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The Fiber Content, Reduced Sugar and Organoleptic Quality of Nata De Avocado on The Variation Types of Sugar and Nutrition

Desty Sekar Prameswari[1], Titik Suryani[2*]
[1,2]Biology Education, Faculty of Teacher Training and Education, Universitas Muhammadiyah Surakarta. Jl. A. Yani Tromol Pos I, Pabelan, Kartasura, Sukoharjo, Central Java, Indonesia, 57162
*Corresponding author: ts169@ums.ac.id

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Abstract: *Nata is a probiotic food fermented with the starter Acetobacter xylinum bacteria. Avocado has the potential as nata substrate containing carbohydrates, protein, iron, vitamin A, vitamin B and fat. The purpose of this study was to determine the fiber content, reducing sugar and organoleptic quality of nata de avocado on the type variations of sugar and nutrients. This research method was an experiment with Completely Randomized Design (CRD), 2 factors. Factor I: sugar type (G): brown sugar (25 g) and granulated sugar (25 g). Factor II: nutrient type (N): 25% mung bean extract (62.5 ml) and 25% sword bean extract (62.5 ml). The results showed the best fiber levels, reducing sugar and organoleptic quality of nata de avocado were 4.51% and 12.770%, white color, neutral aroma, chewy texture and preferred in the G1N2 treatment (25 g brown sugar and 62.5 ml sword bean extract).*

Keywords: *Nata, Fiber Content, Reducing Sugar, Avocado, Sugar Type, Nutrition Type, Organoleptic*

1. INTRODUCTION

Food diversification is an effort that can be made to increase the diversity of nutritious and safe foods to consume, so that it can meet the nutritional intake needed the body (Pangestika et al., 2021). Probiotic foods are types of foods containing live microorganisms (good bacteria), and if consumed sufficiently, it can provide health benefits. Nata is one type of probiotic foods fermented with the starter *Acetobacter xylinum* bacteria safe and healthy (Lubis et al., 2021) and also the functional food containing cellulose and fiber good for health. (Tallei et al., 2022). The study results by the LIPI Biology Research and Development Center, 100 grams of nata contains 20 grams of carbohydrates, 80% water, 20 grams of fat, 146 calories, 2 mg of phosphorus, 12 mg of calcium, and 0.6 grams of iron. One of the benefits of nata as a dish when breaking the fast of drink mix, especially for obesity and diet programs (Nugraheni, 2012). The nata substrate is not only from coconut water, but also it is from pineapple peel, in line with research (Rahayu et al., 2023) stated that the high reducing sugar content of 13.56% pineapple peel waste has the potential to be processed into raw materials for making nata. One of the nata substrate materials as an innovation of substrate is avocado fruit.

Avocado (*Persea americana*) is a fruit type enriched with nutritional content of 100 g containing 92 calories; protein 0.96 g; fat 25.18 g; carbohydrates 7.6 g; calcium 10 mg; phosphorus 20 mg; iron 0.9 mg vitamin A 180.00 SI; vitamin B 0.05 mg vitamin C 13.00 mg; water 84.30 g (Breemer et al., 2024) has the potential as substrate of making nata. Avocado fruit is usually processed into juice or jam (Ramadhani et al., 2017), and avocado seeds can be processed into flour (Has, 2022). The novelty of this study used avocado fruit as substrate of nata which has never been used before. In addition to the substrate, the manufacture of nata also requires the carbon source as energy for the growth of *acetobacter xylinum bacteria* as starter in the nata

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fermentation process. In this study, the carbon source is brown sugar and granulated sugar.

