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# ACCEPTABILITY TEST OF PROCESSED TUBER PRODUCTS AS A LOCAL FOOD ALTERNATIVE

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**Abstract**

The purpose of this study is to determine the level of acceptance of panellists towards processed sweet potato–potato patties and purple sweet potato onde-onde through organoleptic tests. This research is an experiment with a completely randomized design (CRD) involving 15 trained panelists from the academic community of Nahdlatul Ulama University of North Sumatra. The research method includes product development with various formulations, followed by a hedonic test on the attributes of taste, color, aroma, and texture using a numerical scale of 1–5. The data from the panelists' evaluations were analyzed descriptively to determine the most preferred treatment. Research results show that for perkedel products, formulation P0 (100% sweet potato, 0% potato) obtained the highest scores in all organoleptic attributes (taste 3.53; color 3.67; aroma 3.47; texture 3.67), making it the formulation most preferred by the panelists. In purple sweet potato onde-onde products, the most preferred taste attribute was found in treatment M2 (50% glutinous rice flour, 50% purple sweet potato) and M4 (100% purple sweet potato), whereas the best color, aroma, and texture were obtained in treatment M3 (25% glutinous rice flour, 75% purple sweet potato). The use of yellow sweet potatoes in full produces fritters with the best sensory quality, Meanwhile, the substitution of purple sweet potato in a balanced or dominant proportion can increase panelists' acceptance of onde-onde.

**Keywords** : *Tubers, organoleptic, local food, processed products.*

## INTRODUCTION

Food diversification is considered an important strategy in supporting national food security and reducing dependence on rice consumption and imported food commodities. Indonesia possesses abundant biodiversity resources in the form of tuber crops, such as cassava, sweet potato, taro, canna, and cocoyam, which have significant potential to be developed as alternative foods with high nutritional value. Tubers are recognized as important sources of complex carbohydrates, dietary fiber, vitamins, minerals, and bioactive compounds that contribute positively to human health. In addition, tuber crops are able to adapt to various environmental conditions, including marginal lands with relatively low cultivation costs, making them potential sustainable food resources for strengthening local food security (FAO et al., 2021).

The increasing public awareness regarding food diversification has encouraged the development of various processed food products based on local tubers. Several

innovations have been introduced, including bread substituted with tuber flour, local flour-based bakery products, sweet potato snack bars, and modified traditional foods derived from taro and cassava. The development of these products is not only intended to increase the economic value of local commodities but also to broaden food consumption patterns and improve the competitiveness of local food products in the modern food industry (Mudawaroch & Rinawidiastuti, 2025).

The success of a food product is influenced not only by its nutritional composition and functional properties but also by consumer acceptance of its sensory characteristics. Sensory evaluation or organoleptic testing is one of the most important methods in food research because it is used to assess attributes such as color, aroma, taste, texture, and overall acceptability of food products (Petriana et al., 2021). Food products with high nutritional quality may not necessarily be accepted by consumers if their sensory characteristics do not meet consumer preferences (Hastuti et al., 2025). Therefore, organoleptic testing is essential to determine consumer acceptance of processed tuber-based products as alternative local foods.

Several previous studies have demonstrated that processing tubers into innovative food products can increase both the economic value of local commodities and public acceptance of local foods. Research on modified traditional foods made from tubers revealed positive panelist acceptance regarding taste, color, aroma, and texture attributes (Hastuti et al., 2025). Other studies concerning the utilization of local tuber flour as an ingredient in processed foods also reported favorable organoleptic characteristics and considerable potential for further development as alternative food products (Samhana & Indrasti, 2024). Furthermore, innovations such as sweet potato-based snack bars have shown that local food products can be well accepted by consumers, particularly younger generations, when developed using appropriate formulations and processing techniques (Stone et al., 2020).

Changes in modern lifestyles have increased consumer demand for food products that are practical, nutritious, and possess good sensory quality. This condition creates opportunities for the development of tuber-based products as competitive alternative local foods. However, studies regarding consumer acceptance of processed tuber products remain limited, particularly those involving systematic and measurable organoleptic evaluation methods.

