackers with 10% management have a concentration value of 2.94%.

Ash content is closely related to the mineral content of the material. Minerals in food are usually determined by combustion, then the results of combustion destroy organic compounds and leave minerals. It can be seen from the data above that the minerals contained in the crackers are influenced by the flavor powder of the mackerel fish head. According to SNI 01-2713-1999, the maximum level of cracker ash is 1%, the analysis results show that the crackers with the addition of flavor powder do not meet the SNI criteria [5].

3.3 Protein Content

The results of the cracker protein levels at 0% and 10% are presented in Fig. 3.

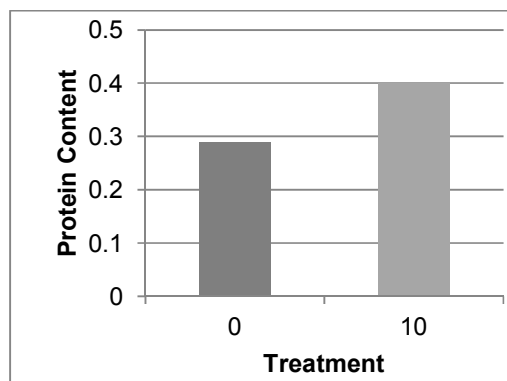


Fig. 3. Protein content

Based on the test results of protein content showed that there was an increase in protein content in crackers with the addition of tenggiri fish head flavor powder. Based on the above data it can be concluded that the addition of tenggiri fish head flavor powder raises the protein content. Crackers with control treatment (0%) had a concentration of 0.29 and crackers with 10% treatment had a concentration value of 0.40.

Increased protein content in crackers indicates that tenggiri fish head flavor powder contains protein. According to [7] high and low protein content in a product is influenced by the amount of water content that is lost (dehydrated) from the material. The protein value will be large if the amount of water lost is greater. Selian due to removal of the amount of water, high and low protein values are influenced by the dissolution of protein components when carried out due to heat drying. The dissolved protein component consists of water-soluble proteins, especially sarcoplasm.

3.4 Fat Content

Fat content is an important element for products that are carried out by the frying process using oil. The fat or oil that is used is too high causing the product to become rancid and unacceptable to consumers [8]. The results of the fat content test are presented in Fig. 4.

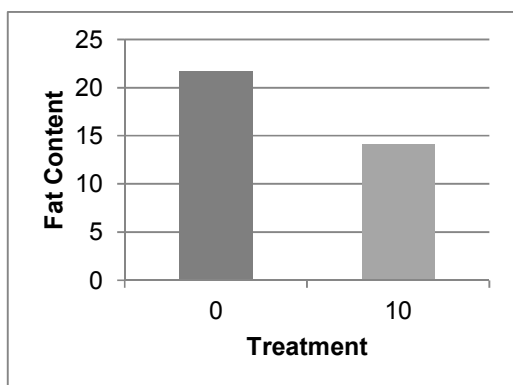


Fig. 4. Fat content

Based on data from the fat content test results showed that there was an decrease in fat content in crackers with the addition of tenggiri fish head flavor powder. From the above data, it can be concluded that the addition of mackerel fish head flavor powder increases the fat content. Crackers with control treatment (0%) had a concentration of 21.74 and crackers with 10% treatment had a concentration value of 14.16.

Heating and boiling affect the fat content in the ingredients and reduce excessive fat content, during the boiling or processing process, food ingredients are affected in many ways including changes in protein, fat, and carbohydrates (Nabil 2005 in Putra et al. 2015). The level of fat in crackers is increased due to frying treatment that uses large volumes of cooking oil. Therefore oil is used to enter the crust (outer surface) and an outer layer (outer zone) so that it fills the empty space that was originally filled by water [9].

4. CONCLUSION

Based on the research results it was concluded that there was a change in chemical composition and still meet the quality requirement crackers based SNI 01–2713-1999. There were treatment crackers of 0% and 10%. crackers with a treatment of 10% have a protein content of 0.40%, an ash content of 2.94%, water content of 4.17%, and fat content of 14.16%.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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