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Fortification of Indian Anchovy Fish Flour as a Source of Protein and Calcium for PreferencesLevel Flat Rice Noodles

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KeyWords

Anchovy fish flour, flat rice noodle, protein and calcim

ABSTRACT

This study aims to determine the levels of indian anchovy flour fortified on the flat rice noodles most preferred by panelists and to know protein and calcium content of the most preffered flat rice noodles. This research was carried out from May to June 2018 at the Fisheries Product Processing Laboratory of the Faculty of Fisheries and Marine Sciences and the Ruminant Animal Nutrition Laboratory and Animal Food Chemistry, Faculty of Animal Husbandry, Padjadjaran University. The research method used was an experimental method with 5 treatments of adding indian anchovies flour and 15-20 semi-trained panelists as replicates, with the observed parameters consisting of organoleptic tests including appearance, aroma, texture and taste; and a proximate test which includes water, protein, fat, ash, carbohydrate and calcium levels. The results showed that the 5.0% treatment has the highest median appearance and taste, which is 9 and the median value of aroma and texture is 6, so that the 5.0% recognition has the biggest alternative value of 7.8, and can increase the protein content of 3.11%, namely from 7.49% to 10.6%, and calcium by 0.08% which is from 0.13% to 0.21%.

1. INTRODUCTION

Protein is a food substance needed by the body, which functions as a building and regulating agent (FKM UI Department 2008). Calcium is an important food substance that functions for tooth and bone growth (Permitasari 2013). According to the Ministry of Health (2008) that calcium consumption in Indonesia is still quite low, which is only about 254 mg / day. One source of protein as well as calcium is indiananchovy (*Stolephorusindicus*).

According to the Ruminant Animal Nutrition Laboratory and Animal Food Chemistry Faculty of Animal Husbandry Padjadjaran University (2015) in Putri (2015) the protein and calcium content of indiananchovy respectively were 59.64 grams / 100 grams and 2150 mg / 100 grams. The protein and calcium content of indiananchovy and its entire body that can be consumed makes anchovies as one of the alternative ingredients for nutrition enhancers, especially protein and calcium which can be added to food products.

One method of processing and preservation that can be done on anchovy is processing it into flour. According to the Ruminant Animal Nutrition Laboratory and Animal Food Chemistry Faculty of Animal Husbandry Padjadjaran University (2015) *in* Putri (2015) the protein and calcium content of indian anchovy respectively are 48.26 grams / 100 grams and 2780 mg / 100 grams. One of the efforts to increase protein and calcium intake can be done by fortifying foodstuffs by adding anchovies to food products known to the public, one of them is flat rice noodles.

Fortification is an effort to improve nutritional status or quality because it provides food products that can be used as a source of nutrients needed (Hariyadi 2006). According to Fu (2008), flat rice noodles are a side product of noodle product variations, which use rice flour as a basic ingredient, but in terms of nutrition have a low nutritional content, as revealed by Hartono, et al. (2007)flat rice noodle included in the category of noodles, then viewed according standard quality of wet noodles SNI 2987: 2015 noodles protein content of at least 9% of the weight of the ingredients but it turns out according to the data Asean Food Composition Tables (2000) that in 100 grams of flat rice noodles only contains 5 mg of calcium and according to Siahaan, et al (2015) protein contained only 7.9 grams /100 grams of material.

2. RESEARCH METHODS

2.1 Time and Place of Research

This research was conducted from May to June 2018. The manufacture of indian anchovy, wet flat rice noodles and organoleptic testing was carried out at the Fisheries Product Processing Laboratory, Faculty of Fisheries and Marine Sciences, Padjadjaran University, while proximate testing was carried out at theRuminant Animal Nutrition Laboratory and Animal Food Chemistry, Faculty of Animal Husbandry, Padjadjaran University

2.2 Research Tools and Materials

The tools used for making anchovy flat rice noodles are gas stoves, pans, *meat grinders, blenders*, digital scales, analytic scales, electric ovens, knives, cutting boards, rulers, plates, spoons, measuring cups and plastic containers. Tools for hedonic testing are hedonic test assessment sheets, white plastic plates, spoons and glasses. Material which is used for making indian anchovy flour, namely indian anchovy (*S. indicus*) which is made into flour, rice flour, tapioca flour, salt, water and vegetable oil.