Brown sugar as carbon source and as energy for the growth of *Acetobacter xylinum* bacteria playing role in breaking down carbohydrates into cellulose. According to research (Supriyani et al., 2020) brown sugar contains 9.16% water content, 84.31% sucrose, 0.53% reducing sugar, 0.11% fat, 2.28% protein, total minerals 3.66%, calcium 1.35% and phosphorus 1.37%. The study results stated that the addition of brown sugar as carbon source of 15% in nata de coco resulted in nata thickness of 0.67 cm, yield of 12.09%, water content of 97.17% and cellulose content of 2.83%. In addition, granulated sugar (sugar cane juice) contains 364 calories of energy and 94% carbohydrates / 100 g (Aprilia & Suryana, 2022). According to research (Rodiah et al., 2021), the addition of 5% granulated sugar produced nata de coco thickness of ± 1 cm. The study results of (Maryam, 2020) showed that concentration of 5% granulated sugar in Nata de leri produced yield of 66.14%, thickness of 0.62 cm, and fiber content of 4.21%.

Nitrogen source is one of the factors in the nata making process and as source of nutrition for *A.xylinum* bacteria. One of the good and safe sources of nitrogen and nutrition in the nata fermentation process is sword beans and can be an alternative to soybeans (Widiantara & Cahyadi, 2018). In 100 g of sword beans contain 389 kcal of energy, 27.4 g of protein, 2.9 fat (Nursalma et al., 2021). The study results of (Awalin et al., 2023) processed sword beans have protein content of 30.36%, that can be processed into sword bean flour. In addition to sword beans, green beans can also be an alternative ingredient as nitrogen source of making nata. Green beans contain 323 kcal of energy, 22.9 g of protein, 1.5 g of low fat, carbohydrates (56.8 g), iron, 7.5 mg and 10 mg of vitamin C (Fathonah et al., 2018). The study results of Ningsih et al.'s (2021) stated that good nata de nira has thickness of 1-1.5 cm and the addition of 1.5% bean sprout extract. The study results of Ihsan's (2020) stated the best results of nata de kersen were thickness of 1.13 cm and yield of 58%, chewy texture, yellowish white color, and fairly sour aroma. The level of acceptance was also very good, especially after adding 25% green bean extract. Sword beans and green beans have the potential to be used as nitrogen source of the nata fermentation process. The novelty of this research was using substrates of avocado fruit, the carbon sources of brown sugar and granulated sugar, nitrogen sources (nutrients) of sword beans and green beans,as well lime as pH regulator (citric acid 7-7.6% (Lestari et al., 2018).

The purpose of this study was to determine the fiber content, reducing sugar and organoleptic quality of nata de avocado on the type variations of sugar and nutrient.

2. RESEARCH METHOD

Time and Place of Research

This research was conducted in September 2024 - March 2025 at the Industrial Microbiology Laboratory, FKIP, Muhammadiyah University of Surakarta, fiber and reducing sugar content tests were conducted at the Nutrition Laboratory, Faculty of Health Sciences, Muhammadiyah University of Surakarta, and organoleptic quality tests were conducted at the campus environments of Universitas Muhammadiyah Surakarta.

Tools and Materials

1. The tools used in this study: 50 ml measuring cup, 500 ml beaker glass, thermometer, glass stirrer, pan, pH stick, digital scale, plastic, mask, glove, scissors, spoon, basin, cloth, filter, blender, stove,cutting board, knife, rubber, jar, plastic box, vernier caliper, test tube, tissue, rubber band, label paper.
2. Materials used in this study: avocado fruits, brown sugar, granulated sugar, lime, Acetobacter xylinum starter, green beans, sword beans, umbrella paper, mineral water, distilled water, 70% alcohol.

Research Desaign

This research method was an experiment with Completely Randomized Design (CRD) factorial pattern with 2 factors. Factor I: the variation of sugar type (carbon source) (G): brown sugar (25 g) and granulated sugar (25 g). Factor II: type of bean (nitrogen source) (N): 25% mung bean extract (62.5 ml) and 25% sword bean extract (62.5 ml), each treatment 3 times repeated.

