

ANALYSIS OF NUTRITIONAL COMPOSITION IN ONION STICKS WITH THE ADDITION OF PATIN FISH (*PANGASIU HYPOPHthalmus*) MEAT FLOUR

Karakteristik Kimia Stick Bawang Dengan Penambahan Tepung Daging Ikan Patin (*Pangasius hypophthalmus*)

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(Received June 28th 2024; Accepted September 16th 2024)

ABSTRACT

Increasing catfish production must be accompanied by increasing its utilization. One form of utilization of catfish is to make fish meal because it has wide applications in the food sector. Catfish meat meal can be applied as an additional ingredient in the formulation for making onion sticks. The application of adding catfish meat flour to onion stick products has an impact on the level of liking. The addition of 15% catfish meat flour to the formulation for making onion sticks produces the most preferred product. This research aims to analyze the proximate composition of onion sticks with the addition of 15% catfish meat flour. This experimental method is a non-designed experiment with two treatments with levels of addition of catfish meat meal. Treatment A added 0% catfish meat meal as a control and treatment B added 15% catfish meat meal. The parameters observed were the proximate composition of onion sticks including water content, ash content, fat content, protein content and carbohydrate content. The data obtained was analyzed comparatively descriptively. Based on the research results, it was found that the proximate analysis contained in the treatment of 15% addition of catfish meat flour to onion sticks was a water content of 4.35%; ash content 2.17%; fat content 36.56%; protein content 9.31% and carbohydrate content 47,61%.

Keywords: Cookies, Discrimination, Quality, Proximate, Protein

ABSTRAK

Peningkatan produksi ikan patin harus diiringi dengan peningkatan pemanfaatannya. Salah satu bentuk pemanfaatan ikan patin adalah dibuat menjadi tepung daging ikan karena memiliki aplikasi yang luas dalam bidang pangan. Tepung daging ikan patin dapat diaplikasikan sebagai bahan tambahan dalam formulasi pembuatan *stick* bawang. Aplikasi penambahan tepung daging ikan patin pada produk *stick* bawang berdampak terhadap tingkat kesukaan. Penambahan tepung daging ikan patin sebesar 15% pada formulasi pembuatan *stick* bawang menghasilkan produk yang paling disukai. Penelitian ini bertujuan untuk menganalisis komposisi proksimat *stick* bawang dengan penambahan tepung daging ikan patin sebesar 15%. Metode eksperimental ini adalah eksperimental non rancangan dengan dua perlakuan tingkat

penambahan tepung daging ikan patin. Perlakuan A penambahan tepung daging ikan patin 0% sebagai kontrol dan perlakuan B penambahan tepung daging ikan patin 15%. Parameter yang diamati adalah komposisi proksimat stick bawang meliputi kadar air, kadar abu, kadar lemak, kadar protein dan kadar karbohidrat. Data yang diperoleh dianalisis secara deskriptif komperatif. Berdasarkan hasil penelitian didapatkan bahwa analisis proksimat yang terkandung dalam perlakuan 15% penambahan tepung daging ikan patin pada *stick* bawang adalah kadar air 4,35%; kadar abu 2,17%; kadar lemak 36,56%; kadar protein 9,31% dan kadar karbohidrat 47,61%.

Kata Kunci: *Cookies*, Deskriptif, Mutu, Proksimat, Protein

INTRODUCTION

Catfish (*Pangasius hypophthalmus*) is a freshwater commodity that has good prospects because its cultivation techniques are easy and have high economic costs (Ananda et al., 2015). In recent years, catfish cultivation production has increased more than other types of fish, namely 14.12%. This increased production must be followed up by increasing the diversity of processing.

Catfish processing in Indonesia is generally processed into semi-finished products/fillets, shredded meat and wadi (Bakrie, 2020). Wadi is a processed product of fermented catfish, a traditional specialty of the island of Kalimantan. Several other products that use catfish as raw material are meatballs and other fish jelly products (Wijayanti et al., 2024). The use of catfish in a food product formulation will be more diverse if catfish meat is made into flour. Fish meal is an intermediate product, like fillets, namely a product that is ready for further processing (Asih & Arsil, 2020). This catfish meat meal can be used in the formulation of making onion stick products.