2.3 Method

The research method used is experimental and descriptive methods. Experimental method with 5 treatments and 15-20 panelists as replications. Descriptive method was carried out to explain rendementyield, protein and calcium level test and hedonic test. The hedonic test was carried out using the human senses to measure the level of panelists' preference which included appearance, aroma, texture and taste.

2.4 Data analysis

The analysis used is non-parametric analysis for organoleptic testing using a two-way variant analysis of Friedman test with Chi-square test according to Apriyantono et al (1989) in Sriwidianingsih (2013). The statistics used in the Friedman test are defined by the following formula:

 $X_{r}^{2} = \frac{12}{bk(k+1)} \sum_{i=1}^{t} (Rj)^{2} - 3b(k+1)$

Information : X_r² = friedman Test Statistics b = deuteronomy k = treatment Rj^2 = total ranking of each treatment

If there is the same number, the correction factor (FK) is calculated using the following formula:

$FK = 1 - \frac{\sum T}{bk \ (k^2 - 1)}$	
$\chi^2_{c} = \frac{\chi^2}{\chi^2}$	

Information :

T = N (t3-t)

T=The same number of observations for one rank

N=The same number of observations for a rank with the same t value

The significant value of the X_c^2 observation price can be known by using the table of Chi-square critical prices with db = k -1; λ = 0.05.

Decision rules for testing hypotheses are:

 H_0 = Giving flour anchovy to flat rice noodles does not give a real effect on the level of preference

H₁ = Giving flour anchovy to flat rice noodles gives a real influence on the level of preference

If the price of X_c^2 counts $< X_c^2$ table, then accept H_0 and reject H_1 . Whereas if the price of X_c^2 counts $> X_c^2$ table, then accept H_1 and reject H_0 . If H_1 is accepted, the treatment gives a real difference and is followed by a multiple comparison test (multiple comparison). To find out the differences between treatments using the multiple test formula as follows:

IRi-RjI ≥ Z [
$$\alpha/k(k-1)$$
] $\sqrt{bk(k+1)/6}$

Information :

IRi-RjI= Difference in ranking average

Ri= average rating of the sample

Rj= average rating from sample to -j

 α = experiment wise error

b = lots of data / replications

k = many treatments

z = value in Z table for multiple comparison

Decision making on the relative weight values of the appearance, aroma, texture and taste criteria is done by pairwise comparisons by changing pairwise comparisons with a set of numbers that present the relative priorities of the criteria and alternatives / treatments. To determine the best treatment using the Bayes method.

3. RESULTS AND DISCUSSION

3.1 Rendement of Indian Anchovy Flour

Processing fish into flour will produce rendement. The rendement calculation aims to determine the amount of anchovies needed if you are going to make a product with the addition of indian anchovy. Fresh indian anchovy weight used was 1500 grams and headless dried indian anchovy flour was 137 grams, so the rendementobtained in the study was 16%.

3.2 Organoleptic Characteristics

A. The appearance of Anchovy Flat Rice Noodles

Based on the appearance test, the median value of the preference of anchovyflat rice noodles in organoleptic assessment ranged from 5 to 9, which means normal or neutral until very well liked, the treatment which has the highest median level of preference is 5.0% which has a slightly beige white appearance and its shape resembles that of the flat rice noodles which is thin and neat.

Addition of IndianAnchovy Flour (%)	Median	Average appearance
0,0	7	6,9 abc
2,5	7	7,4 bc
5,0	9	7,7 с
7,5	5	5,9 ab
10,0	5	5,6 a

Table 1. Average Appearance Flat Rice Noodles According to Treatment Addition of Indian Anchov Flour

Description: Numbers followed by lettersthe same shows no significant difference according to the 5% comparison test

The average value of the highest appearance was obtained in the treatment of 5.0% anchovy flour addition of 7.7. The 5.0% treatment was favored by the panelists because the addition of indian anchovy only made the color change slightly beige so that it was still favored by the panelists, and the flat rice noodles started to get less sticky, so this made it easier to cut the flat rice noodles into sheets, so the shape looked neater because it doesn't stick tightly to the knife. The treatment of 0.0% and 2.5% has a white appearance and slightly beige white, but has an average value lower than 5.0% treatment, this is because the shape is still less neat because of the sticky flat rice noodles so that when done cutting the noodles into sheet shapes, there are noodles sticking to the knife which causes the shape to become less neat. The treatments 7.5% and 10.0% have the lowest average value of preference, this is because even though the shape is neat because the noodles are not sticky when cutting because the addition of indian anchovy is increasing, but the color of the noodles is already looks brownish so it is less liked and decreases panelist judgment. As mentioned by Soekarto (1985) *in* Efrianti (2013) products that have a neat and intact form are certainly preferred by panelists because they are considered good when compared to products that are less neat and not intact.

