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Development Evaluation Of Various Products From Purple Sweet Potatoes (Ipomoea Batatas L. Poir)

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Abstract. This research is in the form of field experiments aimed to development evaluating of various products from purple sweet potato. Sweet potato is everywhere and very much in Makassar. It is often abundant and easily damaged so it is wasted because people do not yet understand the best processing methods to be durable and the selling price increases. The price is very cheap and the processing is still traditional, namely boiled and fried. Almost all rural communities have sweet potato gardens. Various types of sweet potato, some of them purple. Why was the purple one chosen? Besides the attractive color, high nutritional content and benefits are very good for health because they contain antioxidants. Therefore it is necessary to innovate the development of its products with a touch of technology so that the results are better, preferred by the community and the selling price increases. After evaluating the product development in the field it turns out that various products can be made, namely pizza, panada, sweet bread, poding, and selai. From the results of the development of various purple sweetpotato products were evaluated and tested organoleptically for hedonic tests and hedonic quality with indicators of color, taste, texture, aroma, and quality of product yields, it turned out that panelists were very well-liked and the quality was worthy of being produced for home industry business development. Therefore it needs to be socialized so that the benefits are better and known by the community as raw materials for productive businesses that are cheap and easy to obtain. Using experimental research methods in the field, organoleptic was tested by 20 panelists trained and not trained with the instrument checklist. Data were analyzed with descriptive and mean test of SPSS program assistance. The results of the product are pizza, panada, sweet bread, poding, selei of purple sweet potato that people like and the quality is very good to be marketed.

Keywords: Evaluation, Various Product Development, Purple Sweet Potato.

INTRODUCTION

Purple sweet potato with its Latin name Ipomoea Batatas L (Gina Firgianti et al, 2018), Ipomoea batatas L. Poir (Nida El Husna et al, 2013), Ipomoea batatas var Ayamurasaki (Kumalaningsih, 2007) contains anthocyanin pigments that are higher than other types of sweet potato. The pigment is more stable when compared to

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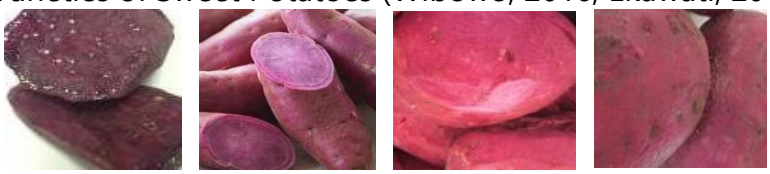
anthocyanins from other sources such as red cabbage, elderberries, blueberries, and red corn. Furthermore, it was explained that purple sweet potato began to be known to spread throughout the world, especially countries with tropical climates in the 16th century, it is estimated that purple sweet potato was first in Spain through Tahiti, Guam Islands, Fiji and New Zealand (Suprapti, 2003). Many grow in Indonesia and are liked by the community. There are many varieties of sweet potato, there are white, yellow, red, and purple ranging from light purple to dark purple and deep purple. Sweet potato has the potential to be developed as a food ingredient because it has high nutritional content and is easy to process and easily available as industrial raw materials. Today purple sweet potato has been widely used as flour which is an intermediate product for raw materials for processed products. Purple sweet potato flour has been widely used in the manufacture of beverages, noodles, biscuits, cakes, cakes and breads. There are various kinds of purple sweet potato, including: (a) Biang Variety of Sweet Potatoes, (b) Ayamurasaki Variety Sweet Potatoes, (c) Yamagawa Murasaki Varieties of Sweet Potatoes (Wibowo, 2016; Ekawati, 2014).



a. b. c. d.