Based on these considerations, research on the organoleptic evaluation of processed tuber products is important to determine consumer acceptance of locally developed food products. The findings of this study are expected to provide scientific information regarding the sensory quality of tuber-based products and contribute to sustainable food diversification programs utilizing local resources.

## METHOD

This research was conducted in the basic laboratory of Nahdlatul Ulama University of North Sumatra (UNUSU). An acceptability survey was conducted on 15 trained panelists who were randomly selected and are members of the academic community at Nahdlatul Ulama University of North Sumatra.

**Tools and Materials**

The tools used in this study are a gas stove, frying pan, pot, mixer, spatula, stirring spoon, digital scale, stainless bowl, stainless steel colander/strainer, potato/sweet potato peeler, grater, cutter (knife set), cutting board, plate, bowl, small cup, small box, mineral water glass, label paper, napkin/tissue, and a questionnaire sheet for acceptability test (hedonic test).

The materials used in this study were samples in the form of yellow sweet potatoes, potatoes, and purple sweet potatoes, wheat flour, eggs, salt, ground pepper, scallions, garlic, shallots, cooking oil, glutinous rice flour, sesame, instant yeast, butter, granulated sugar, baking powder, toppings (sprinkles, powdered sugar), sample code labels, and mineral water.

**The procedure :**

**Making sweet potato and potato fritters:**

- Potatoes and yellow sweet potatoes are peeled and then washed clean.
- Potatoes and yellow sweet potatoes are cut into small pieces and then steamed until soft.
- Then the soft potatoes and yellow sweet potatoes are removed and drained until they are not watery.
- After drying, the potatoes and yellow sweet potatoes are mashed until smooth and even.
- After being mashed, the potatoes and yellow sweet potatoes are mixed and spices such as finely mashed shallots and garlic, along with seasonings like salt, ground pepper, green onions, and celery, are added.
- 1 egg is added as a binder and stirred evenly until completely combined.
- Part of the dough is taken using a spoon, and the dough is shaped into flat rounds or to your preference.
- Then prepare a pan and fill it with oil for frying. While waiting for the oil to heat, dip the fritters into beaten eggs before frying (to prevent them from falling apart).
- After that, fry the yellow sweet potato-potato fritters over medium heat until they turn golden brown, then flip to the other side until evenly cooked.
- Once cooked, remove the yellow sweet potato-potato fritters and drain using a strainer.

- After the yellow sweet potato–cold potato croquettes, they are put into plastic for a hedonic test.

**Making purple sweet potato onde-onde**

- All ingredients are weighed according to the formulation.
- Peel and wash the purple sweet potatoes thoroughly, then steam until soft.
- Once the purple sweet potatoes are soft, mash them.
- Mix the glutinous rice flour and wheat flour, then add sugar and salt into the mixture, then add the mashed purple sweet potatoes to the mixture and stir well while gradually adding warm water little by little while kneading.
- Knead the dough until smooth, soft, and not sticky.
- After that, take the dough for the skin, then add the palm sugar filling, cover it, and shape it into a ball, then roll it in sesame seeds until evenly coated.
- Then heat the oil, then fry the purple sweet potato onde-onde until they float and turn golden yellow, remove and drain.
- After the purple sweet potato onde-onde cools, pack it into a container and it is ready for organoleptic testing.

**Organoleptic Test**

Hedonic testing is one type of acceptance test in which each panelist is given a questionnaire containing their likes or dislikes regarding all treatments. The scale used in the following Table 1:

Table 1. Hedonic Scale

| Hedonic Scale | Numeric Scale |
|---|---|
| Like Very Much | 5 |
| Like | 4 |
| Somewhat Like (neutral) | 3 |
| Dislike | 2 |
| Dislike Very Much | 1 |

Source: Nurlani, 2022 (Harahap, 2022)

Hedonic testing is conducted to determine which product is most liked, assess consumer acceptability of food products, compare sensory quality between products or treatments, and serve as a basis for the development and improvement of food products (Harahap, 2022). In this study, a hedonic test was conducted to obtain subjective assessments of color, taste, aroma, and texture, carried out on 15 panelists with various age ranges (20-50 years) consisting of students and lecturers from Nahdlatul Ulama University of North Sumatra (Academic Community).