The results of statistical tests on the appearance of anchovy flat rice noodles show that the spacing is 0.0%, 2.5%. 5.0% does not differ significantly between one another and it is not too different just to add cream with higher costs, but 5.0% treatment differs significantly with 7.5% and 10.0% treatment, this is because the color of the flat rice noodles is 7.5% and 10.0% has shown a brownish color. The treatment of 0.0% and 2.5% compared with 7.5% and 10.0% treatments did not have a significant difference, this was done to the level of satisfaction with the appearance of the nieces by the panelists relatively the same. So that it can be seen from the results obtained that the addition of indian anchovy flour by 5.0% can affect the level of preference of the panelist appearance on the flat ricenoodles produced.

The appearance of indian anchovy flour has a brownish cream color that curls on the maillard reaction during the process of making anchovies flour in hot temperatures. Maillard reactions are interactions on reducing sugar groups with amino acids that occur at high temperatures (Rusmianto 2007 *in*Herliani 2016). In addition, the mineral content in indian anchovy also affects the color of the flat rice noodles which added indian anchovy, according to Prabowo's statement (2010) *in*Siswanti et al (2017) which is higher in mineral ingredients, it will make the product color darker. Helfina (2014) also states that the same color as wet noodles by the color produced by anchovy flour, and also according to Haryati et al (2006) which already has long jawed mackerel (*Rastrelirs*p.) flour to be added will make the colored noodle dough more opaque because of the color of mackerel flour which is increasingly dominating. Therefore, the more levels of addition of fish flour, the more it will reduce the appearance of noodles from the panelists.

B. Aroma of Anchovy Flat Rice Noodles

The test of aroma of anchovy flat rice noodles resulted in a treatment of 0.0% and 2.5% obtaining the median value of the highest level of preference which was 7 which means that it was favored by the panelists, the treatment of 5.0% had a median value of 6 which means that panelists still favored it, while treatment 7, 5% and 10.0% obtain the lowest median level of preference, which is 5 which means normal / neutral. Randi (2012) *in* Siahaan (2015) revealed that the addition of fish protein concentrate (KPI) can provide a distinctive aroma of fish in a product, and the higher the KPI administration, the more distinctive the product's aroma and the aroma of fish. Nooranisha (2016) also added that the distinctive aroma that would arise in a food product would depend on the constituent ingredients and ingredients added to the product.

Addition of IndianAnchovy Flour (%)	Median	Average appearance
 0,0	7	6,5 a
2,5	7	6,4 a
5,0	6	6,3 a
7,5	5	5,8 a
10.0	5	57a

Table 2. Average Aroma Flat Rice Noodles According to Treatment Addition of Indian Anchovy Flour

Description: Numbers followed by lettersthe same shows no significant difference according to the 5% comparison test

The fat content of the flat rice noodles added with indian anchovy flour will also increase due to the influence of the fat content contained in the indian anchovy flour, this also affects the flat rice noodles aroma produced, as according to Pratama et al (2018) statement, that fat and fatty acids which is a source of volatile compounds that can affect the aroma of a food product. This is what causes the assessment of the aroma to the product to decrease, due to the specific aroma of the flat rice noodles which will decrease with the addition of the concentration of dried anchovies flour to the flat rice noodles.

The average value of anchovy flat rice noodles aroma ranged from 5.7 to 6.5 which was decreasing with the addition of anchovy flour concentration in the flat rice noodles, but the numbers on the average level of preference for aroma of noodles showed a sufficiently different range of values. small. This is because the aroma of fish flour given up to 10.0% treatment is still covered by the aroma of flour derived from rice flour which dominates the raw material for making kwetiau, so giving indian anchovy flour does not give a significant difference to the aroma of flat rice noodles and is still favored by the panelists. up to 10.0% addition of indian anchovies. This is in accordance with the statement of Candra et al (2018) which states that the aroma of eel meat added to wet noodles will be disguised by the aroma of wheat flour, because the addition of eel meat is very little when compared to the amount of wheat flour used as raw material.

