Agricola
Vol. 15 (2): 289 - 298, Juni 2025
e-ISSN: 2354-7731; p-ISSN: 2088-1673
doi: 10.35724/ag.v15i2.6969

Formulation of purple sweet potato *(Dioscorea alata)* nugget as low glycemic index alternative food

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Diterima: 25-04-2025
Disetujui: 26-06-2025

ABSTRACT
The threat of a food crisis is a serious problem in Indonesia, which can be caused by an imbalance between food availability and demand. On the other hand, purple sweet potato *(Dioscorea alata)* can be used as an alternative source of raw materials for making various types of food. This study aims to develop a nugget formulation using purple sweet potato as an alternative food source with a low glycemic index. The research employed a Completely Randomized Design (CRD) with four treatment groups and four replications. The treatments consisted of varying proportions of purple sweet potato flour and tapioca flour, such as P1 (10%:90%), P2 (40%:60%), P3 (60%:40%), and P4 (90%:10%). The parameters evaluated included pH, cooking loss, and organoleptic properties (color, aroma, texture, shape, and taste). Results indicated that the pH values of the nuggets ranged from 5.0 to 5.8, remaining within the acceptable range for processed foods. Cooking loss increased with the rising proportion of purple sweet potato flour, with the highest value observed in treatment P4 (32%) and the lowest in P1 (11%). The organoleptic evaluation revealed that treatment P1 received the highest score for color, while treatment P2 was rated the highest score for aroma (score: 2.8), texture (2.8), shape (2.9), and taste (3.1). Purple sweet potato nuggets offer several health benefits due to their content of bioactive compounds such as water-soluble polysaccharides, dioscorin, and diosgenin, which function as immunomodulators and contribute to the prevention of metabolic disorders. Overall, this study highlights the potential of purple sweet potato as a nutritionally rich alternative raw material in the development of functional food products aimed at supporting food security in Indonesia.

KEYWORDS: Alternative Food, Nugget, Flour, Organoleptic Test, Purple Sweet Potato.

1. INTRODUCTION

Food represents the most fundamental human necessity, as it directly influences human existence and survival in terms of both quantity and quality (Goshme, 2019). Ensuring the availability of sufficient, safe, high-quality, and nutritious food is a critical requirement for maintaining food security (Pérez-Escamilla, 2017). High-quality food is essential for consumption and plays a vital role in enhancing human capital and overall development (Delgado et al., 2021). Consequently, food security is a matter of significant concern for both society and the state, as it is essential for achieving equitable welfare (Pinstrup-Andersen, 2009).

The food crisis remains a serious issue in Indonesia, with food insecurity largely stemming from an imbalance between food availability and demand (Perdana et al., 2022). This situation is a direct consequence of the disparity between population growth and the rate of agricultural productivity (Willy et al., 2016). Moreover, rapid population growth has led to the reduction of agricultural land, as more land is converted for residential use (Gaudėšius, 2016). Based on these challenges, identifying and developing alternative food sources is crucial to addressing the ongoing food crisis (Khosyiati et al., 2024).

Amidst these food security challenges, the development of food products with a low glycemic index is becoming increasingly important (Siswanto & Mudita, 2025). This approach is crucial in addressing the rising prevalence of diabetes mellitus in Indonesia, which reached 21.3 million cases in 2021 (WHO, 2021). Purple sweet potato (*Dioscorea alata*), one of Indonesia's local commodities, holds significant potential to be developed into a functional food product. With a glycemic index (GI) of 54, it is considered safe for consumption by individuals with diabetes (El Bash et al., 2023).

Tubers represent one of the key local food resources with significant potential for development in Indonesia (Susiarti & Sulistiarini, 2015; Neto et al., 2023). Among them, the purple sweet potato (*Dioscorea alata*) is a well-known variety recognized for its nutritional value (Qi-mao, 2012). This tuber is rich in bioactive compounds beneficial to human health, including high levels of antioxidants, dietary fiber, vitamins, and minerals. It is widely consumed globally as a nutritious vegetable due to its high total phenolic content and antioxidant capacity, which contribute to the prevention of degenerative diseases, premature aging, and prevent stunting (Yousuf et al., 2016; Anita et al., 2023). In addition, purple sweet potatoes provide essential nutrients that support the health of internal organs (Khosyiati, 2025). Given these benefits, the development of purple sweet potatoes as a local food resource holds considerable potential (Pacheco et al., 2020).