Figure 1. Assorted purple sweet potatoes. Source: Wibowo, 2016

There have been many research results on sweet potato but in this paper we will only discuss the evaluation of the development of various products from purple sweet potato as a result of research on purple sweet potato and product development. Purple sweet potato is very attractive because it tastes so good and the color is really nice. More than that, purple sweet potato contains anthocyanins which are very beneficial for health because they are useful as antioxidants. Therefore, it is necessary to cultivate and develop its products widely in order to be understood by the general public. Balitbangtan explained that based on data from the Central Statistics Agency in 2015, the productivity of sweet potato in Indonesia in 2014 was 152.00 ku / ha, increasing 5.61% in 2015 amounting to 160.53 ku / ha. It was recorded that in 2015 the sweet potato production in South Sulawesi Province was 71,677 tons, an increase of 4,035 tons from 2014 with a production of 67,642 tons. The largest producer of sweet potatoes in South Sulawesi is Bone Regency with a production of 21,688 tons, followed by Gowa Regency with 6,033 tons, Takalar Regency with 5,731 tons and Maros Regency with 4,612 tons (South Sulawesi Agricultural Service, 2015). The nutritional content of purple sweet potatoes is also better because the antin-3 variety is as much as 150.7 mg anthocyanins, 1.1% fiber, 18.2%, starch, 0.4% reducing sugar, 0.6% protein, 0, 70 mg iron and 20.1 mg vitamin C (Balitbangtan, 2016). Based on data from Riskesdas (2013), it was found that the consumption of food made from processed wheat flour including instant noodles, wet noodles, bread and biscuits, as much as 13.4% of Indonesians consume biscuits

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once per day. The dependence of Indonesian people on wheat flour is very high. This can be seen from the number of processed food products that use wheat flour. Therefore, food diversification efforts are important, in addition to reducing dependence on wheat flour, also to explore other food potentials (Widyastuti, 2015) to be developed into various products. Why? Because purple sweet potato is beneficial for health and can be used as functional food and its anthocyanin content is quite high, ranging from 33.90 mg/100 g to 560 mg /100 g which are antioxidants (Yusuf. M, et al. 2008). It is further explained that anthocyanins have a tendency to polymerize under oxidative conditions such as exposure to oxygen, light, and heat which causes the color change to brown, or so-called browning. Color changes can also be caused by the presence of enzymes in the food ingredients themselves. This event is called a browning enzymatic which is usually caused by the polyphenol oxidase (PPO) enzyme in purple sweet potatoes (Oke and Workneh, 2013). The loss or damage of anthocyanins can be prevented by pretreating purple sweet potato before further processing. According to Miller, one way to reduce the percentage of anthocyanin damage during processing is by means of steam blanching or steam blanching. Blissator is a preliminary process by giving heat at a high temperature, in a short time to reduce enzyme activity and kill microbes in the material (Miller and Rice, 1996). Apart from reducing the activity of the enzymes that cause browning in anthocyanins, the blanching method can also improve the color and taste quality of the product. According to Gloria et al (2016), taste and appearance are important quality parameters in beverage products from purple sweet potato. Many commercialized beverage products contain food additives in the form of flavorings, sweeteners and dyes, to meet consumer preferences. Purple sweet potato is a source of anthocyanin antioxidants, and purple sweet potato is naturally low in fat (Mentari, 2015). The increase in fat content in purple sweet potato and other products is influenced by the composition of other ingredients other than raw materials, such as margarine and egg yolk. From the results of the hedonic test and the hedonic quality test of the purple sweet potato biscuits, the most preferred and having good quality were biscuits with a ratio of 1: 3 (purple sweet potato: flour). From the results of the Friedman test for organoleptic test analysis showed that there was an influence on the quality of purple sweet potato biscuits from the aspects of color, texture, overall quality and level of preference, while from the aspect of color and taste there was no effect. According to Suprapti (2003) the nutritional content of sweet potatoes in 100 grams of edible materials are: Calories (calories) 123.00; 1.80 g protein; Fat 0.70 g; Carbohydrates 27.90 g; Calcium 30.00 mg; Phosphorus 49.00 mg; Iron 0.70 mg; Sodium 0 mg, Potassium (mg) 0 mg; Niacin 0 mg; Vitamin A 7,700.00 SI; Vitamin B 0.90 mg; Vitamin B1 0 mg; Vitamin C 22.00 mg; Water 68.50 g; The meat portion is 86.00%. When compared to the nutritional value content in sweet potatoes based on the color it turns out differently. According to Suprapta (2013) in Arixs (2006), the nutritional content of fresh sweet potato based on the color of the tuber flesh in 100 grams of edible material is as follows:

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Table 1.Nutritional content of fresh sweet potato based on the color of the tuber flesh in 100 grams of ingredients

Nutrition	white sweet potato	Yellow sweet potato	Purple sweet potato
Starch (%)	28.79	24.47	22, 64
Reducing sugar (%)	0.32	0.11	0.30
Fat (%)	0.77	0.68	0.94
Protein (%)	0.89	0.49	0.77
Water (%)	62.24	68.78	70.46
Vitamin C (mg / 100 g)	28.68	25.00	21.43
Vitamin A (SI)	60.00	9,000.00	-
Anthocyanins (mg / 100 g)	-	-	110.51

Source: Suprapta (2003) in Arixs (2006); Directorate of Nutrition, Ministry of Health RI (1981) within the Directorate Nuts and Tubers (2002).