C. Texture of Anchovy Flat Rice Noodles

The hedonic test of the anchovy noodles texture resulted in a median level of preference of 5 to 7, indicating that up to 10.0% of the addition of indian anchovy flour was still favored by the panelists.

Table 3. Average	Texture Flat Rice I	Noodles According	to Treatment	: Addition of Indian	Anchovy Flour

Addition of IndianAnchovy Flour (%)	Median	Average appearance
0,0	7	7,8 c
2,5	7	6,8 abc
5,0	6	6,5 abc
7,5	5	5,6 ab
10,0	5	5,5 a

Description: Numbers followed by lettersthe same shows no significant difference according to the 5% comparison test

Flat rice noodle's texture in the treatment without the addition of indian anchovy flour has an average value of the highest preference of 7.8 because it is supple textured, slightly sticky and soft, while other treatments have an average value of the level of preference decreases with the increasing amount of indian anchovy. According to Kanoni (1991) *in* Bachtiar et al. (2014), this is because the texture is becoming less supple, suggesting that the sarcoplasmic protein contained in indian anchovy inhibits gel formation. Therefore, the addition of indian anchovy is added. produced is increasingly not chewy. In addition, the texture of a material will be affected by the water content, in this case the water content of the flat rice noodles with the addition of indian anchovy flour seems to decrease (Table 6), thus affecting the elasticity of the flat rice noodles texture, in accordance with the statement Diniyah, et al (2017) which states that wet noodles that have high water content will cause the texture of the noodles to become more supple. Siahaan (2015) added that the more fish protein concentrate (KPI) added to the mixture would make the resulting noodles less elastic, not sticky and hard because the resulting dough becomes thicker when compared to dough without the addition of KPI.

The results of statistical tests showed that the texture of the addition of anchovy flour was 0.0% compared to 2.5% and 5.0% did not have a significant difference because the decrease in texture elasticity of the noodles produced was not so large, while with concentrations of 7.5% and 10.0% there is a significant difference because the resulting texture starts to be felt, which is not too chewy and slightly broken.

D. Taste of Anchovy Flat Rice Noodles

The addition of indian anchovy flour is 0.0% and 2.5% has a median value of 7 which means that panelists are favored, 5.0% treatment has the highest median value of 9 which means panelists are very much liked, while the treatment is 7.5% and 10.0 % has a median value of 5 which means normal / neutral. This shows that up to 10% of the addition of indian anchovy flour is still favored by panelists.

Table 4. Average Taste Flat RiceNoodles According to Treatment Addition of Indian Anchovy Flour

Addition of IndianAnchovy Flour (%)	Median	Average appearance
0,0	7	6,5 abc
2,5	7	6,5 abc
5,0	9	7,8 c
7,5	5	5,6 ab
10,0	5	5,5 a

 $\frac{10,0}{5}$

Description: Numbers followed by lettersthe same shows no significant difference according to the 5% comparison test

The average value of the level of preference in treatment 5.0% has the highest value compared to other treatments. The taste of flat rice noodles in the 5.0% treatment still feels typical of noodles which come from rice flour and taste slightly savory resulting from the addition of anchovies flour. In contrast to the 10.0% treatment which has the lowest average level of preference, which is 5.5 because in this treatment the taste of indian anchovy is more savory and tends to be salty, dominating the rice noodles, thereby reducing the typical taste of flat rice noodles from rice flour, and decreasing panelist assessment. This is due to the influence of higher fat content along with the increasing concentration of indian anchovies added, because according to Laksono's (2012) statement that the fat content of a food product will give a savory flavor to the food.

The treatment of anchovy flat rice noodles with 5.0% treatment was not significantly different compared to the treatment of 0.0% and 2.5%, but the taste was increasingly tasty with the increasing addition of anchovies. The treatment of 7.5% and 10.0% resulted in a significant difference in taste with 5.0% treatment, because the taste of flat rice noodles produced was very tasty and began to feel fishy typical of fish. In addition to the taste of the noodles affected by fat content, glutamic acid also affects the taste in a food product. According to Amrullah (2012), the prominent amino acid content in anchovy is glutamic acid, while according to Mizutani (1992) *in* Ningsih (2018) states that glutamic acid is related to the taste of "umami" in food products. Hariyadi (2001) states that the taste produced in a product mainly comes from the ingredients used not only because of the process carried out, therefore different flavors of anchovies are derived from the presence of a distinctive taste of indian anchovies added because of the fat content and glutamic acid in it.

