

## *Effect of Avocado Seed Flour Nugget on Organoleptic Tests*

**Eliska<sup>1\*</sup>, Sajaratud Dur<sup>1</sup>**

<sup>1</sup>Universitas Islam Negeri Sumatera Utara, Medan, Indonesia

(Correspondence author's email, [eliska@uinsu.ac.id](mailto:eliska@uinsu.ac.id))

### **ABSTRACT**

*Avocado seeds contain a lot of starch and can be processed into foods such as avocado seed flour (TBA). TBA is classified as low-protein flour but has a lot of nutritional content, so it can be made into noodles or other food products. This research aimed to determine the acceptability of avocado seed flour nuggets with chicken, catfish, and shrimp variants. The research design in this study is a pure experiment with a simple experimental design. A simple experimental design is also called a posttest-only control group design. This research design was a nugget design with 25% avocado seed flour and 25% tapioca flour with three treatments (three flavor variants), chicken, catfish, and shrimp (50%). The results of this study showed that there were significant differences in the chicken, catfish, and shrimp nugget variants based on color categories because the results were  $p < 0.05$ . In terms of texture, the test shows a  $p$ -value of  $> 0.05$ , which means that there is no real difference between the three variants of avocado seed nuggets. In conclusion, this research is based on the results of the ANOVA test on avocado seed nuggets with chicken, catfish, and shrimp variants. The results obtained were that there were real differences in the chicken, catfish, and shrimp nugget variants based on the color, taste, and aroma categories. Meanwhile, in the texture category, the test results obtained were that there were no real differences between the three avocado seed nugget variants.*

**Keywords:** Avocado Seeds, Avocado Seed Flour, Nugget, Organoleptic Test, Stunting.

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## **PENDAHULUAN**

Avocado (*Persea Americana* Mill) is a tree that grows in the highlands of Central America, and its types are widely distributed throughout the country. Avocado (*Persea Americana* Mill) is a tree that grows widely in tropical areas such as Indonesia. Avocado is a fruit that many people like. Avocados are delicious and nutritious. However, people only use avocados for the pulp, and the seeds become waste<sup>1</sup>.

Based on BPS (Central Statistics Agency) data in 2019, Indonesian avocado

production was 461,613 tons, especially in North Sumatra province at 18,525 tons. But unfortunately, only the flesh is consumed and the skin and seeds are thrown away and become trash. In fact, avocado seeds can be processed into various alternative foods, including avocado seed flour<sup>2</sup>.

The content of avocado seeds has high potential as a main food ingredient. Avocado seeds contain a lot of starch and can be processed into foods such as avocado seed flour (TBA). TBA is classified as low-protein flour but has a lot of nutritional content, so it can be made into noodles or other food products<sup>3</sup>.

Apart from carbohydrates, protein, and fat, avocados are also rich in various vitamins such as vitamins A, C, and E, as well as various minerals such as calcium, magnesium, phosphorus, potassium, zinc, iron, copper, and sodium<sup>4</sup>.

The characteristic of avocado seed flour which is high in starch is a great opportunity to be used as an alternative to wheat flour. In general, various foods are made from wheat flour, as we know, wheat flour is made from wheat which is rich in gluten. Gluten is a natural protein found in cereals or grains that is insoluble in water and is chewy. Gluten can interfere with health, namely celiac disease. Therefore, avocado seed flour is an alternative basic ingredient for food products to replace wheat flour<sup>5</sup>.

Wheat flour or wheat flour is one of the main ingredients for making nuggets. Wheat cannot be grown in Indonesia because it is a plant that can grow in subtropical climates. This incident prompted the government to import flour from abroad. Wheat flour contains a protein called gluten. Consuming it in large quantities may have negative effects on the body. This means that the body cannot absorb nutrients optimally<sup>6</sup>.

Dependence on the use of wheat flour in food processing, including nuggets, can be a burden for the country because it has to import wheat from other countries. The increase in population causes an increase in flour consumption. Therefore, in Indonesia it is important to look for alternative food ingredients that are easy to grow in Indonesia and can be converted into flour for a longer shelf life<sup>7</sup>.

Alternatives include turning avocado seed waste into flour and making processed food in the form of nuggets. Nuggets are a food made from wheat flour and are very popular among children, teenagers and even adults<sup>8</sup>.

Nugget is a type of processed food made from minced meat molded in a square shape and coated with spiced flour<sup>9</sup>. Nuggets are a fast food that is very popular among people today, especially among the millennial generation. This product is included in the processed food category which can be found in various supermarkets with various brands, packaging and prices<sup>10</sup>.

The nuggets that are popular today are usually made from minced chicken (broiler)

meat mixed with additional ingredients and spices, then steamed, shaped, coated with egg white and breadcrumbs, then fried<sup>11</sup>.

Nuggets generally have various kinds of fillers. Generally, the filler used is high in protein, such as chicken (broiler). However, in this study the fillers used were chicken, shrimp and catfish as sources of animal protein<sup>12</sup>.

