Rozirwan ROZIRWAN <rozirwan@unsri.ac.id>

[SPEKTA] Submission Acknowledgement

1 pesan

Hayati Mukti Asih, Ph.D <spekta@ie.uad.ac.id> 30 November 2023 pukul 23.19
Kepada: Rozirwan <rozirwan@unsri.ac.id>

Rozirwan:

Thank you for submitting the manuscript, "Training on Making Mangrove-Based Beauty Soap Innovation Products in Sungsang IV Village, South Sumatra" to SPEKTA (Jurnal Pengabdian Kepada Masyarakat : Teknologi dan Aplikasi). With the online journal management system that we are using, you will be able to track its progress through the editorial process by logging in to the journal web site:

Manuscript URL: http://journal2.uad.ac.id/index.php/spekta/authorDashboard/submission/9463
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If you have any questions, please contact me. Thank you for considering this journal as a venue for your work.

Hayati Mukti Asih, Ph.D

Rozirwan ROZIRWAN <rozirwan@unsri.ac.id>

[SPEKTA] Editor Decision

2 pesan

spekta ie <spekta@ie.uad.ac.id> 2 Oktober 2024 pukul 20.48
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Rozirwan, Tengku Zia Ulqodry, Wike Ayu Eka Putri, Gusti Diansyah, Yoga Winarta, Redho Yoga Nugroho:

We have reached a decision regarding your submission to SPEKTA (Jurnal Pengabdian Kepada Masyarakat : Teknologi dan Aplikasi), "Training on Making Mangrove-Based Beauty Soap Innovation Products in Sungsang IV Village, South Sumatra".

Our decision is: Revisions Required
The reviewers have indicated that the manuscript needs to be improved according to the recommendations before publication. Please carefully address the issues raised in the comments (please see below), and submit your revised version by October 12, 2024.

Please, also provide a separate "response to the reviews" letter, in which you outline each change made (point by point, in red colour) as raised in the reviewer comments, and provide a suitable rebuttal to each reviewer comment, which is not addressed in the revised version of your manuscript.

Please modify your manuscript and save as (with changes made in manuscript marked in red color) and send back to us.

Reviewer A:
Recommendation: Revisions Required

General Comments

he initiative to utilize mangrove resources for beauty liquid soap production in Sungsang IV Village is commendable. It highlights the potential of integrating local resources with sustainable economic development. Here's a review and suggestion for improvement:
1. Follow-up Support: Establishing follow-up sessions or a community forum where participants can share experiences, ask questions, and get continued assistance would enhance long-term success.
2. Diversified Products: In addition to beauty liquid soap, consider introducing other mangrove-based products such as candles, lotions, or eco-friendly packaging. This could expand economic opportunities and sustain local interest.
3. Marketing and Business Skills: Include a module on marketing, branding, and entrepreneurship. Teaching the participants how to package, market, and sell their products would empower them to create a sustainable local business model.
4. Environmental Education: Integrate lessons on the importance of mangrove conservation and sustainable harvesting practices to ensure that the local ecosystem remains healthy and that the exploitation of resources is balanced with conservation.
5. Collaboration with Local Stakeholders: Partnering with local businesses, tourism, or government agencies could provide additional channels for product distribution and create a broader impact on the community’s economy.

Abstract

add the date of implementation and how many are involved in the community service.

Introduction

1. Lack of Specific Data on Antioxidant Properties: While the potential antioxidant benefits of S. caseolaris are mentioned, there is a need for more detailed scientific data or references to studies that quantify these properties. Including specific findings or comparisons to other known antioxidant sources

would strengthen the argument.
2. Potential for Scaling and Market Development: The review could benefit from an exploration of the market potential for mangrove-based beauty products. Providing information on how this product could be positioned locally or even on a broader scale (e.g., eco-friendly markets) would add value to the overall project vision
3. Community Engagement: The document touches on the community's limited understanding but does not provide sufficient insight into how to address this gap. It would be beneficial to outline specific strategies for raising awareness and training the community in sustainable practices and product development

Methods/Analytichal Framework

Author need to improve the methods
author need to add the flow diagram of the community service

Results and discussion

The discussion section needs to be described scientifically. Kindly frame it along the following lines:
i. Main findings of the present study;
ii. Comparison with other studies;
iii. Implication and explanation of findings;
iv. Strengths and limitations.