Onion sticks are a snack product in an elongated flat shape with a savory and crunchy taste (Gunawan & Ridwan, 2024). The raw materials for making onion sticks are flour, eggs, salt, margarine, garlic and water. Flour as the main ingredient in making sticks is rich in carbohydrates, but low in protein compounds so that the resulting stick product will have unbalanced nutrients (Ramah et al., 2019). Increasing protein compounds or nutrients in onion stick products can be done by adding fish meal to the formulation. Another impact of adding catfish meat flour to the formulation for making onion sticks is that it influences the level of preference for the onion stick products produced.

Several previous studies regarding the addition of catfish meat flour to a product, one of which was carried out by Ningrum et al. (2017), who made biscuits with catfish flour substitution of 10%, 15%, 20%. The results of the research showed that the addition of 15% catfish flour was more accepted by the panelists compared to other treatments. Ernisti et al. (2018), made creakers with the addition of Siamese catfish flour at 0%, 10%, 20%, 30% and 40%. The results of the research showed that the addition of 10% Siamese catfish flour was better than other concentrations of Siamese catfish flour. Pratiwi's research (2024) informed that the addition of 15% catfish meat flour to the stick-making formulation produced the most preferred stick product. Based on the description above, this research aims to determine the proximate composition of onion stick products resulting from the addition of 15% catfish meat flour.

METHODS

Place and Time

The research period took place from February to March 2024. The research was carried out in two places. Making onion sticks is carried out in the Fisheries Product Processing Technology Laboratory, Joint Building for Fisheries and Agriculture, Faculty of Agriculture,

Padjadjaran University. Testing of the proximate composition of onion sticks was carried out at the UPTD Testing and Implementation of Fishery Product Quality (PPMPP) Cirebon, West Java Province Fisheries and Maritime Service.

Research Design

This research was a non-designed experimental study with two treatments with levels of adding catfish meat flour to making onion sticks. The two treatments were treatment A with the addition of 0% catfish meat meal and treatment B with the addition of 15% catfish meat meal.

Research Procedures

Making Patin Fish Meat Meal

Making catfish meat flour refers to (Junianto & Rostini, 2024) with several modifications. First of all, the catfish is cleaned from the head, stomach contents and fins. Next, the clean catfish is coated with lime juice and left to rest for approximately 0.5 hours. The next stage, the catfish is steamed for approximately 0.5 hours at a temperature of 85°C-90°C. After steaming is complete, the catfish meat is taken and separated from the bones and skin. The catfish meat obtained is then squeezed to remove as much water as possible from the catfish meat. The next stage, the squeezed catfish meat is then dried in the oven for 8 hours at a temperature of 45°C. After the catfish meat is dry, then blend it and sift it using a 60 mesh sieve, then sift it again with a 100 mesh sieve. The resulting product is fine catfish meat flour.

Making Patin Fish Meat Flour Onion Sticks

Making onion sticks refers to the procedure carried out by (Rizkhi & Holinesti, 2022) with several modifications. The first stage is that all raw materials are weighed according to the specified measurements to be kneaded until smooth. Once smooth, leave the dough for 20 minutes to rest so that the dough texture is perfect. The dough is molded using a pasta maker and then formed into sticks 10 cm long. Fry the onion sticks at 100°C for 7 minutes over low heat until yellowish brown. The formulation used in making onion sticks with the addition of catfish meat flour can be seen in Table 1.

Table 1. Onion Stick Formulation with the Addition of Patin Fish Meat Flour

Ingredients	Treatment	
	A (0%)	B (15%)
Wheat flour (g)	150	150
Patin Fish Meal	-	22,5
Meal (g)		
Tapioca Flour (g)	60	60
Garlic (g)	18	18
Chicken Eggs (g)	45	45
Margarine (g)	40	40
Scallions (g)	12	12
Salt (g)	15	15
Water (ml)	45	45

Observation Parameters

Proximate testing was carried out on the onion sticks obtained from the two treatments above, which aimed to determine the chemical content of onion sticks, whether given the addition of catfish meat flour or those without addition. Proximate testing is carried out on

water content, ash content, fat content, protein content and carbohydrate content. All testing parameters were carried out in duplicate.

Data analysis

The data obtained was analyzed descriptively comparatively. The comparative standard data used is the Indonesian National Standard (SNI) for the proximate composition of dry cakes number: 01-2973-1992 (National Standards Agency (BSN), 1992). According to the SNI, cookies are a type of soft dough biscuit with high fat, crunchy and when broken the cross-section of the piece has a less dense texture.

RESULT

Results of Proximate Analysis of Onion Sticks

Proximate analysis is a chemical test to determine the water content, ash content, protein content, fat content and carbohydrate content in a product (Muza'ki et al., 2022). Based on the proximate composition, the substance content of the product can be stated. The results of the proximate test carried out on onion sticks in the control treatment (0%) and the treatment with the addition of 15% catfish meat meal can be seen in Table 2.