Despite its nutritional advantages, the utilization of purple sweet potatoes remains limited in many communities, primarily being consumed in simple forms such as boiled, fried, or as ingredients in traditional dishes for household consumption. Another variety of tuber, *Dioscorea alata* (also commonly referred to as purple yam), similarly offers potential as an alternative carbohydrate source to support national food security (Cakrawati, 2021). Purple sweet potatoes can be processed into a wide range of value-added products, including cakes, noodles, flour, and beverages such as juice. Such diversification not only enhances the economic value of the crop but also contributes to improving the welfare of local farmers (Webster et al., 2016). Furthermore, as a naturally halal ingredient, it can help build consumer trust and increase consumer confidence, especially among Muslim populations (Setiawan et al., 2024). Therefore, the development of purple sweet potatoes offers a promising pathway toward strengthening food sovereignty and advancing national food independence.

On the other hand, nugget is one of the processed meat or non-meat foods that have a certain taste and are widely favored by Indonesian people as a side dish (Solichah et al., 2021). This study used purple sweet potatoes as a raw material for making nuggets. Purple sweet potatoes contain complex carbohydrates that are broken down slowly in the carbohydrate body (Sinta & Sumaryono, 2022), so they do not increase blood sugar levels drastically. This makes the glycemic index of purple sweet potatoes relatively low, which is around 35. The low glycemic index of purple sweet potatoes is very beneficial for people with diabetes mellitus.

Complex carbohydrates from purple sweet potatoes will be broken down gradually, thus preventing spikes in blood sugar levels that can be dangerous for diabetics. In addition, purple sweet potatoes are also rich in antioxidants and bioactive compounds that can help increase insulin sensitivity (Kalita et al., 2018). Thus, purple sweet potatoes are very suitable as an alternative food ingredient with a low glycemic index for people with diabetes mellitus. Innovation in processing purple sweet potatoes into nuggets can increase the use of purple sweet potatoes as a food ingredient that can support national food security.

To support the development of purple sweet potato as an alternative food commodity, which has been recognized for its significant potential in addressing Indonesia's food crisis, the following literature review will examine various aspects of its utilization in food product diversification, with particular emphasis on innovations in nugget production using local ingredients.

2. LITERATURE REVIEW

Currently, the level of use of agricultural materials other than rice and corn is still relatively low (Rozi et al., 2023). Indonesia has various types of tubers that are spread throughout the region. However, these tubers have not been optimally utilized, one of which is the purple sweet potato (Khosyiati et al., 2025). In terms of availability, these tubers can be an alternative in meeting the population's food needs. Purple sweet potato, as a material that contains high carbohydrates, can be used as a basic ingredient for making nuggets.

Purple sweet potato can be processed into a food product that is popular with the public, namely nuggets. Purple sweet potato has high economic value and nutritional content (Xu et al., 2024). By considering the strategic value of tubers in supporting national food security, following the policy of accelerating the diversification of food consumption based on local resources (Presidential Regulation No. 22 of 2009). Compared to conventional meat-based nuggets, purple sweet potato offers economic advantages. With current processing technologies, it can achieve a product yield of up to 25% while maintaining comparable economic value. Furthermore, it contains essential bioactive compounds, including water-soluble polysaccharides (PLA), dioscorin, and diosgenin, which contribute to human health by acting as immunomodulators and helping to prevent metabolic disorders such as hypercholesterolemia, dyslipidemia, diabetes, obesity, inflammation, and cancer (Muliyana & Dahlia, 2023).

In general, Indonesian people currently consume more nuggets made entirely from beef and chicken (Nevriansyah et al., 2022). Local sources that can function strategically as food reserves to support national food security. For this reason, a breakthrough is needed so that the selling value of this commodity remains stable throughout the year. The breakthrough that can be made is product diversification into processed products, both semi-finished and finished products. Purple sweet potato can be processed into nuggets that are highly nutritious and have economic value. As an effort to optimize purple sweet potato as a food ingredient, we propose purple sweet potato as a raw material in making nuggets (purple sweet potato nuggets). By being processed into nuggets like this, purple sweet potato can have more profitable added value and have a much larger market share because it can be used as a trading commodity. Processed nuggets from purple sweet potato are a local food innovation that is expected to increase Indonesia's independence in food security and no longer depend on imports.