E. Decision Making with the Bayes Method

Based on the data obtained about the weight criteria, appearance, aroma, texture, and taste of anchovyflat rice noodles, it can be seen that the assessment of taste criteria is a more important criterion compared to other criteria, so that the final decision of the panelists with a criteria weight of 0.46, followed texture weight 0.21, aroma 0.17 and appearance 0.16. This shows that the taste criteria is the most considered criterion in the receipt of anchovy flat rice noodles.

It can be seen from the results in table 5, that although the median value of the aroma and texture of the treatment 0.0% and 2.5% is greater than the 5.0% treatment, it will not significantly affect the level of panelist preference, this is due to the weight of the aroma criteria and the texture is smaller than the weight of the taste criteria as previously explained. The 5.0% treatment has a greater median taste than 0.0% and 2.5% treatment, therefore the alternative value of the treatment 5.0% will be greater than other treatments, thus affecting panelists' preference level significant.

Tue at a set (0/)		Criteria			Alternative Val-	
Treatment (%)	Appearance	Aroma	Texture	Taste	ue	
0,0	7	7	7	7	7,0	
2,5	7	7	7	7	7,0	
5,0	9	6	6	9	7,8	
7,5	5	5	5	5	5,0	
10,0	5	5	5	5	5,0	
Criteria Weight	0,16	0,17	0,21	0,46	31,8	

Table 5. Decision Matrix of Anchovy Flat Rice Noodles Assessment with Bayes Method

Bayes method calculation is done to find out the addition of indian anchovies which is most preferred by panelists. Based on the calculations in the table above it can be seen that the addition of indian anchovy is 5.0% in the flat rice noodles which has the highest alternative value of 7.8. The calculation results of the bayes method showed that the treatment of adding anchovy flour by 5.0% was the most preferred treatment by panelists.

3.3 Proximate Test

The proximate test was carried out to determine the nutrient content contained in the flat rice noodles treatment 5.0% anchovy flour which was the most preferred treatment and 0.0% anchovy flour addition treatment as a comparison.

 Table 6.Nutritional content of FlatRiceNoodles with the Addition Of Indian Anchovy Flour Based on Preferred

 Treatment in 100 grams of Flat Rice Noodles

freatment in 100 grains of flat file hoodies			
	Addition of Indian Anchovy Flour (%)		
Content (%)			
	0,0	5,0	
Water	60,41	59,93	
Protein	7,27	10,6	
Fat	3,87	5,44	
Ash	1,98	2,32	
Carbohydrates	86,35	80,96	
Calcium	0,13	0,21	

Source : Ruminant Animal NutritionLaboratory and Animal FoodChemistry Faculty of Animal Husbandry Padjadjaran University

a. Water Content Test

The test results of water content per 100 grams of quinine treatment 5.0% addition of indian anchovy flour that is equal to 59.93%, when compared with flat rice noodles without the addition of indian anchovies which is 60.41% the water content in the flat rice noodles decreased, this was due to additional indian anchovy in 5.0% treatment, as mentioned by Moeljanto (1992) in Apriliana (2010) that fish flour is hygroscopic, ie it can absorb water, so the water content calculated at the time of proximate testing decreases. According to SNI 2987-2015 about wet noodles it is said that the maximum water content in wet noodles is ripe that is equal to 65% per 100 grams of ingredients, so the water content contained in the noodles with the addition of indian anchovy flour is still below the permitted water content limit.

b. Protein Level Test

The proximate test results of the protein content contained in flat rice noodles treatment of 0.0% addition of indian anchovy flour in the amount of 7.27% and 5.0% addition of indian anchovy flour at 10.6% per 100 grams of material. According to SNI 2987: 2015 regarding wet noodles, it is determined that the protein content in wet noodles is cooked at least 6% per 100 grams of ingredients, based on the results of the proximate tests that have been carried out that the protein contained in the anchovy flat rice noodles iin the treatment of 0.0% and 5.0% is still above the SNI provisions.

It was seen that there was an increase in protein content in the flat rice noodles, 5.0% treatment compared to 0.0% treatment, this was due to the influence of the protein content of the indian anchovy added. The protein content of indian anchovy flour itself has a considerable level of 48.26 grams per 100 grams of material (Ruminant Animal NutritionLaboratory and Animal FoodChemistry Faculty of Animal Husbandry Padjadjaran University 2015 *in* Putri 2015).

