SOCIALIZATION OF ANTHOCYANIN CONTENT OF PURPLE SWEET POTATO TUBERS IN BONGKASA PERTIWI VILLAGE TO INCREASE PUBLIC KNOWLEDGE

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ABSTRACT

Purple sweet potato (*Ipomoea batatas* L.) is a local food that contains anthocyanins and has the potential to be developed as a food source with functional value. However, information about the anthocyanin content of purple sweet potatoes in Bongkasa Pertiwi Village and its comparison with other areas in Bali is not widely known to the public. To increase public knowledge about anthocyanins and bioactive characteristics of purple sweet potatoes through research-based socialization and describing participants' responses to activities. The activity was held on July 18, 2026 in Bongkasa Pertiwi Village, Abiansemal District, Badung Regency, Bali, involving 50 participants. Socialization was carried out through the presentation of materials, presentation of research data, discussions, and questions and answers. Knowledge was measured using *a pre-test* and *post-test* which each consisted of 15 questions. The difference in scores was analyzed using *a paired t-test* at α=0.05, while the characteristics and responses of participants were analyzed descriptively. The average knowledge score increased from 45.2 ± 12.4 to 80.8 ± 9.6, with a difference of 35.6 points (*t=18.42;* df=49; *p<0.001)*. The proportion of participants with very high knowledge categories increased from 0% to 56%, while the low category decreased from 24% to 0%. Based on socialized research data, the anthocyanin content of purple sweet potatoes from Bongkasa Pertiwi was 1.17 ± 0.02 mg/g, higher than Mayungan, Tabanan (0.76 ± 0.01 mg/g) and Ubud, Gianyar (0.11 ± 0.01 mg/g). As many as 92% of participants were active in the discussion, 96% considered the material easy to understand, and 90% were interested in developing purple sweet potatoes as a value-added product. Socialization based on research results was followed by an increase in participants' knowledge and a positive response to the use of purple sweet potato as a local food commodity.

Keywords: Anthocyanins, Purple Sweet Potatoes, Local Food, Socialization, Community Knowledge.

1. INTRODUCTION

Bongkasa Pertiwi Village is located in Abiansemal District, Badung Regency, Bali Province, with community activities that are related to agriculture and the use of various local food commodities. Purple sweet potato (Ipomoea batatas L.) is one of the commodities used by the community as food. In addition to being a food source, purple sweet potatoes contain bioactive compounds, especially anthocyanins, which give the bulbs a purple color and have biological activities that have been widely studied (Saini et al., 2024). This potential is not fully known to the public, especially information about the anthocyanin content and its differences based on cultivation location.

Anthocyanins are a group of flavonoid pigments that have antioxidant activity and have the potential to play a role in modulating oxidative and inflammatory processes (Yun et al., 2024). Research Jawi et al., (2015) shows the potential antioxidant and anti-inflammatory activity of purple sweet potato extract from Bali, while Jawi et al., (2016) reported antioxidant and antihypertensive activity in animal models. Other studies have also shown the potential biological activity of purple sweet potatoes related to lipid metabolism and oxidative processes (Heriwijaya et al., 2020). The content of bioactive compounds in plants can vary based on the variety and growing environment conditions, including soil characteristics, temperature, light intensity, and water availability. Thus, the location of cultivation can be related to variations in the content of bioactive compounds in the same commodity.

Non-communicable diseases are still one of the public health problems in Indonesia. Based on the 2018 Basic Health Research, the prevalence of hypertension in the population aged ≥18 years based on blood pressure measurement results reached 34.1%, while the prevalence of diabetes mellitus based on doctor's diagnosis and examination results reached 2.0% and 10.9% based on the results of blood sugar levels (Kemenkes RI, 2018). The high burden of these diseases reinforces the importance of promotive and preventive efforts, including increasing knowledge about food choices that have nutritional value and bioactive components. In this context, purple sweet potatoes have the potential to be introduced not only as a foodstuff, but also as a local commodity that has bioactive characteristics that can be recognized based on the results of the research (Srinivasan & Rana, 2025).