According to the Directorate of Nutrition, Ministry of the Republic of Indonesia, the composition of nutrients in 100 grams of sweet potato ingredients according to different colors and can be seen as follows:

Table 2. Composition of sweet potatoes nutrition for 100 grams/g

No	Unsur gizi	Ubi ungu	Ubi putih	Ubi kuning
1	Kalori (kal)	123	123	136
2	Protein (g)	1,8	1,8	1,1
3	Lemak (g)	0,7	0,7	0,4
4	Kabohidrat (g)	27,9	27,9	32,3
5	Kalsium (mg)	30	30	57
6	Fosfor (Mg)	49	49	52
7	Zat besi (mg)	0,7	0,7	0,7
8	Natrium (mg)	77	-	5
9	Kalium (mg)	0,9	-	393
10	Niacin (mg)	22	-	0,6
11	Vitamin A (S1)	62	60	900
12	Vitamin B (mg)	0,7	0,9	900
13	Vitamin C (mg)	22	22	0,04
14	Air (g)	62,5	68,5	-
15	BBD (%)	75	86	-

Source: Direktorat Gizi Departemen Republik Indonesia (1991)

Sweet potato harvest age can also affect the quality of its nutritional content. Herlin et al (2013) studied which ones were best harvested from 110, 120, 130, and 140 days of age. Their results found that the age of harvest for purple sweet potato was 130 days at best. Based on observations of purple sweet potato harvesting age, highly influence of moisture, ash, fat, protein, vitamin C, and carbohydrates. Based on the research results obtained, purple sweet potato on a 130-day harvesting date contains levels of proximate, i.e. contain a moisture content of 78,869%, ash content of 0,010%, fat content of 0,329%, protein levels of 1,038%, vitamin C levels of 0,145 mg / 100 g, and carbohydrate levels of 19,611. According to Gusti Setiavani, sweet potato is one type of food that can support family nutrition

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improvement programs. The caloric value is quite high, which is 1213 calories / 100 grams. The content of carotenoids (beta-carotene) in sweet potatoes, can function as antioxidants. The antioxidants stored in purple sweet potatoes are able to block the rate of cell damage by free radicals. The combination of beta-carotene and vitamin E in sweet potatoes work together to ward off strokes and heart attacks. Its beta carotene prevents strokes while vitamin E prevents blockages in blood vessels, thus preventing heart attacks. Public knowledge is still lacking about processed sweet potato products so that the shape and presentation of sweet potatoes are still very limited to frying, boiling and steaming. From the results of the author's study, there are various forms of research results from processed sweet potatoes that can be developed including purple sweet potato flour, sweet potato noodles, sweet potato bakpao, sweet potato ice cream, sweets, dodol, sweet potato chips, sweet potato french fries, crackers Sweet potato, instant prebiotic powder, instant sweet potato rice, sweet potato tape, soft drinks, jam, sweet potato bread, various wet cakes, sweet potato brownies, sweet potato cake, sweet potato biscuits, purple sweet potato ice cream. It's just that you still use a mixture of sweet potato flour and flour. The process is very long and long. Therefore, the authors have developed a product using fresh purple sweet potato, so that the processing and processing time is faster and the nutritional content is not lost too much. The color of the tuber meat affects its suitability for processing into food products. The results of the author's study showed that the tubers were colored reddish purple is great for cakes, noodles and juices. Dark purple (dark) tubers are suitable for raw materials for flour and natural dyes. Therefore, Biang sweet potato has the potential as raw material for purple sweet potato flour. According to Ginting et al (2015), sweet potato which has a low water content and deep purple flesh color has a fairly high dry matter content. Ginting also explained that the tubers that have dark purple flesh actually have a higher starch content, making them suitable for processing into flour. Biang sweet potato variety has the highest starch content, namely 66%, so it has the potential as a raw material for making purple sweet potato flour. The decrease in starch content in purple sweet potato flour was caused by the cooking process, so that the starch in the sweet potato was converted into sugar and the reducing sugar content increased. The decrease in anthocyanin levels is caused by prolonged exposure to heat. Anthocyanins are pigments that are sensitive to heat (Koswara, 2013). According to Gina, the main parameters supporting the raw material for flour are moisture content, starch content, reducing sugar content, and anthocyanin content. The criteria for good purple sweet potato as raw material for purple sweet potato flour are low water content, low reducing sugar content, high starch content, and high anthocyanin content (Gina Firgianti, 2018). Nida El Husna (2013) and Winarno (2004) found that thick purple sweet potato contains 61.85 mg / 100 g anthocyanins, 17 times greater than the anthocyanin content of light purple sweet potato, namely 3.51 mg / 100g. The predominant color of sweet potato flesh correlates with the anthocyanin content, the darker the purple color, the higher the anthocyanin