Making Nata de avocado

1. Sterilization of tools**:**plastic container (box) 500 ml,cutting board, knife, measuring cup,

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beaker glass, wooden stirrer, basin, with autoclave

2. Making fermentation media substrate (Avocado fruit):
   Blended avocado fruit 100 g + 600 ml water, strainedg, placed in 500ml plastic container (box)
3. Making Nata de avocado
   Pasteurize avocado fruit extract 250 ml/treatment and according to treatment,: GINI (brown sugar 25 g + green bean extract 62.5 ml), G2N1 (granulated sugar 25 g + green bean extract 62.5 ml), G1N2 (brown sugar 25 g + sword bean extract 62.5 ml), G2N2 (granulated sugar 25 g + sword bean extract 62.5 ml) at a temperature of 60 ° C for 15 minutes, wait until warm, then added 6 ml of lime juice (pH regulator) until acidic conditions (pH 3.5). Furthermore, nata de avocado was poured into 500 ml plastic container and added starter Acetobacter xylinum 30 ml/treatment, shaken so that the media was homogeneous, the container containing the nata de avocado media closed with umbrella paper and tied with rubber, placed in sterile rooms and surface sevenly at room temperature, fermented for 14 days. Nata de avocado pH measurement was measured before fermentation with pH paper, and measured after fermentation.

Harvesting Stage of Nata de avocado

Wash the nata de avocado in running water until clean, cut it into small pieces, soak it for 2 days (change the water every 24 hours), then wash it again, and boiled to remove the sour smell

***Fiber Content Testing of Nata* de avocado**

Fiber testing was carried out using the g method gravimetric. Weighed 1g of nata (A), put into Erlenmeyer, added 1.25% H2SO4, then heated witha hot plate for 1 hour. Next, 3.25% NaOH was added and heated again for 1 hour, then filtered (filter paper whose empty weight was known (B). The filter paper was cleaned with 1.25% H2SO4 3 times, put into an oven at 105°C for 10 hours, cooled in desiccator, then weighed (C). The filter paper and sediment were weighed, put into petri dish whose empty weight was known (D) and put into an oven at 600°C for 5 hours, cooled in desiccator, and weighed after reaching room temperature (E). The fiber content was calculated using the formula:

$$\frac{(C-D)(E-B)}{A} X\ 100\%$$

Information:
A = Sample weight (g)
B = Weight of empty filter paper (g)
C = Weight of filter paper + sediment (g)
D = Weight of empty cup (g)
E = Weight of cup + ash (g)
(Ihsan, 2020)

Reducing Sugar Testing of Nata de avocado

Testing of reducing sugar of nata de avocado using Nelson-Somogyi method. Nata sample 4g was added with 20 ml of 15% potassium iodide (KI) with a volumetric pipette, then titrated with thiosulfate solution. When 1% starch indicator was added, ensured the indicator drops did not turn dark blue, the first titration volume (V1) was recorded. Furthermore, test blank was made by replacing 25 ml with distilled water (L2) and the same procedure was repeated. After that, the titration volume of the obtained test blank (V2) was recorded. Finally, the reducing sugar content was calculated before the inversion process using the following formula:

$$\frac{AT = (V2 - V1)X\ 0{,}1\% = (AT\ X\ FP)}{W\ (100\%)}$$

Information:
AT = Table Number
V1 = Titration Volume of Sample 1
V2 = Titration Volume of Sample 2
FP = Dilution Factor
W = Sample Weight
(Sari, 2019)

Organoleptic Quality Testing of Nata de avocado

The organoleptic quality testing includes color, aroma, texture and acceptability of 25 panelists.

Thickness Testing of Nata de avocado

Testing was carried out using vernier caliper on the nata de.*avocado* different and divide the average as the thickness result of the nata de avocado.

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Nata de avocado Yield Test

Measured the total volume of nata medium with measuring cup (ml), weighed the nata mass, measure the weight of the nata yield divided by the media volume before fermentation (%):

$$\text{Yield} = \frac{massa\ nata\ (gram)}{volume\ media\ (ml)} x\ 100$$

Data analysis

The analysis of fiber and reducing sugar content of nata de avocado using quantitative descriptive method (KruskalWallis test), while organoleptic quality of thickness, and yield of nata de avocado using qualitative descriptive method (Microsoft Excel).