The results of discussions with village officials and health cadres showed that there was a need for information about the anthocyanin content of purple sweet potatoes cultivated in Bongkasa Pertiwi Village and its comparison with other areas in Bali. Information about the potential benefits of anthocyanins is also not widely known by the public. This condition shows a gap between the results of research on the bioactive characteristics of purple sweet potatoes and the knowledge of the community as a user of local commodities. Therefore, this community service activity aims to increase public knowledge about anthocyanins and the potential of purple sweet potatoes through socialization based on research results, conveying comparisons of anthocyanin content based on cultivation locations, and identifying participants' responses and involvement during activities.

2. PROBLEMS AND QUESTION FORMULATION

The identification conducted with partners in Bongkasa Pertiwi Village indicated limited public knowledge regarding the anthocyanin content of locally cultivated purple sweet potatoes and its variation compared with products from other cultivation areas in Bali. Participants also had limited understanding of anthocyanins, their dietary sources, potential health relevance, and factors influencing their concentration. This condition was reflected by the finding that most participants had not previously received information regarding functional foods. In addition, research findings on the anthocyanin, total phenolic, and total flavonoid contents of purple sweet potatoes had not been adequately disseminated to the community and therefore had limited use as a source of information for recognizing the potential of local food commodities. Based on these conditions, the activity focused on disseminating research findings through scientific socialization, discussion, and presentation of comparative data from different cultivation areas.

a. Research Questions

The questions addressed in this activity were as follows:

1) Is there a difference in participants' knowledge regarding anthocyanins and purple sweet potatoes before and after the socialization?
2) How does the anthocyanin content of purple sweet potatoes from Bongkasa Pertiwi compare with that from other cultivation areas in Bali based on previous research data presented during the socialization?
3) What are the participants' responses to and level of participation in the socialization concerning the anthocyanin content and potential utilization of purple sweet potatoes as a local food commodity?

b. Objectives

This activity aimed to:

1) assess the difference in participants' knowledge regarding anthocyanins and purple sweet potatoes before and after the socialization;
2) describe the comparative anthocyanin content of purple sweet potatoes from Bongkasa Pertiwi and other cultivation areas in Bali based on previous research data; and
3) assess participants' responses to and participation in the socialization concerning the anthocyanin content and potential utilization of purple sweet potatoes as a local food commodity.

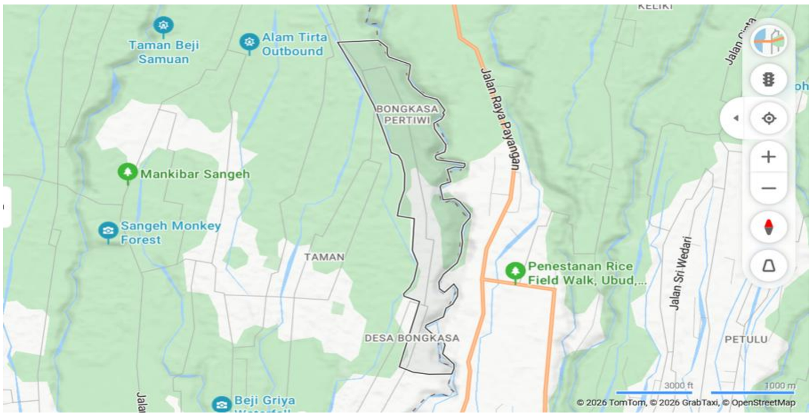

Figure 1. Location Map of Bongkasa Pertiwi Village

Community service activities were carried out in Bongkasa Pertiwi Village, Abiansemal District, Badung Regency, Bali Province. Bongkasa

Pertiwi Village is an area that is mostly used for agricultural and plantation activities. These conditions support the development of various local food commodities, including purple sweet potatoes cultivated by local communities. Geographically, Bongkasa Pertiwi Village is located in the northern part of Badung Regency and borders the Gianyar Regency area. The characteristics of the area dominated by agricultural land make this village relevant as a location for community service activities that focus on increasing public knowledge about the potential of local food, especially the anthocyanin content and functional value of purple sweet potatoes. The location of the activity is about 23–25 km from the Faculty of Medicine, Udayana University with a travel time of about 45–60 minutes via the Denpasar–Abiansemal–Bongkasa route.