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content. The antioxidant content of light purple sweet potato 56.64% and dark purple sweet potato 59.25% are also different. The older the purple color the better because the higher the anthocyanin and antioxidant content. The processing process reduces the anthocyanin content of fresh purple sweet potato, but the resulting product still leaves the anthocyanin content as a source of antioxidants. The processed products that most effectively maintained the anthocyanin content according to Winarno were steamed sweet potatoes, namely 34.14% (dark purple) and 42.16% (light purple), while processed chips showed the greatest decrease in anthocyanins, namely 95.21% (dark purple).) and 88.47% (light purple). Therefore, the authors chose the steamed processing method in this study. Overall, the decrease in antioxidant activity was proportional to the decrease in the anthocyanin content of each type of processed sweet potato, except for chips processed products. The best heating process to prevent the breakdown of antioxidants and other flavonoids compounds is treatment with a high temperature, but a short period of time. This is because the antioxidant components are not heat resistant. Chips products experienced the highest decrease in anthocyanin levels due to the use of high temperatures and very thin material sizes. Purple sweet potato (Ipomoea batatas L. Poir) is one type of sweet potato that is commonly found in Indonesia besides being white, yellow and red. The high content of anthocyanins in root tubers and anthocyanins provides excellent health effects, namely as an antioxidant and anticancer due to electron deficiency in their chemical structure so that they are reactive to counteract free radicals, and can significantly counteract the formation of fat peroxides. Anthocyanins can be degraded by several factors, namely: pH, temperature, structure, light, oxygen, solvents, enzymes and metal ions, and purple sweet potato anthocyanins function as natural antioxidants. Temperature and heating time have a strong effect on anthocyanin stability. Anthocyanins are a group of pigments that are soluble in water and play a role in giving fruits and vegetables their purple, red or blue color. According to Herlin Yaningsih et al. (2013), the results showed that the harvest age of purple sweet potato was very influential on moisture, ash, fat, protein, vitamin C, and carbohydrate content. At 130 days of harvest, purple sweet potato was the best research result, with the highest carbohydrate content. In this condition, sweet potato contains 78.869% water content, 0.010% ash content, 0.329% fat content, 1.038% protein content, 0.145 mg / 100 g vitamin C content, 19.611% carbohydrate content.

RESEARCH METHODS

This research is a qualitative and quantitative research in the form of field experiments that aims to evaluate the development of various products from purple sweet potato with a touch of technology and its application in field. In the early stages, researchers developed a prototype model of pumpkin pizza and pumpkin bread through experimental trials in the laboratory to obtain a prototype model of locally based products. This research uses a Joke Model with components: initial

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findings, development design, model / prototype realization and formation, testing, validation and revision, model implementation and application, evaluation (results), product dissemination. Experimental research in the laboratory is a type of quasi one shot case (XO) experiment, but the second year experimental research is continued with the implementation and application of the model in the field as a model application, using surveys and field practice and as a participant.

Time and place of research: Field research was carried out in La'bo and Daya villages in 2019. The technology tools used were Re-Noodle and Re-Bread (see picture).

