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Addition of Machine Meal to Onion Chips

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Abstract
The purpose of this research is to determine the right level of adding mackerel meat meal to onion chips to produce the most preferred product. The research was conducted at the Fisheries Processing Technology Laboratory of the Fisheries Study Program, Padjadjaran University, Indonesia. The research method used was experimental with 4 treatments, namely the rate of adding mackerel meat meal 0% (without addition, as a control), 5%, 7, 5% and 10% of the total doughs onion chips. The process of making onion chips consists of four main stages, namely mixing ingredients, donating, molding and frying. Variable observations were made on the level of preference for aroma, taste, texture and appearance/color of onion chips. The favorability level test was carried out with a hedonic test with the following scale: very dislike (1), dislike (3), blind (5), like (7), and very likes (9). The panelists used were semi-trained panelists as many as 20 people. Data obtained from the results of organoleptic testing of onion chips from various treatments, the rate off addition of mackerel meat meal, were analyzed descriptively comparative. Based on the results of the study, it can be concluded that the right rate of adding mackerel meat meal to onion chips to produce the most preferred product is 10% of the total dough. The average level of liking for the aroma, taste, texture and appearance/color of onion chips produced was 6, 6; 7, 6; 7, 8 and 8, 0 respectively.

Keywords: Snacks, Organoleptic, Wheat Flour, Descriptive, Products

Introduction

Chips are snacks or snacks in the form of thin slices that are very popular among the public because they have a crispy, savory, not too filling nature and are available in various flavors such as salty, spicy and seminal. Chips are very practical because they are dry, so they are more durable and easier to serve at any time (Sriyono, 2012) [13]. Chips can be made from tubers, fruits or vegetables, mixed with flour dough and other flavoring ingredients, and fried in oil (Oktaningrum, 2013). The names of chips in Indonesia vary and many terms are used such as onion chips.

The main ingredient of onion chips is a mixture of wheat flour and tapioca flour and other additives such as coconut milk, shallots, celery leaves as flavor enhancers (Ibrahim and Widiarto, 2019) [8]. Onion chips are one of the most popular snacks in Indonesia. Its savory and crunchy taste makes onion chips a snack choice that many people like. Besides being easy to buy, these chips can also be made by yourself because the ingredients are quite easy to obtain and how to make them is also simple.

Onion chips have nutritional content and side effects on health. Onion chips contain carbohydrates, proteins, fats, fiber, as well as minerals such as calcium, iron, and phosphorus. However, excessive consumption of onion chips can increase the risk of diseases such as obesity and hypertension (Fadilah *et al*., 2018) [5].

Inovasi to improve the quality and nutritional content of onion chips need to be done. One of the innovations made is to add mackerel meat meal. The addition of mackerel fish meal to food can increase the levels of protein, calcium, and phosphorus in the final product (Asyifa *et al*., 2017) [3]. Eating mackerel meat meal can improve protein quality and improve lipid profiles in women with obesity (Hidayat *et al*., 2020) [7]. In addition to having good nutrition, mackerel flour can add a distinctive taste and aroma of fish to food (Fadhallah *et al*., 2021) [6].

Mackerel (*Scomberomorus commersoni*) is a pelagic fish resource commodity that has a fairly high economic meaning and is used as an export commodity and to meet domestic needs. Mackerel contains approximately 18%-22% protein, 0, 2%-5% fat, carbohydrates less than 5%, water 60% - 80% (Zulfahmi *et al.*, 2014) [17]. Mackerel meat can be processed into flour and is widely used as a supplementation ingredient in food products. The purpose of this research is to determine the right level of adding mackerel meat meal to onion chips to produce the most preferred product.

Research Methods

The research was conducted at the Fisheries Processing Technology Laboratory of the Fisheries Study Program, Padjadjaran University, Indonesia. The ingredients used in this study were mackerel meat meal, wheat flour, tapioca flour, salt, chicken eggs, coconut milk, onion, garlic, margarine, celery and cooking oil. The dishes used to make these onion chips are knives, stoves, cutting boards, scrapers, bowls, rolling pins, spoons, spatulas, pans, and jars.