3. RESULTS AND DISCUSSION

RESULTS

The results of fiber content, reducing sugar, thickness and yield nata de avocado.

The test results of fiber content, reducing sugar, thickness, yield and organoleptic quality of nata de avocado on the variations type of sugar and nutrient in the following table:

Table 1. Results of Fiber Content, Reducing Sugar, Thickness and Yield of Nata de avocado on the variations type of sugar and nutrient.

Treatment	Fiber Content (%)	Reducing Sugar (%)	Thickness (cm)	Receipt (ml)
G1N1	4.62	12,875	0.8	57
G2N1	4.72**	13,970	1.5	17
G1N2	4.51*	12,770*	1.14	28
G2N2	4.62	13,710	1.1	26.4

Information:
- **G1N1** (25 g brown sugar + mung bean extract 25% /62.5ml)
- **G2N1**(25 g granulated sugar + 25% mung bean extract / 62.5 ml)
- **G1N2**(25 g brown sugar + 25% sword bean extract / 62.5 ml)
- **G2N2**(25 g granulated sugar + 25% sword bean extract / 62.5 ml)

**: Highest fiber and reducing sugar content, highest thickness

*: Highest fiber and reducing sugar content, lowest thickness

Based on table 1, it showed that the highest fiber content of nata de avocado was 4.72% in the G2N1 treatment (25 g granulated sugar and 62.5 ml mung bean extract), while the lowest fiber content of nata de avocado was 4.51% in the G1N2 treatment (25 g brown sugar and 62.5 ml sword bean extract). The highest reducing sugar content of nata de avocado was 13.970%, in the G2N1 treatment (25 g granulated sugar and 62.5 ml mung bean extract), while the lowest reducing sugar content of nata de avocado was 12.770% in the G1N1 treatment (25 g brown sugar and 62.5 ml mung bean extract). The highest thickness of nata de avocado was 1.5 cm in the G2N1 treatment (25 g granulated sugar and 62.5 ml mung bean extract), while the lowest thickness of nata de avocado was 0.8 cm in the G1N1 treatment (25 g brown sugar and 62.5 ml mung bean extract). The highest yield of nata de avocado was 57 ml in the G1N1 treatment (25 g brown sugar and 62.5 ml mung bean extract), while the lowest yield of nata de avocado was 17 ml in the G2N1 treatment (25 g granulated brown sugar and 62.5 ml mung bean extract)

Organoleptic Quality of Nata de avocado

The organoleptic quality results of nata de avocado included color, texture, aroma and acceptability in the following table

Table 2. The Organoleptic Quality Results of Nata de avocado on the variation types of sugar and nutrient

	Assessment aspects			
Treatment	**Color**	**Texture**	**Aroma**	**Acceptance Power**
G1N1	Brownish White	chewy	Neutral	Quite like
G2N1	White	chewy	Neutral	Like
G1N2	Brownish White	chewy	Neutral	Quite like
G2N2	White	chewy	Neutral	Like

Information:
- **G1N1** (25 g brown sugar + mung bean extract 25% /62.5ml)
- **G2N1**(25 g granulated sugar + 25% mung bean extract / 62.5 ml)
- **G1N2**(25 g brown sugar + 25% sword bean extract / 62.5 ml)
- **G2N2**(25 g granulated sugar + 25% sword bean extract / 62.5ml

Based on table 2 showed the color of nata de avocado was white in the treatment G2N1 (25 g granulated sugar and 62.5 ml mung bean extract),