Materials used: Deep fresh purple sweet potato which is old and of good quality for pizza, sweetbread, panada, poding and purple sweet potato jam for field testing. The development of pizza, sweet bread, panada is innovated from a pumpkin pizza recipe that has been tested and produced in the field by replacing pumpkin with fresh purple sweet potato that has been steamed and crushed until smooth. So the five products do not use dry sweet potato flour like the product that has been researched by several researchers previously. Likewise, poding and purple sweet potato jam are made from deep purple sweet potatoes that are fresh and steamed and then mashed. The size is according to the recipe that has been provided. Why use fresh, deep purple sweet potato. Because the taste, nutritional content, high antioxidants, original aroma, and easier / faster processing method. Its application / development in the field was innovated from the best results of the pumpkin pizza laboratory test, then given a touch of technology with the appropriate tools (Re-Noodle and Re-Bread).

Research design: starting with experimental trials in the laboratory involving five students and has produced a prototype of the best product model. Initially, making pizza and pumpkin bread from pumpkin flour and fresh pumpkin with marketable factory-based product standards favored by panelists and consumers so that it is ready to be marketed. From the results of this product, its development was innovated and replaced the fresh pumpkin with fresh purple sweet potato. Poding and jam are also innovated from poding and pumpkin jam which is made from fresh, dark purple sweet potato. Experiments in the field were successful because the results were very favorable to panelists, the public, consumers and the quality was suitable for the product to be marketed. The unit of analysis consisted of five kinds of products from the results of experimental trials in the field, namely purple sweet potato pizza, purple sweet potato panada, purple sweet potato bread, purple sweet potato poding, and purple sweet potato jam. The purple sweet potato used is fresh purple sweet potato, not purple sweet potato flour. The criteria are a test of hedonic and hedonic quality on taste, color, aroma, texture, and product quality. The research procedure starts from a survey for initial findings about ingredients, theoretical and recipe studies, model development design, realization and the formation of product models prototypes that have been tested in the laboratory and the best results chosen are applied to research in the field. The study population was dark and dark

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purple sweet potato, good, fresh and readily available in the regions. The research sample was taken incidentally, available in the area as much as 12 kg. The implementing population is PKK mothers and housewives in La'bo and Panti Asuhan Daya villages, who wish to develop businesses or become entrepreneurs. The number of participants is 20 people. The field research was carried out in La'bo' of North Toraja Village and the orphanage in Daya' Makassar.

he data collection used in this study was the organoleptic test for the hedonic test and the hedonic quality test by a panel of 20 people. Involving four students, one entrepreneur, and a research team. Using triangulation of data sources with a checklist instrument, observation, interviews, document analysis, FGD, assessing the follow-up of the application development of a product model prototype from the results of previous laboratory tests. Organoleptic test is used for hedonic test and hedonic quality test. This method has been used in previous research because it is in accordance with the assessment of food products (Saludung, 2018).

Organoleptic test of purple sweet potato pizza, purple sweet potato panada, purple sweet potato bread, and purple sweet potato jam, to test hedonic and hedonic quality with criteria of taste, color, aroma, texture, and product quality, researched in the field by providing training made the product and the results were researched, the data were collected by 20 trained and untrained panelists. This method has been done using data triangulation. The collection of field data using organoleptic tests by trained and untrained panelists is a test based on a sensing process to measure the acceptance of a product and its quality, with five main criteria, namely taste, color, texture, aroma and quality. These criteria are assessed for hedonic test and hedonic quality. According to Stone, the organoleptic test is a food product test based on the level of preference and willingness to use a product. Organoleptic tests, sensory tests or sensory tests are methods of testing using the human senses as the main tool for measuring product acceptance. Organoleptic testing requires a panelist for assessment who can be selected from 7 types of panelists, namely: (1) Individual expert, (2) Small expert panel, (3) Trained panel, (4) Untrained panel, (5) Slightly trained panels, (6) Consumer panels, (7) Children panels. In this field research, 20 panelists were selected and used, namely a combination of trained, untrained, and consumer panelists. The data were processed and analyzed using descriptive analysis with the help of the SPSS program. Qualitative data were analyzed qualitatively. The research team and students were fully involved in experimental activities in the field. Achievement indicators are purple sweet potato pizza, purple sweet potato panada, purple sweet potato bread, purple sweet potato poding, and purple sweet potato jam, with taste, color, aroma, texture and factory quality that are liked by the public, consumers and are worthy of being marketed. The taste is special and matches the quality of industrial products, with local ecosystem-based raw materials. The goal is to produce products that are preferred by the community and marketable, as well as teaching materials for entrepreneurship training for the community and students.