3. LITERATURE REVIEW

Purple sweet potato (*Ipomoea batatas L.*) is a local food commodity containing bioactive compounds, particularly anthocyanins, which contribute to its characteristic purple color. The major anthocyanins identified in purple sweet potatoes include cyanidin and peonidin derivatives (Maqsood et al., 2025). Anthocyanins possess antioxidant activity through mechanisms involving the scavenging of reactive oxygen and nitrogen species, metal-ion chelation, and modulation of endogenous antioxidant systems associated with oxidative and inflammatory processes (Sadowska-Bartosz & Bartosz, 2024). Experimental studies have reported antioxidant, anti-inflammatory, antihypertensive, and lipid-modulating activities of purple sweet potato extracts. Purple sweet potato extract from Bali has been reported to reduce oxidative stress and interleukin-1 levels in hypercholesterolemic animal models and to demonstrate antihypertensive activity in hypertensive rats (Jawi et al., 2015; Jawi et al., 2016). Other studies have reported improvements in lipid profiles and reductions in cholesterol levels following administration of purple sweet potato preparations (Heriwijaya et al., 2020; Jawi et al., 2020). However, these findings should be interpreted according to the level of available evidence, particularly because several reported biological effects originate from experimental studies rather than direct clinical evidence in humans.

The concentration of anthocyanins and other bioactive compounds in purple sweet potato is influenced by genetic characteristics and environmental conditions. Cultivation temperature, soil characteristics, light intensity, water availability, variety, and other agroecological factors may affect the biosynthesis and accumulation of phenolic compounds and anthocyanins. Kurata & Kobayashi, (2023) reported an association between cultivation temperature and anthocyanin accumulation in purple sweet potato, while Im et al., (2021) demonstrated differences in phenolic composition and antioxidant activity among varieties and physical portions of the tuber. Recent research on phenylpropanoid metabolism further indicates that environmental conditions and plant developmental processes contribute to the regulation of secondary metabolites (Ninkuu et al., 2025). Consequently, characterization of bioactive compounds according to cultivation location is relevant for identifying the chemical characteristics of local food commodities. Differences in anthocyanin concentration, however, should not be interpreted directly as differences in health benefits because biological activity is also determined by compound stability, processing, digestion, bioavailability, and intake. Such data are therefore more appropriately used as scientific information for food literacy, local commodity development, and further standardization.

Dissemination of research findings to the community is important to bridge scientific evidence and public understanding of local food resources. Information concerning bioactive compounds needs to be presented in a form that can be understood and related to community experience and food utilization practices. Previous community-based activities involving purple sweet potato have demonstrated the relevance of educational and participatory approaches in introducing its nutritional and functional potential (Jawi, Sutirta Yasa, et al., 2024; Sumadewi et al., 2025). From a public health perspective, increasing knowledge regarding nutritious and bioactive local foods can support promotive and preventive efforts, particularly in encouraging healthier dietary practices and strengthening awareness of non-communicable disease prevention (WHO, 2025; Fekete et al., 2025). Nevertheless, information regarding the variation of anthocyanin content according to cultivation location remains limited at the community level, including in areas where purple sweet potatoes are cultivated as a local commodity. Therefore, research-based socialization that presents comparative data on anthocyanin content from different cultivation areas can provide relevant scientific information for the community, strengthen health literacy, and support the appropriate development of purple sweet potato as a value-added local food commodity.

4. METHODS

The community service activity will be held on July 18, 2026 in Bongkasa Pertiwi Village, Abiansemal District, Badung Regency, Bali. The activity uses a participatory scientific socialization method through the delivery of material, presentation of research data, discussion, and question and answer. The material provided includes anthocyanin characteristics, anthocyanin content of purple sweet potato, comparison of content based on cultivation location, potential biological activity, and agroecological factors related to the content of bioactive compounds. The results of previous research on the anthocyanin content, total phenolics, and total flavonoids in purple sweet potatoes from several regions in Bali were used as information materials in activities and presented through tables and visual media.

The activity was attended by 50 participants, consisting of village officials, posyandu cadres and health cadres, PKK administrators and farmer women's groups, as well as communities involved in agricultural activities and local food utilization. Participants were determined purposively through coordination with the Bongkasa Pertiwi Village apparatus. Participants' knowledge was assessed using pre-test and post-test, each consisting of 15 multiple-choice questions that included the definition and characteristics of anthocyanins, anthocyanin food sources, anthocyanin content by region, potential health benefits, and factors affecting the content. Participants' responses to the activity were assessed using a feedback questionnaire which included ease of understanding the material, the benefits of information, interest in the development of purple sweet potato as a value-added product, the desire to share information with family and neighbors, and the need for similar activities. Participant participation was recorded based on attendance and involvement in discussions and Q&A.