The research method used was experimental with 4 treatments, namely the level of addition of mackerel meat 0% (without addition, as a control), 5%, 7, 5% and 10% of the total chip dough onions. The process of making onion chips begins with preparing all the tools and ingredients needed. The process of making onion chip dough involves the preparation of dough ingredients, namely by mashing shallots and garlic and then slicing celery to taste. Then mix wheat flour with tapioca flour and add finely chopped onions to the basin container. After that, the dough is weighed and then added mackerel meat meal according to the treatment, Treatment A (0%), Treatment B (5%), Treatment C (7, 5%), and Treatment D (10%). Then add enough margarine, eggs, water and flavoring until the dough is smooth and flattened using a rolling pin. Last printed and immediately fried.

Variable observations were made on the level of preference for aroma, taste, texture and appearance / color of onion chips. The favorability level test was carried out with a hedonic test with the following scale: very dislike (1), dislike (3), neutral (5), like (7), and very like (9). The panelists used were semi-trained panelists as many as 20 people. Data obtained from the results of organoleptic testing of onion chips from various treatments of the level of addition of mackerel meat meal were analyzed in a comparative descriptive manner.

Results and Discussion

The parameters tested include 4 parameters, namely aroma, taste, texture and appearance / color. Organolept testik was conducted on 20 panelists and 4 treatments. The first treatment is control by not adding mackerel meat meal (A), the second treatment with the addition of mackerel meat meal by 5% (B), treatment three with the addition of mackerel meat meal by 7,5% (C), and treatment four with the addition of mackerel meat meal by 10% (D). The results of organoleptic tests are presented at Tabel 1.

Table 1: Rated Average Organoleptic Preference Level of Onion Chips with Mackerel Meat Meal Mixture

Specifications	Treatment			
	Addition of meat flour mackerel 0% (A)	Addition of meat flour mackerel 5% (B)	Addition of meat flour mackerel 7.5% (C)	Addition of meat flour mackerel 10% (D)
Aroma	5,3	5,7	6,6	6,6
Taste	5,7	6,4	7,7	7,6
Texture	6,7	7,3	7,3	7,8
Appearance	5,7	6,2	7,2	8
Average	5.85	6.40	7.20	7.50

Flavor

Flavor is one of the important components in determining the valuation of products. Aroma is an odor caused by chemical stimuli smelled by olfactory nerves in the nasal cavity when food enters the mouth. In addition to it, aroma is also an important factor for consumers in choosing food, according to states that the deliciousness of food is determined by the aroma of food. Aroma is a sensory attribute that can describe the taste of a product even though it has not been consumed. Aroma can also determine the components of the ingredients used in making the product (Wiyono *et al.*, 2019) [15].

The average value of the level of liking for the aroma showed significant results on treatment A; B; C; D is 5, 3; 5, 7; 6, 6; 6, 6. Treatment A or control treatment has the lowest average value because onion chips that are not mixed with mackerel meat meal do not smell fish in their products. This suggests that the addition of mackerel meat flour to the manufacture of onion chips with different concentrations can affect the aroma of the chips. Organoleptic results also show that the more concentration of adding mackerel meat meal to the manufacture of onion chips, the aroma content in onion chips will increase. This is in accordance with the statement of Zulfahmi and Swastawati (2014) [17]. Which states that the more fish content added in tapioca flour in making fish crackers, the aroma content in the crackers will increase. The smell of onion chips favored by the panelists was onion chips with C and D treatment, namely the addition of mackerel fish meal as much as 7,5% and 10%, this can be seen based on the largest average value found in C and D treatments with an average value of 6,6.

Taste

According to Yusfiani *et al.* (2021) [16], taste is a factor that plays an important role in determining consumers' final decision to accept or reject a food. In addition, according to Nurwati and Muhamad Hasdar (2021) [10], taste is a form of organoleptic instrument that uses the five senses in the form of the human tongue to determine the sour, bitter, salty and sweet taste of food products.