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RESEARCH RESULTS AND DISCUSSION

The results of the evaluation research on the development of various products from purple sweet potato with innovations with a touch of technology have resulted in various products, namely purple sweet potato pizza, purple sweet potato panada, sweet potato bread, purple sweet potato poding and purple sweet potato jam, as a result of product development. The process is as follows:

Figure 2: Materials, tools used and product development process

Data from experimental research in the field using organoleptic tests to assess the level of liking and product quality (hedonic and hedonic quality) were carried out by 20 trained and untrained panelists, namely PKK lecturers, PKK students, PKK mothers and consumers using a score sheet in the form of a checklist that has been validated. The results of the analysis presented are data from the latest results of the product model application that has been recommended by the panelists to be made into a product prototype because the quality is considered good and very liked by the panelists. Summary The results of the last field data analysis are presented in full in the following table. Assessment rubric based on hedonic test and hedonic quality test, using a scale of 1-5.

Description: Organoleptic test for hedonic assessment and hedonic quality with a scale 1-5. Hedonic Assessment Rubric: 1 = Very Unlike, 2 = Don't Likes, 3 = Somewhat Likes, 4 = Likes, 5 = Very Likes. Hedonic Quality Assessment Rubric: 1 = Very Not Good, 2 = Not Good, 3 = Somewhat Good, 4 = Good, 5 = Very Good. Summary of the organoleptic test results by panelists for hedonic and hedonic quality of Various Products: Pizza, panada, sweet bread, poding and purple sweet potato jam can be seen in the tables 1,2,3.

Tabel 1. Summary of Hedonic Asesement Result of The Last Field Experimental Research

Product Models	Aroma					Color					Texture					Flavor				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. Purple sweet potato pizza /f	0	0	11	12	2	0	0	6	14	5	0	0	5	13	7	0	0	5	15	5
%	0	0	44	48	8	0	0	24	56	20	0	0	20	52	28	0	0	20	60	20
2.Purple sweet potato panada/f	0	0	4	14	7	0	0	4	16	5	0	0	0	12	13	0	0	0	12	13
	0	0	16	44	40	0	0	16	40	4	0	0	0	40	60	0	0	0	56	44

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%																					
3. Purple potato sweet bread /f	0	0	11	12	2	0	0	6	14	5	0	0	5	13	7	0	0	5	15	5	
%	0	0	44	48	8	0	0	24	56	20	0	0	20	52	28	0	0	20	60	20	
4. Purple sweet potato poding/f	0	0	4	14	7	0	0	4	16	5	0	0	0	12	13	0	0	0	12	13	
%	0	0	16	44	40	0	0	16	40	4	0	0	0	40	60	0	0	0	56	44	
5. Purple sweet potato Selei /f	0	0	4	14	7	0	0	4	16	5	0	0	0	12	13	0	0	0	12	13	
%	0	0	16	44	40	0	0	16	40	4	0	0	0	40	60	0	0	0	56	44	

Source: Analysis Result of Organoleptic Test. Data From Panelists (2019)

Tabel 2. Summary of Hedonic Quality Asessement Result of The Last Field Experimental Research

Product Models	Aroma					Color					Texture					Flavor				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. Purple sweet potato pizza /f	0	0	11	12	2	0	0	6	14	5	0	0	5	13	7	0	0	5	15	5
%	0	0	44	48	8	0	0	24	56	20	0	0	20	52	28	0	0	20	60	20
2.Purple sweet potato panada/f	0	0	4	14	7	0	0	4	16	5	0	0	0	12	13	0	0	0	12	13
%	0	0	16	44	40	0	0	16	40	4	0	0	0	40	60	0	0	0	56	44
3. Purple potato sweet bread /f	0	0	11	12	2	0	0	6	14	5	0	0	5	13	7	0	0	5	15	5
%	0	0	44	48	8	0	0	24	56	20	0	0	20	52	28	0	0	20	60	20
4. Purple sweet potato poding/f	0	0	4	14	7	0	0	4	16	5	0	0	0	12	13	0	0	0	12	13
%	0	0	16	44	40	0	0	16	40	4	0	0	0	40	60	0	0	0	56	44
6. Purple sweet potato Selei /f	0	0	4	14	7	0	0	4	16	5	0	0	0	12	13	0	0	0	12	13
%	0	0	16	44	40	0	0	16	40	4	0	0	0	40	60	0	0	0	56	44