The implementation of activities includes the preparation, implementation, and evaluation stages. The preparation stage includes coordination with village officials, determination of participants, preparation of materials, and preparation of evaluation instruments. The implementation stage began with registration and pre-test, followed by the delivery of material, presentation of comparative data on anthocyanin content between regions, discussion, and questions and answers. After the entire series of materials and discussions are completed, participants fill out a post-test and feedback questionnaire. The evaluation stage was carried out by comparing pre-test and post-test scores. Knowledge score data was analyzed using a paired t-test at the significance level of α=0.05 and presented in the form of averages, standard deviations, medians, minimum-maximum values, and category distribution. Data on participant characteristics, participation, and response to activities were presented descriptively in the form of frequency and percentage. Data on anthocyanin content, total phenolics, and total flavonoids used in the material are previous research data and do not include the results of laboratory examinations carried out in service activities.

5. RESULTS OF RESEARCH AND DISCUSSION

a. Results

The community service activity was held on July 18, 2026 in Bongkasa Pertiwi Village, Abiansemal District, Badung Regency, Bali, and was attended by 50 participants. All registered participants attended until the activity was completed so that the attendance rate reached 100%. The characteristics of the participants are presented in Table 1.

Table 1. Characteristics of Socialization Activity Participants

Characteristics	n	%
Gender		
Male	12	24
Women	38	76
Age		
25–35 years old	14	28
36–45 years old	22	44
46–60 years old	14	28
Final education		
Elementary/equivalent	4	8
Junior High School/Equivalent	5	10
High School/equivalent	32	64
Diploma/Bachelor's	9	18
Jobs		
Farmer	26	52
Housewives	14	28
Village apparatus/cadres	6	12
Self-employed/others	4	8
The Cultivation of Purple Sweet Potatoes		

Characteristics	n	%
<1 year	10	20
1–3 years	18	36
>3 years	22	44
Functional food information exposure		
Never before	35	70
Ever	15	30

Participants were dominated by women (76%), age group 36–45 years old (44%), and high school graduates/equivalent (64%). As many as 52% of the participants worked as farmers and 44% had more than three years of purple sweet potato cultivation experience. Although most of the participants were directly related to agricultural activities, as many as 70% stated that they had never received information about functional food before. This condition shows that the activity reaches groups that are relevant to the development of local commodities as well as having a need for scientific-based information.

1) Changes in Participants' Knowledge Before and After Socialization

Participants' knowledge was assessed using 15 multiple-choice questions that included the definition and characteristics of anthocyanins, food sources, anthocyanin content by region, potential health benefits, and factors that affect their content. The distribution of scores before and after the activity is presented in Table 2.

Table 2. Distribution of Knowledge Scores Before and After Socialization

Categories	Pre-test n (%)	Post-test n (%)
Low (0–30)	12 (24)	0 (0)
Medium (31–60)	33 (66)	4 (8)
Height (61–80)	5 (10)	18 (36)
Very high (81–100)	0 (0)	28 (56)
Total	**50 (100)**	**50 (100)**

Before socialization, most of the participants were in the medium knowledge category (66%), while 24% were in the low category and 10% were in the high category. There were no participants in the very high category. After the activity, the distribution shifts to a higher category; As many as 56% of participants reached the very high category and 36% were in the high category, while participants in the low category were no longer found.

Table 3. Comparison of Knowledge Scores Before and After Socialization

Parameters	Pre-test	Post-test	Changes	p-value
Average ± elementary school	45.2 ± 12.4	80.8 ± 9.6	35,6	<0.001*
Median	44,0	82,0	38,0	—

Minimum-maximum	22–72	62–95	—	—

*Paired t-test, α=0.05.

The average knowledge score increased from 45.2 ± 12.4 to 80.8 ± 9.6, with a difference of 35.6 points or an increase of 78.7% compared to the initial score. The paired t-test showed a significant difference in score between before and after the activity ($t=18.42$; $df=49$; $p<0.001$).

Changes are also seen in all aspects of knowledge. The score on the aspect of anthocyanin content between regions increased from 38.7 to 81.5, while the aspect of health benefits increased from 40.5 to 78.2. The aspect of anthocyanin food sources obtained the highest score after the activity, which was 86.3.