Using avocado seed flour as a base for nuggets is an effort to reduce avocado seed waste as well as an effort to reduce the use of wheat flour in Indonesia. Filler with chicken, shrimp, catfish to add variety of flavors so that the nuggets made from avocado seed flour are delicious when eaten.

Based on the description above, researchers are interested in conducting organoleptic testing on avocado seed flour nuggets with three flavor variations, namely chicken, catfish and shrimp.

## METHOD

The research design in this research is a pure experiment with a simple experimental design. A simple experimental design is also called a posttest only control group design. This research design was a nugget design with 25% avocado seed flour and 25% tapioca flour with three treatments (three flavor variants), namely chicken, catfish and shrimp (50%). The research is used to analyze data by explaining or illustrating the data collected.

The organoleptic test for avocado seed flour nuggets used a hedonic test which assessed the taste level of test participants in terms of color, aroma, texture and taste, using a five-point scale, namely dislike, like, really like and really like. The research was conducted at the Faculty of Public Health, North Sumatra State Islamic University, Medan. The panelists used were untrained panelists, namely students from the Faculty of Public Health, UIN North Sumatra and consisted of semesters I and VII. The tools used for the process of making avocado seed nuggets are (1) Container for mixing avocado seed nuggets, (2) Knife for cutting nugget ingredients, (3) Spoon for scooping avocado seed mixture, (4) Blender for smoothing nugget ingredients avocado seeds, (5) Oven for drying avocado seeds, (6) Scales for weighing avocado seed nugget ingredients, (7) Baking pan used as a container for avocado seed when dried in the oven.

The ingredients used for the process of making avocado seed nuggets are (1) Tapioca flour 100 gr, (2) avocado seed flour, (3) Sliced carrots 45 gr, (4) Sliced soup leaves 15 gr, (5) 2 eggs, (6) Pepper and salt, (7) Chicken, catfish and shrimp 500 gr each, (8) White bottom 5 cloves and (9) Wheat flour.

The process for making avocado seed nugget is 91) Weigh out 25 gr of avocado seed flour, 100 gr of tapioca flour, 500 gr of chicken, catfish and shrimp each, 40 gr of carrot slices, 15 gr of soup leaf slices, and 5 fine garlic cloves, (2) Prepare a large container, put into the container avocado seed flour, tapioca flour, chicken/catfish/shrimp, sliced carrot, sliced soup leaves, crushed garlic and beat well 2 eggs, (3) Mix. Mix the mixture evenly and make sure the texture is soft but still sticky, (4) After the mixture is evenly mixed, add salt and pepper to adjust thoroughly then stir again, (5) Put the mixture into a heat-resistant container and steam for about 10 minutes, (6) Leave the mixture until cold.

When it is cold, cut the nuggets and separate each flavor, then coat the nuggets in dry wheat flour, water and breadcrumbs, repeat until the nugget are finished. Next, the nuggets are stored in the freezer so they last longer.

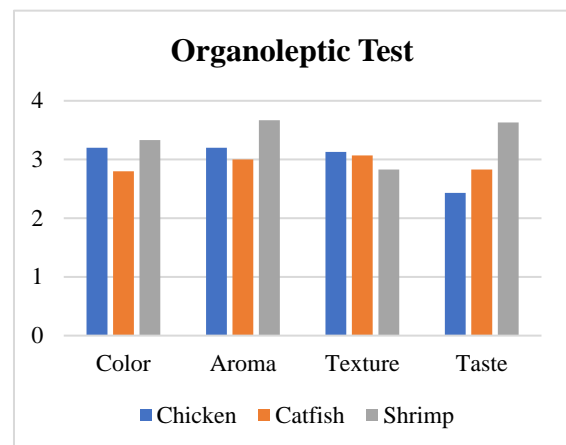
## RESULTS

The results of organoleptic tests on

**Table 1. Avocado Seedd Nugget Anova Test**

<b>Color</b>					
	<b>Sum of Squares</b>	<b>Df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Between Groups	4,622	2	2,311	3,336	0,040
Within Groups	60,267	87	,693		
Total	64,889	89			
<b>Aroma</b>					
	<b>Sum of Squares</b>	<b>Df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Between Groups	7,022	2	3,511	3,574	0,032
Within Groups	85,467	87	,982		
Total	92,489	89			
<b>Texture</b>					
	<b>Sum of Squares</b>	<b>Df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Between Groups	1,489	2	0,744	0,906	0,408
Within Groups	71,500	87	0,822		
Total	72,989	89			
<b>Taste</b>					
	<b>Sum of Squares</b>	<b>Df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Between Groups	22,400	2	11,200	12,104	0,000
Within Groups	80,500	87	0,925		
Total	102,900	89			

avocado seed nuggets using a hedonic scale (level of liking) can be seen in the table below:



**Figure 1. Organoleptic Test Results for Three Variants**

Based on the results of subjective research carried out using organoleptic/hedonic tests on 3 variants in terms of color, aroma, texture and taste, it can be seen in Figure 1. The range of average values for the organoleptic test results for avocado seed flour nuggets in terms of color, aroma, texture, and taste, namely 2,43 to 3,67. The highest average value was shown by the shrimp variant in terms of aroma and taste, namely 3,67 and 3,63. So the organoleptic test with a hedonic scale that was really liked by the panelists was the aroma and taste of the shrimp variant.