References

CONCLUSION
i. Update the conclusion to include the newly formulated theoretical contributions;
ii. Mention the limitations of the study and prospects for future research;
iii. Summarize the key results in a compact form and re-emphasize their significance;
iv. Summarize how the article contributes to new knowledge in the domain.

REFERENCES
It is important to add some recent work (2021-2024) to the literature review. At least 10 new references should be added to article.

Clarity of Presentation

Good

Article Organization

Enough

Originality

Enough

Relevancy

Good

Contribution

Enough

Depth of research/study

Enough

Quality of writting

Enough

Recommendation of Reviewer

Revision

If the article need to be send to other publisher, please give suggestionIf the article is rejected, please give the reason(s)----------

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Reviewer C:
Recommendation: Revisions Required

General Comments

• Comment: While descriptive, the title could be more concise and engaging.
• Suggestion: Consider simplifying it while maintaining its informative nature. For example, "Mangrove-Based Beauty Soap: A Training Initiative for Sungsang IV Village, South Sumatra."
o Grammar: Ensure consistency in verb tense, particularly in the method and results sections.
o Tone: Strengthen the academic tone by avoiding colloquial phrases and ensuring that all claims are backed up by citations.

Abstract

o Background: Make the issue/problem more concise.
o Method: Be specific about the demonstration and training methods used.
o Results: Include quantitative data if possible to strengthen the impact of your findings.
o Conclusion: Conclude with a clear statement about the success of the initiative and its broader implications.

Introduction

o Conciseness: Some information about Sungsang Village's geographical location and demographics is repeated. Streamline these sections.
o Contextualization: Clearly articulate the gap in the current literature regarding the underutilization of mangroves for beauty products.
o Research Significance: Strengthen the statement on how your research contributes to local economic empowerment and environmental sustainability.

Methods/Analytichal Framework

o Participant Selection: Specify criteria for selecting participants (e.g., socioeconomic background, previous experience, gender).
o Training Structure: Provide more details about how the training sessions were divided, including duration and frequency.
o Evaluation Design: Describe the pre- and post-test instruments, how knowledge was measured, and any statistical analyses used to interpret the results.

Results and discussion

o Graphical Data: Include more graphs or tables that quantitatively show the improvement in knowledge post-training. This adds rigor to your discussion.
o Discussion: Further explore the implications of your findings. Discuss how this project can be expanded or adapted for other coastal communities with similar resources.
o Contextualization: Link your results back to broader issues, such as the sustainable development goals (SDGs) or local policy-making related to mangrove conservation and community development.

References

o Update Sources: Include more recent studies (post-2020) to reflect the current state of research in community-based environmental initiatives.
o Consistency: Ensure that the citation format is consistent throughout (APA or another style as per journal guidelines).

Clarity of Presentation

Enough

Article Organization

Enough

Originality

Enough

Relevancy

Enough

Contribution

Enough

Depth of research/study

Enough

Quality of writting

Minimal

Recommendation of Reviewer

Revision

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[Kutipan teks disembunyikan]

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Response to Reviewers

Reviewer #A	Response to Reviewer
Highlights	
Abstract	
Add the date of implementation and how many are involved in the community service.	We have added the implementation date and the number of participants involved. That is on September 25-26, 2024 with 40 participants.
Introduction	
Lack of Specific Data on Antioxidant Properties: While the potential antioxidant benefits of S. caseolaris are mentioned, there is a need for more detailed scientific data or references to studies that quantify these properties. Including specific findings or comparisons to other known antioxidant sources would strengthen the argument.	Lack of Specific Data on Antioxidant Properties: I have incorporated specific scientific data and references regarding the antioxidant properties of Sonneratia caseolaris. The revised text now includes quantifiable findings, such as the levels of flavonoids and phenolic acids detected in the leaves, as well as their antioxidant activity measured through methods like DPPH and FRAP assays. This comparison to well-known sources like green tea and vitamin C strengthens the argument for the bioactive potential of S. caseolaris.
Potential for Scaling and Market Development: The review could benefit from an exploration of the market potential for mangrove-based beauty products. Providing information on how this product could be positioned locally or even on a broader scale (e.g., eco-friendly markets) would add value to the overall project vision	Potential for Scaling and Market Development: I have added a section discussing the market potential for mangrove-based beauty products, highlighting the increasing demand for eco-friendly and natural cosmetics. This discussion includes insights into positioning S. caseolaris products locally and in broader markets, providing a clearer vision for the potential economic benefits of these innovations.
Community Engagement: The document touches on the community's limited understanding but does not provide sufficient insight into how to address this gap. It would be beneficial to outline specific strategies for raising awareness and training the community in sustainable practices and product development	Community Engagement: I have detailed specific strategies for raising community awareness and training on sustainable practices and product development. This includes plans for educational programs and workshops that will empower local residents with the necessary skills and knowledge to utilize S. caseolaris effectively, promoting