Table 4. Score Changes Based on Knowledge Aspects

Knowledge aspect	Pre-test	Post-test	Changes
Definition and characteristics of anthocyanins	48,3	82,5	+34,2
Food sources of anthocyanins	52,1	86,3	+34,2
Anthocyanin content between regions	38,7	81,5	+42,8
Health benefits of anthocyanins	40,5	78,2	+37,7
Factors affecting content	46,3	75,8	+29,5

The largest increase in score was in the aspect of anthocyanin content between regions of 42.8 points, followed by the aspect of health benefits of 37.7 points. The improvement showed that the material was directly related to the characteristics of local commodities and their potential benefits provided a considerable change in knowledge to the participants.

Figure 2. Scientific Socialization on Purple Sweet Potato Anthocyanins in Bongkasa Pertiwi Village.

2) Comparison of Anthocyanin Content of Purple Sweet Potato Between Regions

Comparison of anthocyanin content was one of the main materials presented to the participants. The data used came from the results of a study on the characteristics of bioactive compounds of purple sweet potatoes at three cultivation locations in Bali.

Table 4. Bioactive Compound Content of Purple Sweet Potato Based on Cultivation Location

Cultivation location	Total phenolics (mg GAE/g)	Total flavonoids (mg QE/g)	Anthocyanins (mg/g)
Bongkasa Pertiwi, Badung	**57.58 ± 0.34**	8.79 ± 0.21	**1.17 ± 0.02**
"Come on, Help	17.30 ± 0.28	4.47 ± 0.19	0.76 ± 0.01
Ogun, Gianyar	46.66 ± 0.31	9.30 ± 0.24	0.11 ± 0.01

Source: results of previous research used as socialization material.

Data showed that samples from Bongkasa Pertiwi Village had the highest anthocyanin content, which was 1.17 ± 0.02 mg/g, compared to Mayungan of 0.76 ± 0.01 mg/g and Ubud of 0.11 ± 0.01 mg/g. The information was used to introduce participants to the variation of bioactive characteristics based on the cultivation location. These differences are the basis for discussions about the importance of agroecological conditions in determining the characteristics of local food commodities.

It should be emphasized that the data in Table 5 are the results of previous research used as socialization materials, not the results of laboratory examinations carried out in service activities on July 18, 2026. Thus, service activities function as a means of disseminating research results to the community.

Figure 3. Figure 3. Discussion on Anthocyanin Content of Purple Sweet Potatoes by Cultivation Location.

3) Participant Response and Participation

Participant involvement was seen during the delivery of materials, discussions, and questions and answers. As many as 46 out of 50 participants (92%) were recorded to ask questions or provide responses during the discussion session. Participants' responses to the next activity were assessed through a feedback questionnaire.

Table 5. Participants' Responses to the Implementation of Socialization

Statement	Agree n (%)	Neutral n (%)	Disagree n (%)
Socialization materials are easy to understand	48 (96)	2 (4)	0 (0)
Useful information in everyday life	47 (94)	3 (6)	0 (0)
Interested in developing purple sweet potato as a value-added product	45 (90)	4 (8)	1 (2)
Will share information with family and neighbors	44 (88)	5 (10)	1 (2)
Similar activities need to be continued	46 (92)	3 (6)	1 (2)

Most of the participants gave a positive response to the implementation of the activity. As many as 96% stated that the material was easy to understand, 94% considered the information provided useful in daily life, and 90% stated that they were interested in developing purple sweet potatoes as a value-added product. As many as 92% of participants also stated that activities with similar topics need to be continued.

The discussion with the participants showed that there was an interest in developing the use of purple sweet potato as a local commodity. Several forms of follow-up that emerged in the discussion included the development of farmer groups, the processing of purple sweet potato-based products, and cooperation with universities to support quality testing. These findings are aspirations and follow-up plans that arise during the activity, not the achievements of the program that have been realized.