3. MATERIALS AND METHODS

This study employed a quantitative research approach utilizing a Completely Randomized Design (CRD) to investigate the influence of varying compositions of purple sweet potato flour and tapioca flour on the physicochemical and sensory properties of nugget products. Data derived from pH measurements, cooking loss assessments, and organoleptic evaluations were subjected to analysis of variance (ANOVA) to identify statistically significant differences among treatment groups. When significant effects were detected, Duncan's Multiple Range Test (DMRT) was applied to compare the mean values across the treatments. In addition, descriptive analysis was employed to elucidate the physical and sensory characteristics of the nuggets resulting from each formulation.

3.1. Material Preparation

This study conducted several experiments or trials, including 4 treatment groups or variants and 4 replications with a Completely Randomized Design (CRD) arrangement. Several of the treatments involved varying proportions of purple sweet potato flour and tapioca flour, with the addition of tapioca flour. These four treatments are divided into codes P1, P2, P3, and P4, which can be seen in detail in Table 1.

Table 1. Percentage Combination of Tapioca Flour and Purple Sweet Potato Flour in a Nugget

P	Flour Composition Percentage	
	Tapioca	Purple Sweet Potato
P1	90%	10%
P2	60%	40%
P3	40%	60%
P4	10%	90%

The ingredients used in making nuggets are purple sweet potato flour as the main ingredient, and there are additional ingredients such as tapioca flour, coriander, pepper or pepper powder, grated coconut, shallots, garlic, salt, and ice cubes. In detail, the composition used can be seen in Table 2.

Table 2. Ingredients for making a nugget

Ingredients and Seasonings	Composition based on Variation (g)			
	P1	P2	P3	P4
Purple sweet potato flour	2	8	12	18
Tapioca flour	18	12	8	2
Coriander	2	2	2	2
Pepper powder	2	2	2	2
Breadcrumbs	4	4	4	4
Shallots	5	5	5	5
Garlic	5	5	5	5
Salt	3	3	3	3
Egg	10.8	10.8	10.8	10.8
Water	10	10	10	10

3.2. Nugget Processing Method

The method of processing purple sweet potato nuggets in this study begins by changing the purple sweet potato into flour first, according to the seven steps listed in Figure 1. First, prepare the purple sweet potato and clean it. Next, the second step is to boil or steam the purple sweet potato for 30 minutes. Once cooked, drain and peel the skin, then let it sit for two hours. The third step is to grate the purple sweet potato with a food processor until soft. After being grated, dry the grated purple sweet potato in the sun for 6 hours. Take the grated purple sweet potato, then blend or chop the dried purple sweet potato until smooth. After that, remove the dried purple sweet potato that has been blended or chopped and filter it. Then, the purple sweet potato flour is ready to use. In detail, the documentation of making purple sweet potato flour in this study can be seen in Figure 1.