	both environmental sustainability and economic resilience.
Materials and Methods	
Author need to improve the methods	Improvement of Methods: We have revised the methods section to provide a clearer and more detailed description of the community service activities. This includes outlining the various stages of the service activity, from location monitoring and preparation of materials to the structured training sessions and evaluation processes. We ensured that the method was described step-by-step to enhance clarity and replicability.
Author need to add the flow diagram of the community service	Addition of Flow Diagram: A detailed flow diagram illustrating the stages of the community service process has been added (Figure 1). This diagram visually represents the sequential steps undertaken during the service activities, ensuring that readers can easily understand the implementation plan.
Results & Discussion	
The discussion section needs to be described scientifically. Kindly frame it along the following lines: i. Main findings of the present study; ii. Comparison with other studies; iii. Implication and explanation of findings; iv. Strengths and limitations.	**Main Findings**: We have elaborated on the main findings of our study, emphasizing the significant increase in participants' knowledge and skills regarding liquid soap production from Sonneratia caseolaris mangrove leaf extract. **Comparison with Other Studies**: We included a comparative analysis of our results with findings from previous studies that demonstrate the effectiveness of mangrove extracts as natural antibacterial agents in cosmetic products. This section highlights the consistency of our results with the existing literature. **Implications and Explanation of Findings**: The implications of our findings regarding community empowerment and economic development were expanded. We discussed how the training can foster local industries and promote sustainable resource management among coastal communities. **Strengths and Limitations**: We provided a detailed assessment of the strengths of our study, including the participatory approach

	and practical demonstrations. We also addressed the limitations related to varying participant backgrounds and how this may affect knowledge retention.
CONCLUSION	
i. Update the conclusion to include the newly formulated theoretical contributions;	Theoretical Contributions: We have incorporated the newly formulated theoretical contributions by emphasizing the novel use of *Sonneratia caseolaris* leaves in eco-friendly beauty product development. This research adds to the body of knowledge by showcasing how underutilized mangrove species can be harnessed for economic and environmental benefits, particularly in rural coastal communities.
ii. Mention the limitations of the study and prospects for future research;	Study Limitations: We acknowledge the limitations of this study, particularly the short duration of the training program and its localized scope, which may affect the long-term sustainability and wider application of the findings. This limitation has been mentioned, and we propose that future research explore extended training sessions, longitudinal studies, and potential scalability to other coastal regions with similar resources.
iii. Summarize the key results in a compact form and re-emphasize their significance;	Key Results: The revised Conclusion now succinctly summarizes the significant findings, particularly the increase in participants' knowledge post-training, the potential for economic empowerment through mangrove-based products, and the success of the hands-on, participatory approach.
iv. Summarize how the article contributes to new knowledge in the domain.	Contribution to Knowledge: We have clarified how this research contributes to new knowledge by presenting an effective model for community-based training in sustainable resource utilization. The integration of scientific methods and local knowledge demonstrates a pathway for empowering communities while promoting environmental conservation and sustainable development.