Table 2. Results of Proximate Analysis of Onion Sticks

Chemical Content	Treatment		SNI Pastry
	0%	15%	
Water content	4,39	4,35	Max 5%
Ash Content	2,19	2,17	Max 1,6%
Fat Content	33,72	36,56	Min 9,5%
Protein Content	6,72	9,31	Min 9%
Carbohydrate Levels	52,98	47,61	Min 70%

Water content

Based on the results of observations, the water content of onion sticks with the addition of 15% catfish meat flour decreased by 0.04%. Referring to SNI 01-2973-1992 (BSN, 1992), the two samples are still within the range of SNI requirements. Thus, onion sticks, whether made from the addition of catfish meat flour or not, both meet the quality of dry cake products.

Ash Content

Based on the results of observations, the ash content of onion sticks with the addition of 15% catfish meat flour decreased by 0.02%. The quality requirements of SNI 01-2973-1992 (BSN, 1992), state that the maximum ash content is 1.6%. Based on this data, the ash content of onion sticks, which are added to the formulation of catfish meat flour, does not meet the quality of dry cakes.

Fat Content

Based on the results of observations, the fat content of onion sticks with the addition of 15% catfish meat flour increased by 2.84%. Referring to SNI 01-2973-1992 (BSN, 1992), these two samples are still within the SNI requirements so it can be said that the onion sticks, which are added to the formulation of catfish meat flour, meet the quality of dry cakes.

Protein Content

Based on the results of observations, the protein content of onion sticks with the addition of catfish meat flour by 15% increased by 2.59%. Referring to SNI 01-2973-1992 (BSN, 1992).

These two samples are still within the SNI requirements so it can be said that the onion sticks, which are added to the formulation of catfish meat flour, meet the quality of dry cakes.

Carbohydrate Levels

Based on the results of observations, the carbohydrate content of onion sticks with the addition of catfish meat flour by 15% decreased by 5.37%. Referring to SNI 01-2973-1992 (BSN, 1992), these two samples are still lacking and do not meet the SNI requirements.

DISCUSSION

The water content of a product shows the total amount of water contained in the product, both weakly bound and free. Water content testing was carried out referring to SNI 2354.1-2015 (BSN, 2015) using the oven method. According to Jusniati et al. (2018), the water content of a product can be influenced by several factors, namely the type of product, the ingredients that make up the product and the technique or procedure for making the product. The water content of onion sticks can affect their texture and crunchiness. The water content of a product will also have an impact on its durability. Generally, the higher the water content in a product indicates that the product has a short shelf life, whereas a product that has a low water content will have a long shelf life (Roshifa *et al.*, 2023).

The ash content of a product shows the number of mineral compounds contained in the product (Kritiandi et al., 2021). Ash content analysis is also often carried out as an indicator to determine food quality (Sulistyoningsih et al., 2019). Ash content testing is carried out referring to SNI 2354.1-2015 (BSN, 2015). The decrease in ash content with the addition of fish meal can be caused by the stirring not being smooth enough during kneading so that the resulting dough is not homogeneous (Agustina *et al.*, 2024). Apart from that, this is also caused by the cooking and drying process causing the material to lose protein which can ultimately reduce the ash content of the material (Putri, 2015).

The fat content will have an impact on the durability of the material. If the fat content of the ingredients is high, rancidity will accelerate due to fat oxidation. Fat content testing is carried out referring to SNI 2354.1-2015 (BSN, 2015). The fat content of onion stick products is generally relatively high because the ingredients used are fat sources, namely eggs and margarine (Silaban & Nanohy, 2022). The high fat content in onion sticks can also occur due to the absorption of oil during the frying process. During the frying process, water evaporation occurs and the evaporated water is immediately replaced by the absorbed oil (Iqbal et al., 2016). The weak levels were higher in onion sticks that added catfish meat flour because catfish meat flour also contains fat.

Protein content testing was carried out referring to SNI 2354.1-2015 (BSN, 2015) using the Kjeldahl method. According to Anissa & Dewi (2021), protein is a very urgent nutrient for the body. The function of protein for the body is to be used as a regulatory substance, building and maintaining the body. Protein is also sometimes used as an energy source in the body. There was an increase in the protein content of onion sticks which added catfish meat protein because catfish meat flour contains a lot of protein. The more fish meal added to the onion stick formulation, the higher the protein content of the onion stick produced. This is supported by research by Ernisti et al. (2018), who stated that the protein content of biscuits tends to increase with the higher amount of Siamese catfish meat flour added. This is because Siamese catfish meat meal is included in the group of protein sources.