Figure 4. Interactive discussion of participants regarding the use of purple sweet potatoes as a local food commodity.

b. Discussion

1) Changes in Participants' Knowledge Before and After Socialization

The results of the evaluation showed a change in participants' knowledge after the delivery of material based on research results. The average score increased from 45.2 ± 12.4 to 80.8 ± 9.6 with a difference of 35.6 points and a statistically significant difference (*$p<0.001$). A shift was also seen in the distribution of categories, from the dominance of the moderate category before the activity (66%) to the very high category after the activity (56%). The findings show that information about anthocyanins, characteristics of purple sweet potatoes, and variations in content by location can be understood by participants after being given in a structured manner and using examples that are close to the food source they are familiar with.* These results are in line with Jawi et al., (2024) and Sumadewi et al., (2025), which shows that the delivery of information on the use of purple sweet potatoes in the context of local health and food can increase community engagement and understanding. However, the results of this activity need to be distinguished from studies that used a design with a control group, because the observed changes in scores could not completely separate the effect of socialization from other factors that might also affect the results of the evaluation (Ma et al., 2025).

The largest change was in the aspect of anthocyanin content between regions, from a score of 38.7 to 81.5, followed by the aspect of health benefits from 40.5 to 78.2. On the other hand, the aspect of factors affecting content showed the smallest increase, from 46.3 to 75.8. This pattern can be understood from the level of complexity of the material. Information on differences in anthocyanin levels between regions is more easily linked to concrete data presented in the form of comparisons, while the relationship between environmental conditions and biosynthesis of bioactive compounds requires a more abstract understanding of plant and environmental interactions. These findings are in line with Kurata and Kurata & Kobayashi, (2023) and Ninkuu et al., (2025), explaining that anthocyanin accumulation is influenced by various environmental factors and the regulation of secondary metabolism. Thus, the increase in knowledge does not occur uniformly across the whole material; Information that is concrete and directly related to local conditions tends to be easier to understand than complex biological concepts (Zekker et al., 2025).

Changes in scores based on participant characteristics showed an increase in the entire group, with a relatively close average difference. These findings suggest that the approach to delivering material is acceptable to participants with different age, education, and cultivation backgrounds. However, the differences between the groups cannot be interpreted as differences in effectiveness based on participant characteristics because this study was not designed to test the interaction between individual characteristics and changes in scores. This is important because the ability to receive information is not solely determined by formal education, but also by experience, material relevance, and the way the information is delivered. Participatory approaches that connect scientific knowledge with everyday experience become relevant in that context, as similar approaches have been reported by (Sumadewi et al., 2025).

2) Comparison of Anthocyanin Content of Purple Sweet Potato Between Regions

The results of the study used as socialization material showed that there was a difference in the anthocyanin content in purple sweet potatoes from three cultivation locations in Bali. Samples from Bongkasa Pertiwi Village had anthocyanin levels of 1.17 ± 0.02 mg/g, higher than Mayungan, Tabanan of 0.76 ± 0.01 mg/g and Ubud, Gianyar of 0.11 ± 0.01 mg/g. These differences give an idea that the bioactive quality of plant food is not only related to the type or variety of plants, but can also be influenced by the conditions of the place where it grows. These findings are in line with Kurata & Kobayashi, (2023), which suggests that environmental conditions, including soil temperature, are associated with the accumulation of anthocyanins in purple sweet potatoes. Ninkuu et al., (2025) It also explains that temperature, light, soil characteristics, and other environmental factors can influence the secondary metabolic pathways involved in the formation of phenolic compounds and anthocyanins.

Differences between locations are also seen in the total content of phenolics and flavonoids. Bongkasa Pertiwi has a total phenolic of 57.58 ± 0.34 mg GAE/g, while Mayungan is 17.30 ± 0.28 mg GAE/g and Ubud is 46.66 ± 0.31 mg GAE/g. In contrast, the highest total flavonoid content was found in Ubud (9.30 ± 0.24 mg QE/g), followed by Bongkasa Pertiwi (8.79 ± 0.21 mg QE/g) and Mayungan (4.47 ± 0.19 mg QE/g). This pattern suggests that the advantages of a location do not apply uniformly to all groups of bioactive compounds. Bongkasa Pertiwi shows higher levels of anthocyanins and phenolics, but not the location with the highest levels of flavonoids. These findings show that characterizing a commodity based on a single parameter is not enough to describe its overall bioactive profile. Im et al., (2021) It also shows variations in phenolic composition and antioxidant activity in purple sweet potatoes based on variety and growing conditions.