Reviewer #C	Response to Reviewer
Highlights	
Abstract	
Background: Make the issue/problem more concise.	Background: We have revised the background to make the issue more concise. The focus is now on the specific problem of underutilized *Sonneratia caseolaris* in Sungsang Village and the community's limited knowledge regarding its economic potential, particularly for beauty liquid soap production.
Method: Be specific about the demonstration and training methods used	Method: We have clarified the method section to specifically describe the demonstration process, which included hands-on training on liquid soap production from mangrove leaves. Detailed steps involved product prototype demonstrations, direct assistance, and practical sessions where participants applied the knowledge immediately.
Results: Include quantitative data if possible to strengthen the impact of your findings.	Results: To strengthen the impact of the findings, we have included quantitative data showing the significant improvement in participants' knowledge. For instance, the pre-test and post-test results demonstrated a clear increase in understanding, with knowledge levels shifting from "low" to "better" across all participants. We have provided graphs to visually depict this improvement.
Conclusion: Conclude with a clear statement about the success of the initiative and its broader implications.	Conclusion: The revised conclusion now clearly states the success of the initiative. It highlights not only the increased knowledge and skills of the participants but also the broader implications for economic empowerment and sustainable resource management in the community. This training is presented as a model that could be replicated in other coastal communities to promote sustainable practices and enhance livelihoods.
Introduction	
Conciseness: Some information about Sungsang Village's geographical location and	Conciseness: I have streamlined the sections regarding the geographical location and

demographics is repeated. Streamline these sections.	demographics of Sungsang Village to eliminate redundancy and improve clarity. The information is now presented more concisely while retaining essential details.
Contextualization: Clearly articulate the gap in the current literature regarding the underutilization of mangroves for beauty products.	Contextualization: I have articulated the gap in current literature regarding the underutilization of mangroves for beauty products more clearly. This revised section emphasizes the need for innovation in utilizing *S. caseolaris* beyond its traditional uses, particularly focusing on its potential as a source of bioactive compounds for beauty products.
Research Significance: Strengthen the statement on how your research contributes to local economic empowerment and environmental sustainability.	Research Significance: I have strengthened the statement regarding how this research contributes to local economic empowerment and environmental sustainability. The revisions underscore the dual benefits of developing mangrove-based products: supporting the local economy while promoting responsible environmental stewardship.
Materials and Methods	
Participant Selection: Specify criteria for selecting participants (e.g., socioeconomic background, previous experience, gender).	Participant Selection: We have specified the criteria used for selecting participants in the revised manuscript. Participants were chosen based on their socioeconomic background, previous experience in crafting or home-based production, and a balanced representation of gender, ensuring a diverse and inclusive training environment.
Training Structure: Provide more details about how the training sessions were divided, including duration and frequency.	Training Structure: We have provided additional details about the training sessions, including how they were divided. The training comprised four sessions, each lasting approximately three hours and conducted bi-weekly. Each session focused on different aspects of liquid soap production, including an introduction, detailed production instructions, hands-on practice, and a review and evaluation phase.
Evaluation Design: Describe the pre- and post-test instruments, how knowledge was measured, and any statistical analyses used to interpret the results.	Evaluation Design: The evaluation design has been elaborated upon. We described the pre- and post-training questionnaires used as instruments to measure participants'

	knowledge of liquid soap production. These instruments assessed their initial understanding before training and their knowledge gains after completion. Furthermore, we indicated that statistical analyses were employed to interpret the results of the pre- and post-tests, allowing us to evaluate the effectiveness of the training comprehensively.
Results	
Graphical Data: Include more graphs or tables that quantitatively show the improvement in knowledge post-training. This adds rigor to your discussion.	**Graphical Data**: In response to the suggestion for including more graphical data, we have added additional graphs (Figures 3) that quantitatively illustrate the improvement in participants' knowledge and skills post-training. This enhances the rigor of our findings and provides clear visual representation of the results.
Discussion: Further explore the implications of your findings. Discuss how this project can be expanded or adapted for other coastal communities with similar resources.	**Expanded Discussion**: We further explored the implications of our findings, discussing how the knowledge and skills gained can be applied to similar coastal communities with comparable resources. This section now includes recommendations for adapting the training program to other regions, ensuring broader applicability.
Contextualization: Link your results back to broader issues, such as the sustainable development goals (SDGs) or local policy-making related to mangrove conservation and community development.	**Contextualization**: We have linked our results back to broader issues, specifically the Sustainable Development Goals (SDGs), such as Goal 12 (Responsible Consumption and Production) and Goal 14 (Life Below Water). Additionally, we highlighted the importance of local policy-making in mangrove conservation and community development, positioning our study within the larger framework of sustainable practices.