Generally, the sensory aspects that are assessed are: 1. Taste, which includes sweet, salty, sour, bitter, and savory. 2. Color, which refers to the brightness level and color suitability of the product. 3. Aroma, which refers to the characteristic smell and

fragrance. 4. Texture, which includes hard, soft, chewy, and crispy. 5. Overall appearance, which is the general impression of the product.

The organoleptic test procedure is as follows: The sample product is prepared with a random code, then the panelists are determined and explained how to fill out the hedonic test form. The determined panelists taste the product made and assess each attribute. After that, the data is collected and processed.

**Data Analysis**

This study uses a completely randomized design (CRD) method, each consisting of 5 treatments with 2 food products, namely sweet potato and potato patties and purple sweet potato onde-onde. The treatment formulations of this study are:

1. Product formulation of sweet potato and potato fritters
   P0 = 100% sweet potato, 0% potato
   P1 = 75% sweet potato, 25% potato
   P2 = 50% sweet potato, 50% potato
   P3 = 25% sweet potato, 75% potato
   P4 = 0% sweet potato, 100% potato

2. Formulation of purple sweet potato onde-onde:
   M0 = 100% glutinous rice flour, 0% purple sweet potato
   M1 = 75% glutinous rice flour, 25% purple sweet potato
   M2 = 50% glutinous rice flour, 50% purple sweet potato
   M3 = 25% glutinous rice flour, 75% purple sweet potato
   M4 = 0% glutinous rice flour, 100% purple sweet potato

## RESULTS AND DISCUSSION

### Organoleptic Test

### Sweet Potato and Potato Fritters

#### Taste

For sweet potato and potato perkedel products, the panelists' preference scores for taste in the organoleptic test ranged from 3.33 to 3.53. The panelists' level of preference for the taste of sweet potato and potato patties can be seen from the average preference scores in the following Table 2:

Table 2. Average Scores of Panelists' Liking of the Taste of Sweet Potato and Potato Croquettes

| Treatment | Average |
|---|---|
| P0 = 100% sweet potato, 0% potato | 3,53 |
| P1 = 75% sweet potato, 25 % potato | 3,33 |
| P2 = 50% sweet potato, 50% potato | 3,33 |
| P3 = 25% sweet potato, 75% potato | 3,33 |

| | |
|---|---|
| P4 = 0% sweet potato, 100 % potato | 3,47 |

Based on Table 2 above, it can be seen that the P0 product sample has a higher level of preference than the other treatments, which is 3.53. Then followed by the treatments P4, P1, P2, and P3 which have preference values of 3.47; 3.33; 3.33 and 3.33 respectively. From here we can see that the most liked sweet potato and potato fritter products are products with a formulation of 100% sweet potato and 0% potato. The natural sweetness, relatively soft texture, and more attractive golden yellow color are factors that also influence the panelists' level of liking. In treatments P1, P2, and P3, which gave the same average liking score of 3.33, This can indicate that the variation in the comparison of sweet potatoes and potatoes in the three treatments does not have a significant effect on panelist acceptance. As for the P4 treatment (0% sweet potato, 100% potato), it is also included in the preferred category. The soft texture of the potatoes after boiling and the potatoes have a neutral taste while providing a delicious flavor, making potatoes very suitable for making potato patties and still having good acceptability (Aprillia et al., 2025).

However, the average value of treatment P4 is slightly lower compared to treatment P0, this indicates that adding sweet potatoes can provide added value to product acceptance.