These differences have relevance for the development of local commodities, but their interpretation needs to be done proportionately. Higher anthocyanin levels indicate superiority in the measured chemical parameters, but do not directly prove that consumption of sweet potatoes from a region will have greater health effects. Biological activity is influenced by the type of compound, its stability during processing and digestion, the amount of consumption, and its bioavailability. Maqsood et al., (2025) and Sadowska-Bartosz & Bartosz, (2024) describes the various biological activities of anthocyanins, including antioxidant capacity and modulation of inflammatory processes, but some of the evidence still comes from experimental research. Therefore, in the context of this devotion, information regarding anthocyanin levels is more appropriately used to introduce The bioactive quality potential of local commodities rather than as a basis for making therapeutic claims.

The submission of comparative data provides added value to service activities because participants not only get information about the benefits of anthocyanins in general, but also know the characteristics of commodities in their environment. This knowledge can be the initial basis for strengthening local food identities and developing evidence-based products. However, further standardization is still needed if the information is to be used for the development of functional food products, as bioactive content can be affected by variety, cultivation conditions, harvest age, storage, and processing. Thus, the results of inter-regional characterization are more appropriate to be seen as initial information for the development and standardization of commodities, rather than as a determination of the final quality of a product.

3) Participants' Response and Participation in Activities

Participants' responses showed good acceptance of the socialization approach used. As many as 92% of participants engaged in discussions through questions or responses, while 96% stated that the material was easy to understand. As many as 94% considered the information provided useful in daily life and 92% stated that similar activities needed to be continued. The findings show the suitability between the material provided and the needs of the participants, especially because the information conveyed is directly related to commodities that have been known and used in daily life. These results are in line with an adult learning approach that places experience and practical relevance as important elements in the learning process (Sumadewi et al., 2025).

The response to commodity development opportunities is also quite high. As many as 90% of participants expressed interest in developing purple sweet potatoes as a value-added product and 88% expressed willingness to share information with family or neighbors. Compared to the initial condition when 70% of participants had never received information about functional foods, the results showed a change not only in knowledge scores, but also in acceptance of the information provided. However, interest and intention to develop products cannot be equated with behavior change or successful business development. Follow-up assistance is needed to assess whether the knowledge and interests translate into real practices of cultivation, processing, consumption, or product development (Azeem et al., 2026).

Overall, the three findings show a complementary relationship. Increased knowledge shows a change in understanding after socialization, Comparative data of anthocyanin content provides a scientific basis for the characteristics of local commodities, while Participant Response show acceptance of information and opportunities for its utilization. These findings reinforce the importance of disseminating research results in a community context, especially when the research results are directly related to the food resources available in the local environment. This approach can shorten the gap between the production of knowledge in higher education and its utilization by the community, as shown in the purple sweet potato-based empowerment activity by Jawi et al., (2024) and Sumadewi et al., (2025).

However, this activity has limitations. The evaluation used *a one-group pretest-posttest* design without a comparison group, so that the increase in scores mainly showed changes that occurred after the activity and could not be used to ascertain the magnitude of the effect of causal socialization. In addition, the evaluation is carried out immediately after the activity so that it does not reflect knowledge retention or behavior change in the long term. The data on the anthocyanin content used in the socialization also came from previous research and not the results of tests carried out in community service activities. Therefore, the sustainability of the program needs to be directed to the evaluation of knowledge in the next period, assistance in the use of commodities, and periodic testing of the quality of materials and products. This approach will strengthen the continuity between research results, community capacity building, and the development of local food potential.

6. CONCLUSION

Research-based socialization increased participants' knowledge regarding anthocyanins and purple sweet potatoes, with the mean score increasing from 45.2 ± 12.4 to 80.8 ± 9.6 ($p<0.001$). The anthocyanin content of purple sweet potatoes from Bongkasa Pertiwi was 1.17 ± 0.02 mg/g, higher than that reported for Mayungan and Ubud based on previous research data presented during the activity. Participants also showed positive responses and active involvement, with 92% participating in discussions and 90% expressing interest in developing purple sweet potato as a value-added local food product. These findings indicate that research-based socialization can support community knowledge and awareness of the bioactive characteristics and potential utilization of local purple sweet potatoes. Further studies should evaluate the long-term retention of participants' knowledge, standardize anthocyanin analysis across cultivation areas, and assess the feasibility of developing purple sweet potato-based products.

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