The processing process of making indian anchovy uses high oven temperature and processing of anchovy flour into flat rice noodles which also undergoes steaming, resulting in an increase in the protein content not too high in noodles which added indian anchovies, this is due to the lack of protein contained in the processing. damaged due to processing at hot temperatures. This is in accordance with the statement of Fessenden and Joan (1996) *in*Siahaan (2015) which says that protein is not resistant to heat, so that the protein content contained in a food is very much determined based on the process carried out in making these foods. In addition Sebranek (2009) also states that the measured protein content depends on the amount of ingredients added.

c. Fat Level Test

The proximate results on the fat content of the anchovy flat rice noodles were 0.0% and 5.0% indicating that there was an increase in the value of the fat content of 3.87% in the space of 0.0% and 5.44% in the treatment 5.0% per 100 gram flat rice noodles. There is a little higher fat that occurs because of the fat derived from indian anchovy added, because the fat content contained in anchovy flour is indian anchovy itself

according to the Ruminant Animal Nutrition Laboratory and Animal Food Chemistry Faculty of Animal Husbandry Unpad (2015) *in* Putri (2015) namely amounting to 3.81% per 100 grams of material. Laksono (2012) states that the fat content in food products will provide a savory flavor to the food, besides that it will also give a long satiety to those who consume it.

d. Ash Level Test

Ash content contained in various products can be affected by the minerals contained therein. The results of the proximate testing of ash content of anchovy flat rice noodles in treatment were 0.0% and 5.0%, respectively 1.98% and 2.32%. Gray level increase is done according to anchovy flour because there are additions that have been present in the previous rice ingredient, and added to the ash content contained in anchovies flour. According to Winarno (1985) *in* Siahaan (2015) that the increase in ash levels by the release of water from the product and the concentration of minerals, as well as the added protein.

e. Test for Carbohydrate Levels

Proximate test results on flat rice noodles treatment 0.0% addition of indian anchovies containing carbohydrates by 86.35% and 5.0% addition of indian anchovies containing carbohydrates by 80.96%. The calculation of the carbohydrate content used is using the by difference method which is the calculation involving water, fat, ash, and protein, so that with the addition of indian anchovies which will also contain more water, fat, ash, especially protein, causing a decrease in the amount of carbohydrates which is found on the anchovy flat rice noodles.

f. Calcium Level Test

The results of the proximate testing of calcium levels in flat rice noodles with the addition of indian anchovies in the treatment of 0.0% and 5.0% were respectively 0.13% and 0.21% per 100 grams of flat rice noodles. The increase in calcium content in the flat rice noodles is quite high in 5.0% treatment, this is due to the addition of indian anchovies which contain calcium also in it. Calcium content contained in indian anchovies is 2780 mg per 100 grams of material (Ruminant Animal Nutrition Laboratory and Animal Food Chemistry Faculty of Animal Husbandry Unpad 2015) *in* (Putri 2015). The more amount of indian anchovy is added, the more calcium content in the flate rice noodles produced will increase.

Based on SNI 2987: 2015 regarding wet noodles, it has not been determined how minimum the calcium content contained in wet noodles, but after proximate testing on quee rice treatment of 0.0% or without the addition of indian anchovy flour, there is already a calcium content in it. After addingindian anchovy as much as 5.0%, the calcium content in the flat rice noodles will increase, this indicates that even without the addition of indian anchovies, they already have calcium only in small amounts and will increase the calcium content contained there in. Therefore with the presence of calcium contained in the anchovy flat rice noodles can make it as one of the sources of calcium to meet the body's calcium needs per day.

4. CONCLUSION

Based on the results of research on fortification of indian anchovies as a source of protein and calcium in flat rice noodles, it can be concluded that the addition of indian anchovy flour to 10.0% treatment is still preferred by panelists, but 5.0% addition of indian anchovy flour treatment is the most preferred treatment by panelists. The 5.0% treatment has the highest median appearance and taste, which is 9 and the median value of aroma and texture is 6, so that the 5.0% recognition has the biggest alternative value of 7.8, and can increase the protein content of 3.11%, namely from 7.49% to 10.6%, and calcium by 0.08% which is from 0.13% to 0.21%.

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