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and G2N2 (25 g granulated sugar and 62.5 ml sword bean extract), while the color of nata de avocado was brownish white in the treatment G1N1 (25g brown sugar and 62.5 ml mung bean extract) and G1N2 (25g brown sugar and 62.5 ml sword bean extract). The texture of nata de avocado was chewy in all treatments G1N1 (25 g brown sugar and 62.5 ml mung bean extract), G2N1 (25 g granulated sugar and 62.5 ml mung bean extract), G1N2 (25 g brown sugar and 62.5 ml sword bean extract) and G2N2 (25 g granulated sugar and 62.5 ml sword bean extract). The aroma of nata de avocado was neutral in all treatments G1N1, G2N1, G1N2 and G2N2. The acceptability of nata de avocado was liked in the treatments G2N1 (25 g granulated sugar and 62.5 ml mung bean extract) and G2N2 (25 g granulated sugar and 62.5 ml sword bean extract), while the acceptability of nata de avocado was quite liked in the treatments G1N2 (25 g brown sugar and 62.5 ml mung bean extract) and G1N2 (25 g brown sugar and 62.5 ml sword bean extract).

DISCUSSION

Fiber Content of Nata de avocado

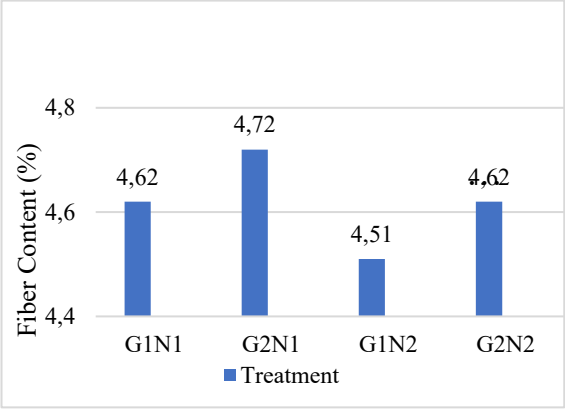

Figure 1. Fiber Content of Nata de Avocado

Nata is useful as blood sugar lowering agent of people in diabetes mellitus, preventing constipation, controlling body weight (preventing obesity) because it contains fiber and low sugar content (Dan & Coco, 2018). The highest fiber content of nata de avocado was 4.72% in the G2N1 treatment (25 g brown sugar and 62.5 ml green bean extract), while the lowest fiber content of nata de avocado was 4.51% in the G1N2 treatment (25 g brown sugar and 62.5 ml sword bean extract). This was because the effect of optimum temperature for the growth of the *Acetobacter xylinum* starter of nata de avocado fermentation process was in line with the results of the study(Fitri et al., 2022) stated that the optimum temperature used in nata de coco fermentation for the growth of Acetobacter *xylinum* was 28°C – 31° if the temperature was higher or lower , then it can inhibit the fermentation process affecting the thickness and nata fiber. In addition to temperature, the length of fermentation also affected the fiber content of nata, this was in line with research (Nadiyah & Farida, 2022) stated that the longer the fermentation period of nata de siwalan, the crude fiber content would increase, the analysis results of the crude fiber content of nata de siwalan produced with different fermentation times of 5, 10, 15, and 20 days showed that the crude fiber content had the quality requirements of packaged nata according to SNI 01-4317-1996 because it did not exceed 4.5%. The fiber content of nata de avocado 4.51% was still in accordance with the SNI nata standard, which was 4.51% (SNI 01-4317-1996).

The use of sugar as an energy source for *Acetobacter xylinum* bacteria in the cellulose formation process can also affect the fiber content of nata de avocado produced. This was in line with the research results (Putri, 2018) stated that sugar concentration affected the fiber content of nata, the higher the sugar added, the higher the fiber content formed. The results of statistical tests using the Kruskal Wallis method stated Asym. Sig. 0.156 > 0.05 so it wsas stated that H0 was accepted which means there was no significant difference in the concentration of sugar types on the fiber content of nata de avocado. The results of statistical tests using the Kruskal Wallis method stated Asym. Sig 0.102 > 0.05 so it was stated that H0 was accepted meaning there was no significant difference in the concentration of nutrient types on the fiber content of nata de avocado.