**Color**

The average preference score of the panelists for the color of sweet potato and potato fritters can be seen in Table 3 below:

Table 3. Average Preference Scores of Panelists for the Color of Sweet Potato and Potato Croquettes

| Treatment | Average |
|---|---|
| P0 = 100% sweet potato, 0% potato | 3,67 |
| P1 = 75% sweet potato, 25 % potato | 3,27 |
| P2 = 50% sweet potato, 50% potato | 3,53 |
| P3 = 25% sweet potato, 75% potato | 3,53 |
| P4 = 0% sweet potato, 100 % potato | 3,33 |

Based on Table 3, from 5 treatments in the organoleptic color test, it can be seen that P0 has the highest level of panelist preference, which is 3.67 compared to the other treatments. This shows that yellow sweet potatoes give a more attractive, bright, and distinctive color compared to potatoes. Meanwhile, in treatments P2 and P3, they gave the same preference rating, which is 3.53. This is because P2 and P3 show that the combination of sweet potato and potato in moderate to high amounts results in a color

more preferred by both panelists, namely a stable and neutral color after P0. Treatment P1 produced the lowest value of 3.27. This is because adding a small amount of potato can affect the product's color, making it less appealing compared to using a large amount of sweet potato. Color is one of the sensory evaluation parameters assessed by the sense of sight and plays an important role in food products, as it functions as a product identity, attractiveness, and quality determination (Permata, 2024).

In the other study showed the results of color preference values for yellow sweet potato nastar cake products, indicating the highest color preference value in the P3L3 treatment (90% sweet potato flour: 50% margarine: 50% butter), meanwhile, the lowest was in the product with treatment P1L3 (50% sweet potato flour : 50% margarine and butter) (Aziza et al., 2022). Yellow sweet potato is a food product that is rich in carbohydrate sources in terms of its nutritional value and contains β-carotene, which is 29 µg/100 g (Solin et al., 2022).

**Aroma**

The average score of the panelists' preference for the color of sweet potato fritters and fritters can be seen in Table 4 below: The average score of the panelists' preference for the color of sweet potato fritters and fritters can be seen in Table 4 below:

Table 4. Average Scores of Panelists' Preference for the Aroma of Sweet Potato and Potato Croquett

| Treatment | Average |
|---|---|
| P0 = 100% sweet potato, 0% potato | 3,47 |
| P1 = 75% sweet potato, 25 % potato | 3,07 |
| P2 = 50% sweet potato, 50% potato | 3,07 |
| P3 = 25% sweet potato, 75% potato | 3,07 |
| P4 = 0% sweet potato, 100 % potato | 3,2 |

In the table 4 above, it can be seen that P0 has the highest preference score of 3.47 compared to the other treatments. This is because yellow sweet potatoes provide a distinctive aroma that is more appealing after the processing. Meanwhile, treatments P1, P2, and P3 gave the same liking score, which is 3.07. This is because adding potatoes in various comparisons can cause the characteristic aroma of sweet potatoes to weaken or balance, so the aroma of the resulting product is relatively the same according to the panelists' assessment. Treatment P4 has a slightly lower liking value than P1, this is because potatoes are a single ingredient that has a fairly acceptable aroma to the panelists even though the potato aroma is not as strong as the sweet potato aroma.

According to (Asmilan, 2024) in his research on sweet potato ice cream, he stated that the sweeter potatoes are added in making ice cream, the stronger the sweet potato aroma becomes, due to the high carbohydrate content of the sweet potatoes. Conversely, the less sweet potato is added, the lower the sweet potato aroma.

**Texture**

Here is table 5 of the average scores of the preference level for the texture of yellow sweet potato fritters and fritters:

Table 5. Average Preference Scores of Panelists for the Texture of Sweet Potato and Potato Croquettes

| Treatment | Average |
|---|---|
| P0 = 100% sweet potato, 0% potato | 3,67 |
| P1 = 75% sweet potato, 25 % potato | 3,40 |
| P2 = 50% sweet potato, 50% potato | 3,53 |
| P3 = 25% sweet potato, 75% potato | 3,47 |
| P4 = 0% sweet potato, 100 % potato | 3,4 |