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Training on Making Mangrove-Based Beauty Soap Innovation Products in Sungsang IV Village, South Sumatra

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Keywords
Beauty Soap;
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ABSTRACT

Background: In an effort to enhance the utilization of mangrove forests based on local coastal resources, a community service initiative was conducted in Sungsang Village, Banyuasin Regency, on 25-26 September 2024. The training focused on teaching 40 participants how to produce beauty liquid soap from *Sonneratia caseolaris* (mangrove) leaf extract. This initiative aimed to address the community's limited knowledge of the economic potential of mangroves while promoting sustainable practices.
Contribution: This activity aims to improve the technical skills of making beauty liquid soap from mangrove plants as an effort to optimize the utilization of mangrove forest vegetation in Sungsang Village.
Method: The method of this service activity is a training in making liquid soap through product prototype demonstration and direct assistance.
Results: In general, the participants' knowledge about making beauty liquid soap from mangroves has increased after undergoing training activities.
Conclusion: The pre-test and post-test evaluation of the 40 participants showed a significant improvement in their understanding, with the evaluation graph showing a shift from low to better levels of knowledge. While there were variations in the level of understanding about beauty liquid soap.

INTRODUCTION

Based on its geographical location, Sungsang Village, Banyuasin Regency, is situated at coordinates 104°52'59.5" to 104°55'6.6" East, in the Musi River Estuary, adjacent to the Bangka

Strait. The village covers an area of 178,369.20 km² and is home to 1,471 families, with most residents working as fishermen due to the abundant marine resources [1],[2]. The village also contains extensive mangrove forests, including *Sonneratia caseolaris* (pedada), a species commonly found along the coast [3]. While the fruits of *S. caseolaris* have traditionally been used for food and beverages, other parts of the plant, such as the leaves, remain underutilized despite their bioactive potential [4],[5].

A significant gap in the utilization of *S. caseolaris* lies in the community's limited knowledge and access to technology for processing it into higher-value products. An initial survey revealed that the local population lacks awareness of the antioxidant properties found in *S. caseolaris* leaves, which contain compounds like flavonoids and phenolic acids known for their antioxidant activity [6]. Studies have demonstrated that the antioxidant activity of *S. caseolaris* leaves, measured through DPPH and FRAP assays, is comparable to that of well-known antioxidants such as green tea and vitamin C, indicating their potential to be harnessed for eco-friendly beauty products.

Liquid soap, created through a saponification process between potassium hydroxide (KOH) and vegetable oil, offers several advantages, including ease of use, efficiency, and bacterial resistance [7],[8]. By leveraging the antioxidant properties of *S. caseolaris* leaves, this research addresses gaps in product development while aligning with the rising demand for sustainable and natural cosmetics in both local and international markets. The eco-friendly beauty product market is projected to grow at a compound annual growth rate (CAGR) of 5.6% through 2026, presenting significant opportunities for *S. caseolaris*-based innovations.

This study contributes to local economic empowerment by offering alternative livelihoods through mangrove-based product innovations. To address the community's limited understanding of *S. caseolaris*, targeted educational programs, and workshops will be organized to teach sustainable harvesting techniques, the extraction of antioxidant compounds, and product development strategies. Collaborations with local organizations and educational institutions will facilitate knowledge transfer and provide ongoing support, enabling the community to transition into eco-friendly product manufacturing. This approach exemplifies how the development of eco-friendly beauty products can foster both economic resilience and environmental sustainability.

METHOD

The community service activities were carried out in Sungsang IV Village, Banyuasin Regency, South Sumatra, in September 2023. The target partners were community groups from Sungsang IV Village consisting of approximately 40 people. Participant selection criteria include socio-economic background, previous experience in craft activities or home production, and balanced gender representation. This community service activity was assisted by Sungsang IV Village officials, students, and a team of lecturers. The method of implementing this service includes training in liquid soap production through product prototype demonstrations and direct assistance [10].