Reduced Sugar Content of Nata de avocado

Reducing sugar is sugar having the ability to reduce due to the presence of free aldehyde or ketone groups (Seal et al., 2020). The highest reducing sugar content of nata de avocado was 13.970% in the G2N1 treatment (25 g granulated sugar and 62.5 ml mung bean extract), while the lowest reducing sugar content of nata de avocado was 12.770% in the G1N2 treatment (25 g brown

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sugar and 62.5 ml sword bean extract), because the sugar source, *Acetobacter xylinum* bacteria were used to form cellulose, this was in line with the study results which stated that the decrease of reducing sugar was due to the sugar of the fermentation medium having been used *A. xylinum* for cell growth metabolism and polysaccharide synthesis through the process of polymerizing glucose into cellulose(Mayasti Nur Kartika I. & N Darmawan A, 2013). This was in accordance with the standard (SNI 01-4317-1996), the best reducing sugar content of nata was <15%. It was possible that the high levels of reducing sugar of nata de avocado were caused by the length of the fermentation process, this was in accordance with research. (Nadiyah & Farida, 2022) stated that fermentation time affected the total sugar content of nata de siwalan. The study results of (Mayasti Nur Kartika I. & N Darmawan A, 2013) stated that reducing sugar increased on the 5th days of the nata de cassava fermentation process because the breakdown of starch granules into monosaccharides (simple sugars/glucose) was still taking place. After the 5th days of fermentation, some of the glucose in the substrate would be used by *A. xylinum* bacteria to activity metabolism and some of it was broken down into polysaccharides (*extracellular cellulose*/ gel). The results of the statistical test using the KruskalWallis method that Asym. Sig. 0.68 > 0.05, stated that H0 wss accepted meaning there was no significant difference in the sugar types concentration of the reducing sugar content of nata de avocado. The results of the statistical test using the KruskalWallis method Asym. Sig. 0.93 > 0.05, stated that H0 was accepted meaning there was no significant difference in the nutrient types concentration of the reducing sugar content of nata de avocado.

Thickness of Nata de avocado

The formation of nata is influenced by the optimum fermentation time so that it will produce the best quality nata (maximum thickness). The highest thickness of nata de avocado was 1.5 cm in the G2N1 treatment (25 g granulated sugar and 62.5 ml mung bean extract), and the lowest thickness of nata de avocado was 0.8 cm in the G1N1 treatment (25 g brown sugar and 62.5 ml mung bean extract). The thickness of the nata de *avocado*, caused by the high and low sugar content of the nata fermentation process. This was in line with the research results (Rizal et al., 2013) stated the thickness of nata de corn increased with the increase of sugar added to the fermentation process. The quality of the starter used can affect the thickness of the nata. This was in accordance with research (Andriani, 2024) which states that the quality of nata de coco was good because the age of the young starter was superior compared to the quality of nata de coco with the age of the old starter so that it has gone through several fermentation cycles, and the *Acetobacter xylinum* bacteria experience changes or decreased metabolic activity. This had an impact on the ability of bacteria to produce cellulose with the same level of density and thickness as in the new starter. In addition to the quality of the starter, the length of fermentation also affects the thickness of the nata, this was supported by the research results of (Ummiyati et al., 2024) which stated that the thickness of nata was 0.3-1.2 cm and sugar concentration and fermentation time affected the thickness of nata de ocha.

Avocado Nata Yield

Nata yield is the wet weight of fermented nata compared to the initial volume of 100% media (Gafar et al., 2022) and to determine the percentage of biomass of nata results from *Acetobacter xylinum* fermentation media. The yield of nata de avocado differed in all treatments. The highest nata de avocado yield was 57 ml in the G1N1 treatment (25 g brown sugar and 62.5 ml mung bean extract), while the lowest nata de avocado yield was 17 ml in the G2N1 treatment (25g granulated sugar and 62.5ml mung bean extract). The high and low yields nata de *avocado* coud be influenced substrate variations, material composition, environmental conditions, and the ability of *Acetobacter xylinum* to produce cellulose (Putriana & Aminah, 2013) and the type of nitrogen source used. This was in line with research (Safitri et al., 2018) that soybeans as source of nitrogen had an effect on the high nata de tala yields. The research results of Putriana & Aminah, 2013, that yield nata influenced by the ability of *Acetobacter xylinum* in producing cellulose, this was related to the age of the *A. xylinum* starter used to produce the best nata yield. This was also in accordance with research (Taskirah, 2011) which stated that the starter age

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of 4 days had an effect on highest yield of nata in 14-days fermentation.