Based on table 1, the panelists' assessments were analyzed using the SPSS 21.0 program using one way ANOVA to determine the differences between the three variants of avocado seed flour nuggets. Based on the table 1, the results of the ANOVA test show a sig (P) value < 0,05, meaning that there are significant

differences between the three variants, namely chicken, catfish and shrimp in terms of color, aroma and taste. Furthermore, the ANOVA test table obtained a sig (P) value > 0,05, meaning there was no significant difference in terms of texture between the three variants of avocado seed flour nuggets.

**Table 2. Duncan Nugget Test for Avocado Seed Flour**

Variants	Color	Aroma	Texture	Taste
Chicken	3,20ab	3,20ab	3,13a	2,43a
Catfish	2,80a	3,00a	3,07a	2,83a
Shrimp	3,33b	3,67b	2,83a	3,63b

Next, after carrying out the ANOVA test, Duncan's further test was carried out to provide information on formulas that were significantly different. Based on table 2, the results of the Duncan color and aroma test show that the proportion of wheat flour and avocado seed flour has an effect on giving different colors and aromas to fried nuggets.

## DISCUSSION

### Panelists' Level of Likeness for Taste, Color, Texture and Aroma of Avocado Seed Flour Nuggets

The taste produced in food is produced by the human sense of taste, namely the tongue because the tongue has red papillae. Taste is generally influenced by several factors, namely chemical compounds, temperature, the combination of food and other food additives and time in the cooking process.

Based on table 1, the results of the ANOVA test show a sig (P) value < 0.05, meaning that there are significant differences between the three variants, namely chicken, catfish and shrimp in terms of color, aroma and taste. In this research, it was found that there was an effect of adding avocado seed flour with chicken, catfish and shrimp flavors on the resulting color.

Furthermore, the ANOVA test table shows a sig (P) value > 0.05. This means that there is no significant difference in texture between the three variations of avocado seed flour nuggets. The texture of a food can be seen from the pressure felt when touched with the mouth or fingers, namely when bitten, chewed, swallowed or held, and can also be recognized from the shape of the nugget.

This is in accordance with Winisiatri's research (2021) where researchers used the Anova test to determine the antioxidant content

in snackbar products. The results obtained show  $p = 0.000$ . This results in an average difference ( $p < 0.05$ ) in the anti-oxidant activity content of snackbar products with five different formulation treatments<sup>13</sup>.

To find out the real differences in the three variants of avocado seed flour nuggets. A follow-up test to the ANOVA test, namely the Duncan test, must be carried out. From the tests that have been carried out, the results of the Duncan color and aroma test show that the proportion of wheat flour and avocado seed flour has an effect on giving fried nuggets a different color and aroma.

In the chicken variant there are two symbols, namely ab, this indicates that the color and aroma of the chicken variant has no real difference from the catfish and shrimp variants. In the catfish and shrimp variants there are 2 different symbols, namely the catfish variant with the symbol a and the shrimp variant with the symbol b, this shows that the color and aroma of the catfish and shrimp variants have a real difference from the color of the chicken.

Based on table 2, the results of the Duncan texture test show that the proportion of wheat flour and avocado seed flour has no effect on providing a different texture to fried nuggets. In the chicken, catfish and shrimp variants, they are on the same symbol, namely symbol a, with the same texture, and are less popular with the panelists because the texture is hard and hard to bite.

Based on table 2, the results of the Duncan taste test show that the proportion of wheat flour and avocado seed flour has an effect on giving a different taste to fried nuggets. The chicken and catfish variants have the same symbol, namely symbol a, this means that the taste of the chicken and catfish variants has no real difference to the shrimp variant. The

shrimp variant has a different symbol from the symbols for the chicken and catfish variants, namely the symbol b, this shows that the taste of the shrimp variant has a real difference from the taste of the chicken and catfish variants.

## CONCLUSION

Based on the results of the ANOVA test on avocado seed nuggets with chicken, catfish and shrimp variants. The results obtained were that there were real differences in the chicken, catfish and shrimp nugget variants based on the color, taste and aroma categories. Meanwhile, in the texture category, the test results obtained were that there were no real differences between the three avocado seed nugget variants.

At this time, researchers have not yet carried out a comparison with a control group between traditional nuggets and avocado seed flour nuggets. And there are no trained panelists in this study, so the accuracy of the findings cannot be recognized outside the research site. For this reason, further research is needed to generalize the findings beyond the research site.

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