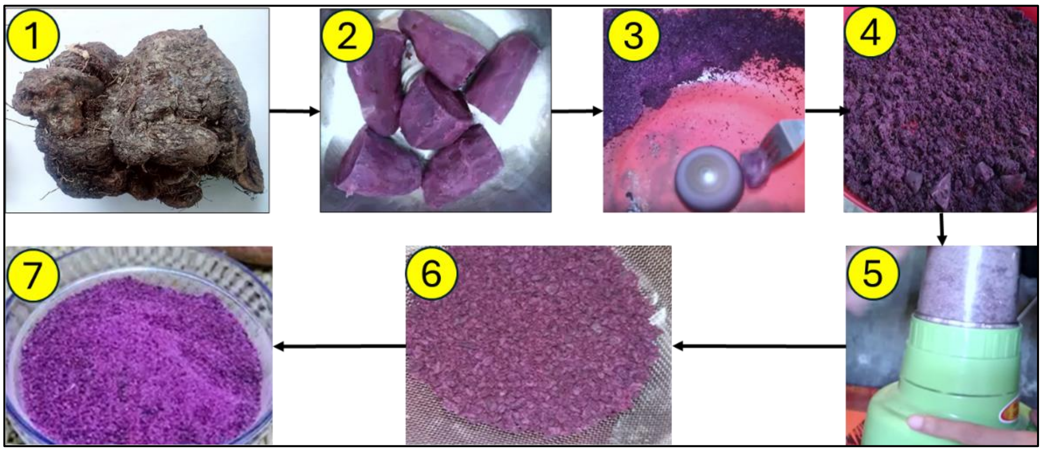

Figure 1. Stages of Making Purple Potato Flour

After the purple sweet potato flour is successfully produced, the next step involves the preparation of the nugget product. Initially, all ingredients are prepared in accordance with the specified proportions outlined in Table 2. These ingredients are thoroughly mixed until a uniform dough is formed. The dough is then shaped into rectangular molds. Thereafter, the shaped dough is deep-fried in preheated oil. Then, after approximately eight minutes of frying, the nuggets are removed from the oil, The frying process is conducted at a temperature of 170-180°C for 8 minutes until the nuggets are golden brown and perfectly cooked, then drained, and are ready to be served, as illustrated in Figure 2.

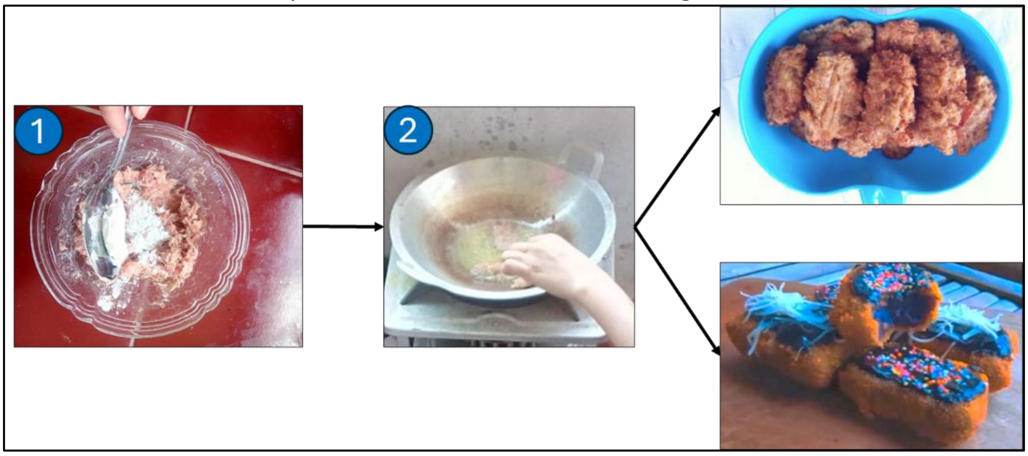

Figure 2. Process of Making Nuggets by Mixing Purple Sweet Potato Flour and Tapioca

4. RESULTS AND DISCUSSION

Purple sweet potato nuggets that have been made must undergo various tests. The first test is the pH test and cooking loss. Testing on pH by cutting nuggets of 10 grams, then crushing, adding distilled water, stirring, then measuring with a pH meter. Furthermore, the second physical test is to observe the cooking loss on each piece of nugget from each treatment (four nuggets) and put them in polypropylene plastic and steamed for 20 minutes in a pressure cooker at a temperature of 100ºC, if the nuggets are removed and reweighed. The third test is an organoleptic test by observing the color, taste, texture, shape, and aroma.

4.1. Test pH and Cooking Loss on Nuggets

The physical properties of nuggets with the addition of purple sweet potato flour were tested and observed on pH and cooking loss. The average results between pH and cooking loss of nuggets with the addition of purple sweet potato flour can be seen in Table 3.

Table 3. Average Value of Physical Properties of Purple Sweet Potato Nuggets

Parameter	P1	P2	P3	P4
pH	5,0	5.3	5.5	5.8
Cooking Loss (%)	11	19	24	32

For the pH test, data indicate that there were no statistically significant differences among the four treatment groups, P1, P2, P3, and P4. The pH values of the nuggets incorporating purple sweet potato flour remained within the normal range of 5.0 to 5.8. Observations suggest a tendency for the pH to increase as the proportion of purple sweet potato flour in the formulation rises. Although the variations were minimal, the results still reflect a measurable effect of the different flour compositions used in each treatment.