Based on Table 5 above, we can see that treatment P0 (100% sweet potato, 0% potato) has the highest average panelist preference score, which is 3.67. This shows that the product with 100% yellow sweet potato is the most preferred by the panelists because of the very soft texture of the sweet potato, making it very comfortable to consume. Treatment P2 has the second level of preference from the panelists, this indicates that a balanced combination of yellow sweet potato and potato patties provides a fairly good texture and is still liked by the panelists because it produces a more stable texture. Treatment P3 (25% sweet potato: 75% potato) showed an average value of 3.47 while P1 (75% sweet potato: 25% potato) and P4 (100% potato) each had an average value of 3.40. The closeness of these values indicates that the variation in potato addition at different formulation levels still produces a product texture that is acceptable to the panelists. The results of the organoleptic texture test indicated that the use of sweet potatoes in a dominant amount or in a balanced combination with potatoes can produce a product texture that is more preferred by the panelists, with the best treatment obtained in P0 (100% sweet potatoes). Texture is one of the characteristics of food products that plays an important role in determining the level of consumer acceptance. This attribute is related to the sensations felt in the mouth after oral processes, such as chewing and tasting, which are produced by a food product (Ghaffar & Nurhamzah, 2024).

So overall, it can be seen that treatment P0 (100% sweet potato, 0% potato) has the highest average preference rating in terms of taste, aroma, color, and texture.

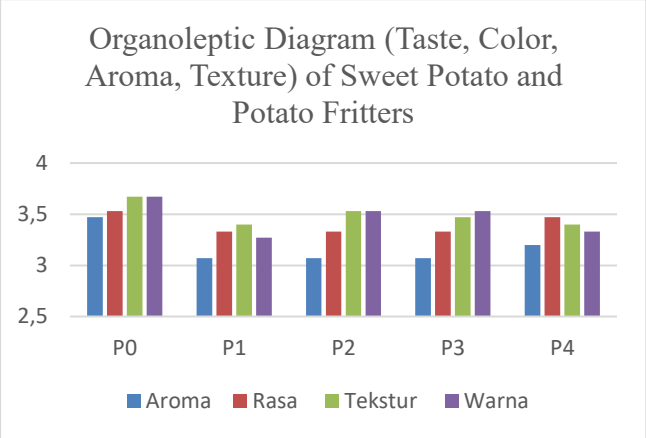


Figure 1. Average Scores of Panelists' Preference Levels for Overall Organoleptic Properties (Taste, aroma, color, and texture) of Sweet Potato and Potato Croquettes

**Purple Sweet Potato Onde – Onde**

**Taste**

For purple sweet potato onde-onde, the average difficulty level rating of the taste by the panelists is as follows:

Table 6. Average Liking Score of Panelists Towards the Taste of Purple Sweet Potato Onde-Onde

| Treatment | Average |
|---|---|
| M0 = 100% glutinous rice flour, 0% purple sweet potato | 3,07 |
| M1 = 75% glutinous rice flour, 25% purple sweet potato | 3,07 |
| M2 = 50% glutinous rice flour, 50% purple sweet potato | 3,27 |
| M3 = 25% glutinous rice flour, 75% purple sweet potato | 3,07 |
| M4 = 0% glutinous rice flour, 100% purple sweet potato | 3,27 |

Based on Table 6, it is known that the level of panelists' preference for the taste of purple sweet potato onde-onde ranges from 3.07 to 3.27. For the purple sweet potato onde-onde product that has the highest preference score, it is found in treatment M2 (50% glutinous rice flour, 50% purple sweet potato) and M4 (0% glutinous rice flour, 100% purple sweet potato), which is 3.27. This may be due to the slightly sweet and distinctive

taste of purple sweet potato, which provides the flavor desired by the panelists and is more preferred by them. The balance between the taste of purple sweet potato and glutinous rice flour or the dominance of the purple sweet potato flavor can enhance the taste of the product. This finding is in line with previous reports stating that the use of purple sweet potatoes in balanced or dominant proportions can increase taste preference in processed food products (Nurdjanah & Yuliana, 2019).