Carbohydrates are nutrients that are really needed by the body to produce energy for humans (Zetiara et al., 2021). Carbohydrates as a source of energy are widely available. Availability is very wide and the price is relatively cheap. Determination of carbohydrate levels was carried out using the by difference method. This method is a calculation of 100% of the total number of compounds in a product minus the levels of protein, fat, water and ash.

Thus, carbohydrate levels will be influenced by other nutritional components, the lower the other nutritional components will result in higher carbohydrate levels, and vice versa (Silaban & Nanlohy, 2022). Nutritional components that influence the amount of carbohydrate content include protein, fat, water and ash content. The carbohydrate content of onion sticks with the addition of catfish meat flour is lower than the original onion sticks (without the addition of catfish meat flour) because there is an increase in the protein content of the onion sticks with the addition of catfish meat flour.

CONCLUSION

The results of proximate analysis of onion sticks with the addition of 15% fish meal caused a decrease in water content of 0.04% and ash content of 0.02%, while fat content, protein content and carbohydrate content increased. The increase in ash content, fat content, protein content and carbohydrate content was 2.84%, 2.59% and 5.37% respectively. The proximate composition of onion sticks with the addition of 15% fish meal, namely the water, ash, fat, protein and carbohydrate content respectively is 4.35%; 2.17%; 36.56%; 9.31% and 47.61%.

ACKNOWLEDGEMENT

The author would like to express his thanks to the supervisor, family, friends, and all parties who cannot be mentioned one by one who have helped in completing this journal article.

REFERENCES

- Agustina, S., Kurniawan, M. F., & Nurhalimah, S. (2024). Analisis Sensori dan Kimia Stik Substitusi Tepung Kacang Hijau Dengan Penambahan Rempah Temu Kunci. *Jurnal Pangan dan Gizi*, 14(1), 54-65.
- Ananda, T., Rachmawati, D., & Samidjan, I. (2015). Pengaruh papain pada pakan buatan terhadap pertumbuhan ikan patin (*Pangasius hypophthalmus*). *Journal of Aquaculture Management and Technology*, 4(1), 47-53.
- Anissa, D. D., & Dewi, R. K. (2021). Peran Protein: ASI Dalam Meningkatkan Kecerdasan Anak Untuk Menyongsong Generasi Indonesia Emas 2045 dan Relevansi Dengan Al-Qur'an. *Jurnal Tadris IPA Indonesia*, 1(3), 427-435.
- Asih, E. R., & Arsil, Y. (2020). Tingkat Kesukaan Choux Pastry Kering Dengan Substitusi Tepung Ikan Gabus. *Jurnal GIZIDO*, 12(1), 36-44. <https://doi.org/10.47718/gizi.v12i1.911>
- Bakrie, R. Y. (2020). Pengaruh Pencucian Daging Ikan Patin (*Pangasius hypophthalmus*) Setelah Penggaraman Terhadap Jumlah Mikroba dan Citarasa Wadi Patin. *Jurnal Ilmu Hewani Tropika*, 9(2), 94-98.
- Badan Standarisasi Nasional (BSN). (1992). SNI Nomor : 01-2973-1992, Tentang Standar Mutu Kue Kering. Jakarta.
- Badan Standarisasi Nasional (BSN). (2015). SNI Nomor : 2354.1-2015, Tentang Prosedur Uji Kimia Produk Perikanan. Jakarta.
- Ernisti, W., Riyadi, S., Fitra, D., & Jaya, M. (2018). Karakteristik Biskuit (*Crackers*) Yang Difortifikasi Dengan Konsentrasi Penambahan Tepung Ikan Patin Siam (*Pangasius hypophthalmus*) berbeda. *Jurnal Ilmu-Ilmu Perikanan dan Budidaya Perairan*, 13(2), 88-100
- Gunawan, A. A., & Ridwan, Z. A. (2024). Substitusi Tepung Kulit Manggis Dalam Pembuatan Stik Bawang. *Jurnal Manner*, 3(2), 171-174.
- Iqbal, A., Rochima, E., & Rostini, I. (2016). Penambahan Telur Ikan Nilem Terhadap Tingkat Kesukaan Produk Olahan Stick. *Jurnal Perikanan Kelautan*, 7(2), 150-155.