Furthermore, the cooking loss analysis revealed a positive correlation between the percentage of purple sweet potato flour and the extent of cooking loss. The observed increase in cooking loss during the production of nuggets containing purple sweet potato flour can be attributed to several key factors. Firstly, the elevated dietary fiber content in purple sweet potatoes plays a crucial role in contributing to higher cooking loss, as fiber tends to disrupt the structural matrix and reduce water retention during thermal processing. Secondly, the distinct starch composition of purple sweet potato, compared to that of conventional wheat flour, further influences cooking loss. Specifically, the differing ratios of amylose to amylopectin in purple sweet potato starch affect its gelatinization properties and water-holding capacity. Thirdly, the high concentrations of phenolic compounds and anthocyanins present in purple sweet potato may alter the molecular interactions between proteins and starches. These bioactive compounds are known to form complexes with both protein and starch molecules, potentially hindering the development of a cohesive gel network and diminishing the product's ability to retain moisture during cooking.

Cooking loss refers to the reduction in weight after cooking, expressed as a percentage of the initial weight before cooking. As shown in Figure 3, the cooking loss increased with higher concentrations of purple sweet potato flour. This parameter is an important indicator of nutritional quality, specifically of the water retention capacity of the product during thermal processing. Cooking loss is influenced by both temperature and duration of cooking, wherein higher temperatures and prolonged cooking times lead to greater moisture evaporation until equilibrium is reached. It is also closely related to the water-binding capacity of the product, the higher the capacity, the lower the cooking loss during heating. Additionally, the gelatinization of starch, which involves the breakdown of the crystalline structure of starch granules, enhances water absorption and interaction with other ingredients. This process is irreversible and significantly affects the texture and water retention properties of the final product.

Figure 3. Cooking Loss Test on Nuggets

4.2. Organoleptic Test of Nuggets

Organoleptic testing is a sensory evaluation method used to assess the quality of food products through the five human senses, such as sight, smell, taste, touch, and hearing, by examining attributes such as color, aroma, flavor, texture, and overall appearance (Ray, 2021). Organoleptic tests were conducted on nuggets with different compositions of purple sweet potato flour and tapioca flour as listed in Table 1.

Organoleptic testing on nuggets was conducted on the color, aroma, texture, shape, and taste of the nuggets. The organoleptic test assessment score utilizes a hedonic scale with the following criteria: a score of 0-1 indicates "Very Dislike", 1-2 indicates "Dislike", 2-3 indicates "Like", and 3-4 indicates "Very Like". The assessment was conducted by 30 semi-trained panelists using the organoleptic test method. The overall results of organoleptic tests of nuggets P1, P2, P3, and P4 can be seen in Table 4.

Table 4. Average Organoleptic Test Value of Purple Sweet Potato Nuggets

P	Color		Aroma		Texture		Shape		Taste	
	Score	Criteria	Score	Criteria	Score	Criteria	Score	Criteria	Score	Criteria
P1	2.7	Like	2.5	Like	2.7	Like	2.7	Like	2.1	Like
P2	2.3	Like	2.8	Like	2.8	Like	2.9	Like	3.1	Very Like
P3	1.8	Dislike	2.5	Like	2.2	Like	2.5	Like	2.8	Like
P4	1.6	Dislike	2.1	Like	2.1	Like	2.4	Like	2.4	Like

4.2.1. Nugget Color

The organoleptic test results presented in Table 3 indicate a decline in panelists' preference for the color of purple sweet potato nuggets as the proportion of purple sweet potato flour increased. In treatments P3 and P4, the average panelist “Disliked” the color of the nuggets. This trend can be attributed to the panelists’ visual preference for the golden-yellow hue typically associated with conventional nuggets, as opposed to the purplish coloration resulting from the inclusion of purple sweet potato flour. As the concentration of purple sweet potato flour increased, the internal color of the nuggets became progressively more purple, which was perceived as less appealing by the panelists.

4.2.2. Nugget Aroma

The use of purple sweet potato flour had a notable influence on the aroma of the nugget products. The panelists' average preference scores for aroma ranged from 2.1 to 2.8, indicating a general level of "Like." Among the four formulations, treatment P2 (containing 40% purple sweet potato flour) received the highest preference for aroma. In this treatment, the characteristic scent of purple sweet potato was present but not overpowering, resulting in a more balanced and acceptable aroma. Treatment P3 (60% purple sweet potato flour and 40% tapioca flour) also received relatively favorable ratings, likely due to the mitigating effect of additional ingredients and the cooking process, which helped to moderate the intensity of the purple sweet potato aroma. Meanwhile, in treatment P4, with the highest concentration of purple sweet potato flour (90%), produced a strong and distinctive aroma that was less preferred by the panelists, indicating that excessive amounts of purple sweet potato flour can negatively impact sensory acceptance related to aroma.