The stages of community service activities include: 1) Site Monitoring and Preparation: An initial survey was conducted to identify the presence of mangrove plant resources in the surrounding environment, ensuring the availability of raw materials for liquid soap production. Licensing and coordination with local village officials are important for collecting community group data and administrative arrangements; 2) Gradual and Controlled Liquid Soap Making Training: The training session was organized into four sessions, each lasting approximately

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three hours. The sessions include an introduction to liquid soap production, detailed instructions on the production process, hands-on practice, and training review and evaluation; 3) Activity Monitoring and Evaluation: Monitoring was conducted throughout the training to ensure understanding and skill acquisition.

A detailed flowchart of these stages is included to visualize the step-by-step process of the service activities and ensure clarity in the implementation plan (Figure 1). Figure 1. Flowchart of the Community Service Process. Various media aids such as slides, projectors, screens, and brochures were used to deliver the materials manner clearly and engagingly. Educational materials are provided in the form of slides and videos to help participants easily understand the technique of making liquid soap from mangrove leaves [10].

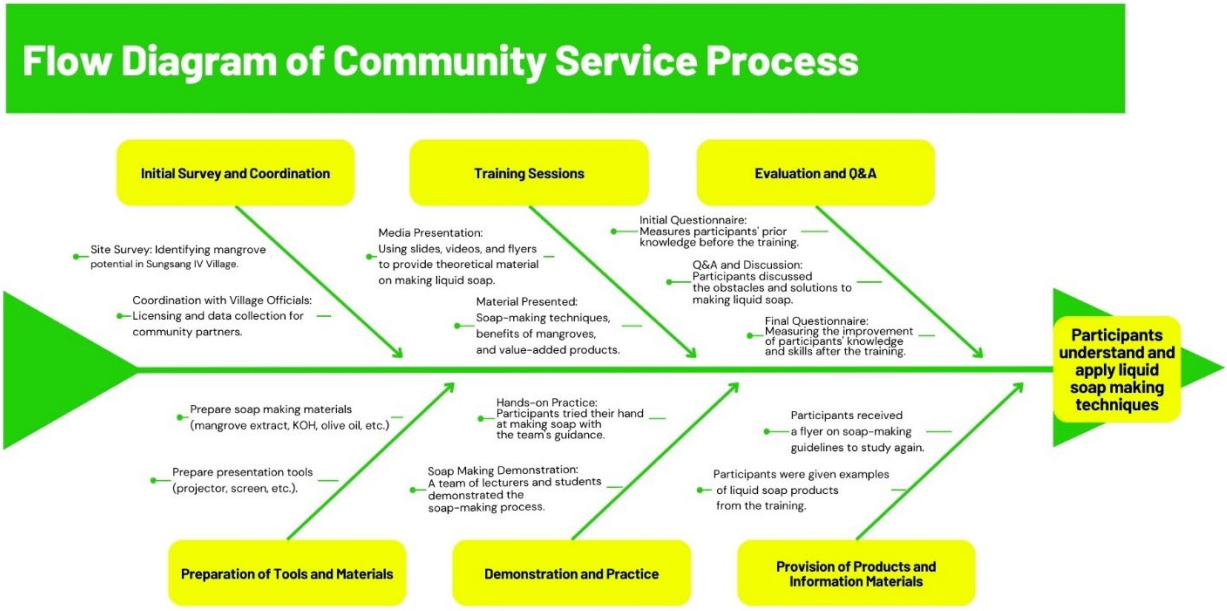

Figure 1. Flow Diagram of Community Service Process

Upon completion, participants received the liquid soap products they had made, along with an educational brochure to reinforce the information learned for relearning. Demonstrations were led by university students, who guided participants through each step in using the tools and materials. Tools and materials used in this activity included mangrove leaf extract, red ginger extract, KOH, distilled water, citric acid, olive oil, glycerin, aminone, food coloring, fragrance, stainless steel bowl, electric stove, and glass jar.

Before the demonstration, the participants filled out a pre-training questionnaire to assess their initial knowledge of liquid soap production. A question and answer session followed, allowing participants to discuss problems and solutions related to liquid soap production and sustainable utilization of mangroves. Afterward, participants were given a post-training questionnaire to evaluate the increased knowledge and skills gained from the community service activity [10], [12].