- Junianto., & Rostini, I. (2024). *Physical, Chemical, and Functional Characteristics of Small Pelagic Fish Meat In Indonesia*. 17(4), 1424–1433.
- Jusniati, J., Patang, P., & Kadirman, K. (2018). Pembuatan Abon Dari Jantung Pisang (*Musa Paradisiaca*) Dengan Penambahan Ikan Tongkol (*Euthynnus affinis*). *Jurnal Pendidikan Teknologi Pertanian*, 3(1), 58. <https://doi.org/10.26858/jptp.v3i1.5198>
- Kristiandi, K., Rozana, R., Junardi, J., & Maryam, A. (2021). Analisis Kadar Air, Abu, Serat dan Lemak Pada Minuman Sirop Jeruk Siam (*Citrus nobilis var. microcarpa*). *Jurnal Keteknikan Pertanian Tropis Dan Biosistem*, 9(2), 165–171. <https://doi.org/10.21776/ub.jkptb.2021.009.02.07>
- Muza'ki, K. A., Warsidah., & Nurdiansyah, S. Y. I. (2022). Analisis Kandungan Proksimat Kerang Ale-Ale (*Meretrix* sp) Segar dan Fermentasi. *Jurnal Kimia Khatulistiwa*, 10(1), 26-34.
- Ningrum, A., Suhartatik, N., & Kurniawati, L. (2017). Karakteristik Biskuit Dengan Substitusi Tepung Ikan Patin (*Pangasius* Sp) Dan Penambahan Ekstrak Jahe Gajah (*Zingiber officinale var. Roscoe*). *Jurnal Teknologi dan Industri Pangan*, 2(1), 53–60.
- Pratiwi, R. (2024). Penambahan Tepung Daging Ikan Patin (*Pangasius hypophthalmus*) Terhadap Tingkat Kesukaan Produk Stick Bawang. *Skripsi*, Fakultas Perikanan dan Ilmu Kelautan-Universitas Padjadjaran. Bandung
- Putri, N. (2015). Pengaruh Penambahan Tepung Teri Jengki Pada Pembuatan Stick Terhadap Tingkat Kesukaan Konsumen. *Skripsi*, Fakultas Perikanan dan Ilmu Kelautan-Universitas Padjadjaran. Bandung
- Ramah, D. A., Hendrayati, & Rochimiwati, S. N. (2019). Daya Terima Cheese Stick Dengan Penambahan Tepung Ikan Teri (*Stolephorus* sp). *Media Gizi Pangan*, 26(1), 61–69.
- Rizkhi, F. M., & Holinesti, R. (2022). Kualitas Stick Bawang Substitusi Tepung Tempe Kedelai. *Jurnal Pendidikan Tata Boga Dan Teknologi*, 3(2), 233-238. <https://doi.org/10.24036/jptbt.v3i2.328>
- Roshifa, D. N., Puspita, A. A., Mughofar, D. K. S., Dewi, T. P., Wicaksono, D. S., Muflihati, I., Suhendri, S., & Ujianti, R. M. D. (2023). Prosiding Seminar Nasional Mini Riset Mahasiswa, 2(1), 16-26..
- Silaban, B., & Nanlohy, E. E. E. M. (2022). Pemanfaatan Tepung Undur-undur Laut (*Hippa* sp.) Untuk Pembuatan Cemilan Sticks. *Jurnal Teknologi Hasil Perikanan*, 2(1), 113–120.
- Sulistyoningsih, M., Rakhmawati, R., & Setyaningrum, A. (2019). Kandungan Karbohidrat dan Kadar Abu Pada Berbagai Olahan Lele Mutiara (*Clarias gariepinus*). *Jurnal Ilmiah Teknosains*, 5(1), 41-46.
- Wijayanti, A., Rahmawati, S. H., & Emilyasari, D. (2024). Karakteristik Kimia Bakso Ikan Patin (*Pangasius* sp.) Melalui Pemberian Tepung Konjak (*Amorphophallus oncophyllus*). *LEMURU: Jurnal Ilmu Perikanan dan Kelautan Indonesia*, 6(1), 15-29. <https://doi.org/10.36526/jl.v6i1.3500>.
- Zetiara, A. Z., Akhriani, M., Muharramah, A., & Abdullah. (2021). Hubungan Tingkat Kecukupan Lemak dan Karbohidrat Dengan Status Gizi Pada Remaja Putri. *Jurnal Gizi Aisyah*, 1(2), 85-90.