4.2.3. Nugget Texture

The addition of purple sweet potato flour significantly influenced the texture of the nugget products. Panelists’ preference scores for texture ranged from 2.1 to 2.8, with the highest preference observed in treatment P2, which contained 40% purple sweet potato flour. This was followed by treatment P1 (10% purple sweet potato flour), which ranked second in texture acceptability. These findings indicate that varying the proportions of purple sweet potato and tapioca flour impacts the resulting texture of the nuggets. A higher proportion of purple sweet potato flour was associated with a denser texture, which negatively affected panelists' preferences. Texture is a critical sensory attribute that substantially influences consumer acceptance. A less desirable texture can reduce the overall appeal of a food product. Furthermore, texture is closely related to the moisture content; lower water content generally leads to a firmer, more compact texture, which may not be favored by all consumers. This result is consistent with the cooking loss data, which indicates that the P2 treatment exhibits a relatively low cooking loss (19%), suggesting a good water-binding capacity and resulting in a texture preferred by the panelists. In contrast, the P4 treatment, which demonstrates the highest cooking loss (32%), yields a less desirable texture due to excessive moisture loss during the cooking process.

4.2.4. Nugget Shape

The incorporation of purple sweet potato flour had a significant impact on the physical shape of the nugget products. Panelists’ preference scores for nugget shape ranged from 2.4 to 2.9, with the highest level of preference recorded for treatment P2, which consisted of 40% purple sweet potato flour and 60% tapioca flour. It got “Very Like” criteria from panelists. This was followed by treatments P1, P3, and P4, respectively. These results suggest that variations in the proportion of purple sweet potato flour and tapioca flour influence the structural integrity and visual appeal of the nuggets. A higher dominance of one flour type, particularly purple sweet potato flour, tended to increase the density of the product, thereby reducing panelists' preference for its shape. The density and form of a food product are important characteristics that affect consumer perception and acceptability.

4.2.5. Nugget Taste

The addition of purple sweet potato flour to nuggets has a significant effect on the taste of the nuggets. The panelists' preference level for the taste of the nuggets ranged from 2.1 to 3.1. The panelists liked the taste of the P1 nuggets, which were treated with 40% purple sweet potato flour. This shows that nuggets with a combination of 60% tapioca flour have a positive effect on the taste of the nuggets produced. However, the higher the dose of purple sweet potato flour added, the panelists' preference level for the taste of the nuggets tended to decrease. Taste is a determining factor in consumer acceptance of food products. The taste factor plays an important role in product selection by consumers because taste is the tongue's response to the stimulation given by a food and consumers will decide to accept or reject products with these four flavors (Curto et al., 2020). The taste of the nuggets with the addition of 60% purple sweet potato flour was still liked by the panelists, but there was a tendency for the panelists to prefer the taste of nuggets with a percentage of 40% purple sweet potato flour. In addition, the taste is not only influenced by the amount of flour used. However, it is also likely influenced by the taste of the spices added, such as in the study, nuggets have a specific savory taste which is a combination of various flavors, namely the salty taste which comes from sugar, salt, pepper, and garlic. The level of taste preference for the nuggets also correlates with the pH value of the product. Treatment P2, with a pH of 5.3, yielded the most preferred taste (score 3.1), as this pH falls within an optimal range that is neither too acidic nor too alkaline. Meanwhile, higher pH values observed in treatments P3 (5.5) and P4 (5.8) tend to result in a less preferred taste, likely due to their impact on the overall flavor balance of the nugget product.