Treatments M0 (100% glutinous rice flour) and M1 (75% glutinous rice flour : 25% purple sweet potato) yielded the same taste score of 3.07, indicating that the addition of purple sweet potato in limited quantities did not significantly affect the product's flavor. In this formulation, the flavor profile of the onde-onde is still dominated by glutinous rice flour, which has a neutral flavor profile (Winarno, 2004). Conversely, treatment M3 (25% glutinous rice flour : 75% purple sweet potato) showed a relatively lower flavor score. This condition indicates that an overly strong dominance of the characteristic purple sweet potato flavor is not always in line with the panelists' preferences, thereby potentially reducing the level of flavor acceptance (Khamidah, 2016). Therefore, the results of the organoleptic test indicate that substituting up to 50% purple sweet potato and using purple sweet potato exclusively are still well-accepted by the panelists, suggesting that purple sweet potato has the potential to be utilized as an alternative ingredient to replace glutinous rice flour in the production of onde-onde without compromising sensory taste quality.

**Color**

The average score of the panelists' preference for the color of purple sweet potato onde-onde can be seen in the table as follows:

Table 7. Average Preference Scores of Panelists for the Color of Purple Sweet Potato Onde-Onde

| Treatment | Average |
|---|---|
| M0 = 100% glutinous rice flour, 0% purple sweet potato | 3,07 |
| M1 = 75% glutinous rice flour, 25% purple sweet potato | 3,20 |
| M2 = 50% glutinous rice flour, 50% purple sweet potato | 3,13 |
| M3 = 25% glutinous rice flour, 75% purple sweet potato | 3,4 |
| M4 = 0% glutinous rice flour, 100% purple sweet potato | 3,13 |

Based on Table 7 above, it can be seen that the panelists' preference levels ranged from 3.07 to 3.40. Treatment M0 (100% glutinous rice flour, 0% purple sweet potato) received the lowest score, which was 3.07, reflecting a relatively pale

appearance of the product. The absence of natural pigments made the color of onde-onde less visually appealing, as glutinous rice flour tends to produce a white to grayish color after processing (Winarno, 2004).

The increase in color preference scores in treatment M1 (75% glutinous rice flour, 25% purple sweet potato) to M3 (25% glutinous rice flour, 75% purple sweet potato) corresponds with the increasing proportion of purple sweet potato in the formulation. Purple sweet potatoes contain high levels of anthocyanins. Anthocyanins are flavonoid compounds derived from plant pigments, generally colored orange, red, purple, and blue (Kunnaryo & Wikandari, 2021; Priska et al., 2018). Anthocyanins can function as antioxidants that work in neutralizing free radicals (Priska et al., 2018). Treatment M3 (25% glutinous rice flour : 75% purple sweet potato) showed the highest color preference value with a score of 3.40. This indicates that the intensity of the purple color produced in that composition was considered the most suitable for panelists' preferences. Anthocyanins in purple sweet potatoes are known to have fairly good stability against the heating process, so the bright color can still be maintained in traditional food products. Food processing can affect anthocyanin levels. The anthocyanin concentration in purple sweet potatoes decreases based on the heating temperature and duration (Mahmudatussa'adah et al., 2015). Another study mentioned that the anthocyanin levels in dragon fruit skin decrease as the temperature and duration of the heating process increase (Wahyuni et al., 2018).

On the other hand, in treatment M4 (0% glutinous rice flour, 100% purple sweet potato) the color liking value decreased to 3.13. This decrease is suspected to be related to the product's color being too dark or too intense, thus not fully meeting the panelists' visual expectations. Excessive color intensity is known to reduce consumer acceptance of a product's appearance (Khamidah, 2016). The higher the concentration of purple sweet potato added, the more attractive the resulting purple color and the more intense it becomes. This is in line with the anthocyanin compounds contained in purple sweet potatoes, which function as natural colorants (Wulandari et al., 2025).

The results of this study indicate that anthocyanins in purple sweet potatoes play an important role in the formation of onde-onde color, but their use needs to be regulated proportionally. Adding purple sweet potatoes up to 75% produces the most preferred color, while the use of purple sweet potatoes completely is still acceptable, although the level of preference tends to decrease.