Source: Analysis Result of Organoleptic Test . Data From Panelists (2019)

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Summary of Mean Analysis Result of Hedonic and Hedonic Quality Asessement.
Result of The Last Field Experimental Research (Table 1) and (Table 2)

Product Models	Aroma		Color		Texture		Flavor	
	Hedoni	Mutu Hedonik	Hedonił	Mutu Hedonik	Hedoni	Mutu Hedonik	Hedonik	Mutu Hedonił
1.Purple sweet potato pizza	3.52	3,76	3,76	4,16	4,12	4.44	4,64	4,72
2.Purple sweet potato panada	3,64	3,88	3,96	4,00	4,44	4.24	4,72	4.78
3.Purple potato sweet bread	3.52	3,76	3,76	4,16	4,12	4.44	4,64	4,72
4.Purple sweet potato poding	3,64	3,90	3,96	4,00	4,44	4.24	4,72	4.88
5.Purple sweet potato Selei	3,64	3,95	3,96	4,30	4,64	4.46	4,82	4.90

The results of the evaluation of the last experimental research in the field based on the results of the final data analysis can be explained that the quality and acceptance of the panelists and consumers towards the aroma, color, texture, flavor of the purple sweet potato product is very good. In terms of aroma, color, texture, taste, they are generally well-liked and of excellent quality. Evaluation of pizza, panada, sweet bread, poding, and purple sweet potato jam, in terms of aroma, color, texture, taste, has been liked and judged by panelists and consumers for its good quality and suitable for production as well as for marketing. The average value of quality in general for the two products was 3.76 - 4.90 and the average value of the preference level was generally 3.52 - 4.82. The aroma is still a bit low but the color, taste and texture are very good. Why low because pizza, panada, sweetbreads, poding, and purple sweet potato jam, the aroma is not very attractive but the more original the better. The frequency and percentage of likes is quite high. Likewise, the quality is considered to be good and feasible for the product to be marketed. However, the aroma will continue to be continuously improved to suit industry standards. The conclusion is that the results of research are generally very favorable both in terms of aroma, color, texture, flavor, and the quality is assessed as good from the experimental results as presented above. The panelists liked purple and natural colors because they were considered not to be contaminated with chemicals. No need to dye anymore because the color is natural so it is more attractive. The product is being continuously developed and its aroma, texture and taste are continuously improved. It was produced and distributed on October 1, 2018 and the application was developed in the second year of field research from June-12-15 August 2019. This is a product model that has been developed and continues to be developed further.

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CONCLUSION

From the results of the survey in the community, purple sweet potato is found in all regions in Indonesia. The benefits are very large and the nutritional content is high but it is often abundant in the season and is simply wasted because it is not processed due to ignorance of the community to process it into productive materials with high economic value. The use of purple sweet potato as a raw material for pizza, panada, sweet bread, jam, poding, and as a substitute for staple food is unknown even though its nutritional content meets the needs and is very much in community gardens in Makassar, Sometimes it is abundant and damaged even though the trees are very much growing in Makassar and its utilization potential is enormous. Therefore, the authors chose purple sweet potato as one of the important ingredients to research and the results were socialized as well as motivating the public to use it. The author has conducted field trials through community empowerment training for home industry development and it turns out to be very popular. Students are involved to become developers, reformers, and agents of innovation for the community to use local food in their environment as a source of productive income, as well as reduce unemployment and create new jobs to improve people's lives. The results that have been achieved are products of pizza, panada, sweet bread, jam, poding, that have been given a touch of factory-based technology so that the products have high economic value, are innovative and can be entrepreneurs. This product is based on technopreneurship. If these are produced and utilized properly, the community can have new jobs as well as a more productive, environmentally based source of income whose raw materials are cheap and easy to obtain but which can be processed into superior products with marketable national industry standards.

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