4.3. Purple Sweet Potato as an Alternative Food Product Innovation

One approach to optimizing Indonesia's natural resources is through the utilization of purple sweet potatoes as a primary ingredient in the production of local food products, such as purple sweet potato nuggets. The advantages of purple sweet potato nuggets, in comparison to conventional nuggets, include:

1) Purple Sweet Potato has low return viscosity and high protein. High return viscosity is not expected for cake, cake or rerotion products because it causes hardness after the product is cold. Thus, purple sweet potato with low viscosity will make nuggets still look fresh and delicious.
2) Purple Sweet Potato has good nutritional value for diet because it contains sucrose, glucose, fructose, maltose, and amylopectin, so nuggets can be used as an alternative food ingredient during a diet.
3) Purple Sweet Potato has bioactive compounds. Bioactive compounds are secondary metabolites produced by plants through a series of secondary metabolic reactions. Plants that have the potential as medicinal plants have bioactive compounds such as alkaloids, terpenoids, phenolics, steroids, and flavonoids in varying amounts.
4) Purple Sweet Potato contains quite high inulin. Inulin is one of the components of food ingredients that is widely used as a functional food because it has a high fiber content. Purple sweet potato has the highest inulin and fiber content, which is 14.629% (bk / dry weight) (Sari et al., 2021). Thus, nuggets made from purple sweet potato are one of the local food products that are good for health.

In creating local food processing innovations that are conducted as a solution for providing food ingredients based on purple sweet potato nuggets, the role of the government is very important in determining progress and the results of the food products being cultivated. This innovation is one of the advantages in improving the management of agricultural products, specifically purple sweet potato, to overcome product limitations or obstacles that result in a food crisis in Indonesia. Indonesia has had many forms of wealth that other countries do not have, now it is up to the community and government to utilize the potential of this natural wealth.

Overall, the organoleptic test results demonstrated a significant correlation with the physical parameters of the nuggets. The P2 treatment, which incorporated an optimal ratio of 40% purple sweet potato flour to 60% tapioca flour, yielded favorable outcomes, including an acceptable cooking loss (19%) and a balanced pH level (5.3). Moreover, this formulation exhibited superior organoleptic characteristics across the majority of sensory parameters evaluated. These findings suggest that the 40:60 proportion of purple sweet potato flour to tapioca flour constitutes the optimal composition for producing nuggets with desirable physical properties and high sensory acceptability.

Purple sweet potato processing innovation is one of the strategic advantages in optimizing the management of Indonesian agricultural products as an alternative to overcome the limitations of food products that can lead to a national food crisis. Indonesia has natural resources that other countries do not have, and now relies on the community and government to utilize the potential of these natural resources optimally, including as an alternative food. This innovation offers diversification opportunities for the industrial sector and micro, small, and medium enterprises (MSMEs), enabling business actors to leverage purple sweet potato processing technologies in the development of a range of value-added products, such as purple sweet potato flour, chips, and antioxidant-rich bakery items. These advancements contribute to strengthening national food security by promoting the diversification of nutrient-dense food products.

5. CONCLUSIONS

Based on the research conducted, the formulation of nuggets using purple sweet potato *(Dioscorea alata)* demonstrates considerable potential as a low glycemic index alternative food product. Experimental results indicate that the pH values of the purple sweet potato nuggets remained within the normal range (5.0–5.8) across all treatment variations. Cooking loss was observed to decrease with the reduction in purple sweet potato flour concentration. Conversely, higher concentrations of purple sweet potato flour were associated with increased moisture retention post-cooking. From an organoleptic perspective, panelists expressed a preference for the nugget formulation comprising 40% purple sweet potato flour and 60% tapioca flour (P2), particularly in terms of aroma, texture, shape, and taste. However, panelist ratings for color declined as the proportion of purple sweet potato flour increased, with the P1 formulation receiving the highest score for appearance.

This study shows that purple sweet potato-based nuggets have great potential as an alternative food with a low glycaemic index, supporting local food diversification, and increasing the economic value of agricultural products. Purple sweet potato nuggets offer low setback viscosity, which contributes to favorable textural stability after cooling. Additionally, they are rich in complex carbohydrates, making them suitable for dietary consumption, and contain various bioactive compounds with health promoting properties. Notably, the product's high inulin content (14.629% dry weight) further supports its classification as a functional food. This innovation not only presents a nutritious and health-conscious food alternative, but also aligns with national food security initiatives through the strategic utilization of local agricultural resources.

For further development, it is recommended to conduct formulation optimization research to improve product color acceptability, as well as product stability testing during storage to ensure the quality and durability of purple sweet potato nuggets over a certain period of time. To maximize the potential of this product, government support is essential in enhancing its production scalability and distribution within the wider community.

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