Organoleptic test of onion cryptic taste preference level from treatment A; B; C; D which is 5.7; 6, 4; 7, 7; 7.6. The lowest average value is treatment A or control treatment, this happens because in the manufacture of onion chips is not added mackerel meat meal, fish flavor is absent. Organoleptic results show that the addition of mackerel meat meal to the manufacture of onion chips has a noticeable influence on the taste of the product. The more concentration of mackerel fish meal mixed in making onion chips, the stronger the fish flavor contained in onion chips will be. According to Aryani and Norhayani (2011) [2] the components that form the taste of food ingredients are related to protein in foodstuffs, the more protein contained the product will taste more savory. The taste of onion chips favored by the panelists was onion chips with treatment C adding mackerel fish meal as much as 7, 5%, this can be seen based on the largest average value found in treatment C with an average value of 7, 7.

Texture

Food texture can be defined as something that looks real and generally the entire surface that is visible on the outside. Texture is the appearance of the nature of the product that can be assessed and observed through the sense of toucha. Texture is an important trait in food products that can affect consumer acceptance. Texture is usually related to sensing or organoleptic tests on solid materials, namely the

impression in the mouth after oral processes such as chewing and tasting or with direct hand touch. The texture of the product usually varies, usually the texture includes sticky, smooth, rough, thick, elastic, supple, chewy, crispy and others. (Sheren 2021) [14].

Organoleptic results of the level of texture preference of onion chips showed significant value in treatment A; B; C; D is 6, 7; 7, 3; 7, 3; 7, 3. Treatment A or control treatment of adding mackerel flour as much as 0% has the lowest average value, then adding mackerel flour as much as 5% and 7,5% both have a value of 7,3, and the highest value is adding mackerel fish meal as much as 10% with an average value of 7,8%. This is influenced by one of them is the length of frying time, in treatment A (control) the frying time is too long so that the texture is not too crispy, while in treatment D the length of frying time is right so that there is an increase in texture value because it is crispy. The formation of a hard texture in fried products is influenced by the main components that make up the ingredients. Wheat flour, tapioca flour, and mackerel fish meal which are the main components in onion chip products have a major role in producing a hard texture in the product. It is due to the components amylose and amylopectin. During the frying process, there will be a flour retrogradation process which will result in the formation of a hard texture on the product. In addition, the frying process will cause the amount of water in the ingredients to decrease and the hardness to increase. (Azza *et al.*, 2021) [4] The texture of the chips becomes coarse if the tapioca flour used is not fine or the grains are coarse and the presence of foreign objects such as gravel. The amount of use of tapioca flour must be in accordance with the predetermined recipe. If the tapioca flour is too little then the texture becomes hard. (Purwanti 2011) [12].

Color/Appearance

One assessment that is often done is the assessment of the color or appearance of the product. Color is an important product for a food product. Color can be viewed as a physical (objective) tool and organoleptic (subjective) property using the sense of sight. Color is the first sensory that can be seen directly by panelists, determining the quality of food ingredients generally depends on the color they have, colors that do not deviate from the color that should give the impression of their own assessment by panelists (State, *et al.*, 2016).

Based on organoleptic tests on the aspect of appearance atau color obtained an average value that is quite different from each treatment, in treatment A; B; C; D is 5, 7; 6, 2; 7, 2; 8. The lowest average value, namely treatment A or control treatment, this happens because when frying onion chips, treatment A is done too long and the fire is too large, which causes the color / appearance of the product to be too dark and also slightly burnt. And the highest average value is treatment D (10%) because the length of time frying chips is right is not too fast or long so that the appearance of the resulting product is quite good. The color of onion chips during the frying process will change. The surface of the outer layer will be brownish-yellow. The appearance of color on the surface of the material is caused by the browning reaction or Maillard reaction. The level of color intensity depends on the length of time and temperature during the frying process and the chemical composition on the outer surface of the foodstuff. This shows that mackerel onion meal chips in treatment D have the best color than other treatments. The color produced by onion chips is also influenced by the ingredients used in making onion chips and the Maillard reaction during the frying process (Adrianti & Isamu, 2019) [1].

Conclusion

Based on the results of the study, it can be concluded that the right rate of adding mackerel meat meal to onion chips to produce the most preferred product is 10% of the total dough. The average values of liking for the smell, taste, texture and appearance/color of the onion chips produced were 6; 7, 6; 7, 8 and 8, 0 respectively.

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