Organoleptic Quality of Nata de avocado

The quality organoleptic nata de avocado included color, texture, aroma and acceptability varies. The color of nata de avocado was white in the G2N1 treatment (25 g granulated sugar and 62.5 ml mung bean extract) and G2N2 (25 g granulated sugar and 62.5 ml sword bean extract), while the color of nata de avocado was brownish white in the G1N1 treatment (25 g brown sugar and 62.5 ml mung bean extract), and G1N2 (25 g brown sugar and 62.5 ml sword bean extract). The difference color of nata de *vocado* influenced by the concentration of sugar used. In line with research (Rif'anna et al., 2021) which stated that sugar concentration affects the cloudy white color of guava nata. The difference color of nata de avocado was due to the nitrogen source used, this was in accordance with (Latumahina et al., 2017) which stated that the nitrogen concentration was high. then the color of the sugar palm nata was more brownish white because the nitrogen hydroxyl ions interact with sugar or substrate. The formation of this brown color can occur due to the activity of enzymes or sugars having characteristics that can trigger browning reaction (the caramelization) process. However, the difference color of nata can be overcome soaking the nata for approximately 2 days after the fermentation process. This was in line with research by Lestari (2019), the brownish white color of nata de coco can change to pure white if soaked for 2 days and washed and boiled many times.

The texture of nata de avocado was chewy in all treatments (G1N1, G1N2, G2N1, G2N2). The texture of nata de avocado was also influenced by the length of the nata fermentation process. According to research (Putriana & Aminah, 2013), the best yield of nata de cassava texture was 3.23/chewy on the 5th days of fermentation. In addition to the length of the fermentation process, the water content of nata also affected texture nata. In line with research (Arruan et al., 2022) stated that the higher water content of nata de coco would form more chewy nata de coco texture.

The aroma of nata de avocado was neutral in all treatments (G1N1, G1N2, G2N1, G2N2). The aroma of nata de avocado was neutral because it was influenced fairly long boiling process of approximately 2 days, so that the aroma of nata acid was no longer sour, this was also supported by research (Durotul Jauhariah, 2021) which stated that the aroma of nata de cashew was strongly sour. After nata de cashew was soaked for two days and boiled, the sour aroma of nata was decreased. The aroma of nata can also be influenced by the quality of the *Acetobacter xylinum* starter on the success of the process fermentation on the aroma of the nata produced. This was in line with (Andriani, 2024) stated that the fresh/new *Acetobacter xylinum* bacterial starter of making nata de coco would produce nata de coco having good color, shape, aroma, taste and elasticity.

Acceptability of nata de avocado was liked at the G2N1 treatment (25 g granulated sugar and 62.5 ml mung bean extract) and G2N2 (25 g granulated sugar and 62.5 ml sword bean extract). Acceptability of nata de avocado was quite liked at the G1N1 treatment (25 g brown sugar and 62.5 ml mung bean extract) and G1N2 (25 g brown sugar and 62.5 ml sword bean extract). The panelists gave sufficient reason because the color of nata de avocado was brownish white, so it gave the impression of being less attractive to the panelists.

4. CONCLUSION

The fiber content, reducing sugar and the best organoleptic quality of nata de avocado was 4.51% and 12.770%, brownish white color, chewy texture, neutral aroma and quite liked at the G1N2 treatment (25 g brown sugar and 62.5 ml sword bean extract)

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