**Aroma**

The average score of the panelists' preference for the aroma of purple sweet potato onde-onde can be seen in the table as follows:

Table 8. Average Preference Scores of Panelists for the Aroma of Purple Sweet Potato Onde-Onde

| Treatment | Average |
|---|---|
| M0 = 100% glutinous rice flour, 0% purple sweet potato | 2,93 |
| M1 = 75% glutinous rice flour, 25% purple sweet potato | 2,80 |
| M2 = 50% glutinous rice flour, 50% purple sweet potato | 2,87 |
| M3 = 25% glutinous rice flour, 75% purple sweet potato | 3,27 |
| M4 = 0% glutinous rice flour, 100% purple sweet potato | 2,87 |

The organoleptic test results on the aroma of purple sweet potato onde-onde showed panelists' preference scores ranging from 2.80 to 3.27. Treatment M0 (100% glutinous rice flour, 0% purple sweet potato) scored 2.93 for aroma, indicating that the product's aroma tends to be neutral and not very prominent. This is due to the absence of the distinctive aroma contribution from purple sweet potato, as glutinous rice flour generally has a weak aroma characteristic. Thus, the aroma of onde-onde in this treatment is mainly influenced by added ingredients and the processing method.

In treatment M1 (75% glutinous rice flour : 25% purple yam), the aroma value slightly decreased to 2.80. This condition indicates that the addition of a relatively small amount of purple yam has not been able to produce a distinct characteristic aroma. In addition, the combination of glutinous rice flour and purple yam in low proportions has not yet provided an appealing aroma impression for the panelists.

Aroma value increased again in the M2 treatment (50% glutinous rice flour : 50% purple sweet potato) with a score of 2.87. In this composition, the aroma of purple sweet potato begins to be noticeable, but its intensity is still considered light so it has not yet provided an increase.

Treatment M3 (25% glutinous rice flour : 75% purple sweet potato) showed the highest aroma value, which was 3.27. This result indicates that using a higher proportion of purple sweet potato can produce a more distinctive and balanced aroma. The natural soft aroma of purple sweet potato, combined with the aroma developed during the frying process, provides a more attractive aroma character that is preferred by the panelists.

On the other hand, in the M4 treatment (100% purple sweet potato), the aroma value decreased again to 2.87. This decrease is suspected to be related to the overly dominant aroma of purple sweet potatoes or the emergence of a stronger characteristic tuber aroma, so it does not fully match the preference of some panelists. The anthocyanin compounds found in purple sweet potatoes are stable against ultraviolet light and heat-resistant compared to other sources of anthocyanins, making them useful as natural pigments in food additives (Triastuti, 2021).

**Texture**

The average score of the panelists' preference for the texture of purple sweet potato onde-onde can be seen in the table as follows:

Table 9. Average score of panelists' preference for the texture of purple sweet potato onde-onde.

| Treatment | Average |
|---|---|
| M0 = 100% glutinous rice flour, 0% purple sweet potato | 2,93 |
| M1 = 75% glutinous rice flour, 25% purple sweet potato | 2,80 |
| M2 = 50% glutinous rice flour, 50% purple sweet potato | 2,87 |
| M3 = 25% glutinous rice flour, 75% purple sweet potato | 3,27 |
| M4 = 0% glutinous rice flour, 100% purple sweet potato | 2,87 |

Based on the table above, it is shown that the average panelists' preference scores for the texture of purple sweet potato onde-onde ranged from 2.4 to 3.2. Treatment M0 (100% glutinous rice flour) received the lowest score of 2.40, indicating that the product's texture was less preferred.

The resulting texture tends to be too chewy and dense, making it less comfortable to chew. This condition is related to the characteristics of glutinous rice flour, which is rich in amylopectin and produces high chewiness.

The addition of purple sweet potato in treatment M1 (75% glutinous rice flour : 25% purple sweet potato) increased the texture preference score to 3.07. The presence of a limited amount of purple sweet potato is suspected to be able to balance the dough structure, making the texture softer without eliminating the characteristic chewiness of onde-onde. However, in the M2 treatment (50% glutinous rice flour : 50% purple sweet potato), the preference value slightly decreased to 2.87, indicating that the texture in this composition is not yet fully in accordance with the panelists' preferences.

The highest preference score was obtained in treatment M3 (25% glutinous rice flour : 75% purple sweet potato) with a score of 3.20. At this proportion, the product produces a softer texture, not too chewy, and easy to chew. The starch and fiber content in purple sweet potatoes play a role in forming a softer structure, thereby providing a texture sensation more preferred by the panelists.

On the other hand, in treatment M4 (100% purple yam), the texture preference score decreased again to 2.40. This decrease is suspected to occur because the product's texture becomes less elastic and tends to be brittle due to the absence of glutinous rice flour as a structure-forming agent. The results of this study indicate that the use of purple sweet potato in high proportions, while still combined with glutinous

rice flour, is able to produce the texture of onde-onde most preferred by the panelists. Glutinous rice flour has the ability to form good gluten when moistened with water. This is due to the interaction between prolamins, which have fewer polar groups (Man & John M de, 1989). Stated that gliadin and glutenin are the main components responsible for the elasticity of the dough (Ciaffi et al., 1996).

So overall, for the onde-onde product, purple sweet potato provides the best taste attributes in treatment M2 (50% glutinous rice flour, 50% purple sweet potato) and M4 (0% glutinous rice flour, 100% purple sweet potato). For color, aroma, and texture, the M3 treatment (25% glutinous rice flour, 75% purple sweet potato) was given, which provided the highest level of panelist preference, indicating the product most liked by the panelists. This can be seen in the overall diagram (taste, color, aroma, and texture) below:

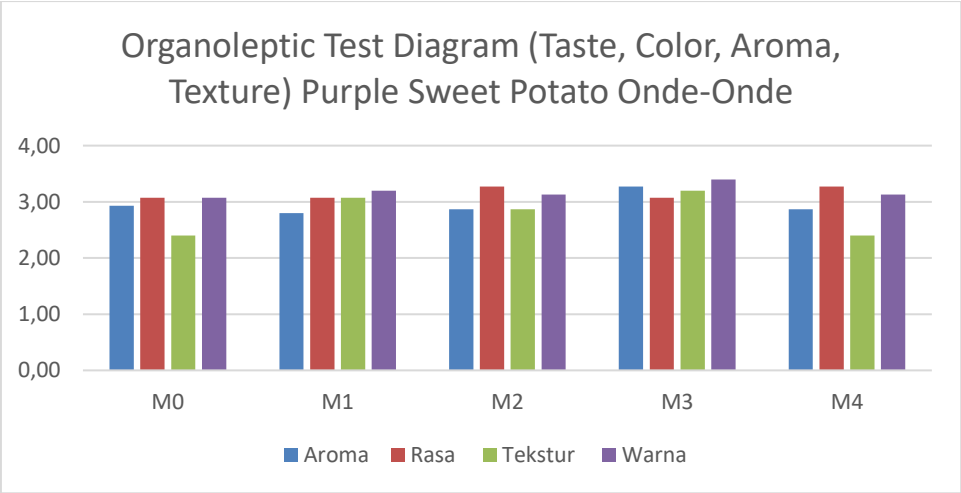


Figure 2. Average Scores of Panelists' Preference Levels for Organoleptic (Taste, aroma, color, and texture) of Purple Sweet Potato Onde-Onde.

**CONCLUSION**

- Sweet potato–potato fritters with the P0 formulation (100% sweet potato, 0% potato) received the highest scores in all organoleptic attributes (taste, color, aroma, texture).
- Yellow sweet potatoes provide a natural sweet taste, soft texture, and more appealing golden yellow color compared to potatoes. Potatoes are still acceptable to the panelists, but the preference score is slightly lower than when using pure sweet potatoes.
- Purple sweet potato onde-onde showed the highest level of taste preference in the M2 formulation (50% glutinous rice flour : 50% purple sweet potato) and M4 (100% purple sweet potato).

- The best color, aroma, and texture of onde-onde were obtained from the M3 formulation (25% glutinous rice flour : 75% purple sweet potato).
- The preferred texture of onde-onde is achieved with a balanced combination of purple sweet potato and glutinous rice flour, as it results in a softer and easier-to-chew product.
- Overall, yellow sweet potato is superior for perkedel products, while purple sweet potato effectively improves the sensory quality of onde-onde when used in a balanced or dominant proportion.

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