RESULTS AND DISCUSSION

Training in making liquid soap innovation products is crucial for improving the knowledge and skills of participants/community groups in Sungsang IV Village. The results of the pre-test and post-test evaluations show a significant increase in participants' understanding of the process of making beauty liquid soap from Sonneratia caseolaris mangrove leaf extract. As

demonstrated in Figure 1, the training agenda involved 40 participants from Sungsang IV Village, providing a comprehensive learning experience. The evaluations reflect the effectiveness of the training, indicated by the shift in participants' knowledge from "don't know" to "know" in various aspects of liquid soap production.

To increase the rigor of the research results, graphs were added (Figure 3) that quantitatively illustrate the improvement of participants' knowledge and skills post-training. For example, Figure 6 presents the results of the community service questionnaire showing the percentage increase in understanding of participants' skill attainment, liquid soap characteristics, packaging methods, pricing strategies, composition, and market conditions. This quantitative data underscores the effectiveness of the training program in fostering practical skills and theoretical knowledge.

Figure 2. Providing material for service activities

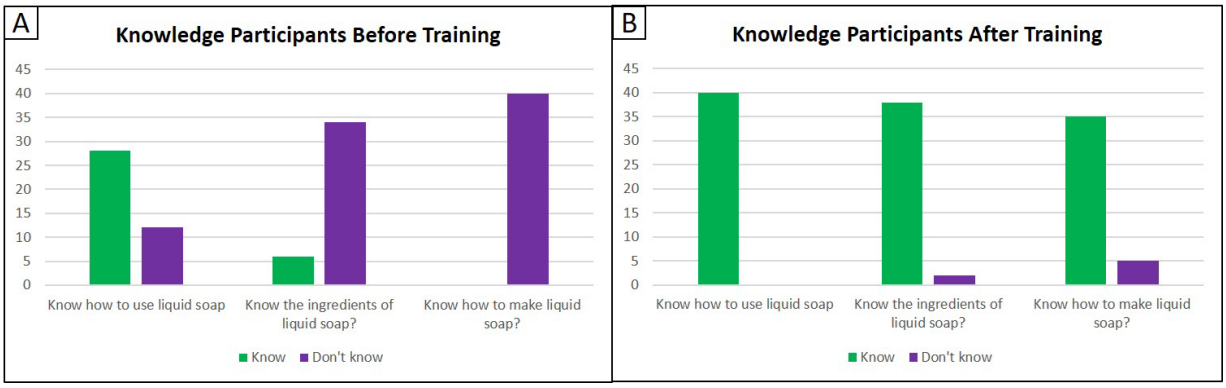

Figure 3. (A) Knowledge participants before training, (B) Knowledge participants after training

The findings of this study align with previous research that highlights the potential of mangrove extracts as natural antibacterial agents in cosmetic products. Similar studies have demonstrated the effectiveness of S. caseolaris in promoting health and reducing reliance on synthetic compounds such as triclosan [15], which are commonly used in commercial liquid soaps but pose health risks due to bacterial resistance and potential allergic reactions [13],[14]. The use of mangrove leaf extracts offers a safer, eco-friendly alternative, reflecting growing trends in sustainable beauty product innovations. Previous works, such as those referenced in [8-9], have shown that using ethanol in the maceration process, followed by rotary evaporation,

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results in a crude extract rich in beneficial secondary metabolites.

The success of this training program has significant implications for the economic empowerment of coastal communities in Sungsang IV Village. By teaching participants how to utilize natural resources such as mangroves, this training contributes to the development of local industry while also raising awareness of the importance of sustainable resource management. The practical skills acquired can be immediately applied to enhance the livelihood of the community, fostering a local business ecosystem centered around environmentally friendly products. Furthermore, the substitution of synthetic chemicals like triclosan with natural alternatives emphasizes the broader movement toward safer cosmetic products, as supported by the discussion in [15-11].

A key strength of this study is the highly participatory approach adopted during the training, which included hands-on demonstrations and active engagement through Q&A sessions, as depicted in Figures 4 and 5. This method proved effective in increasing participant interest and knowledge retention. However, a limitation identified from the post-training evaluation, shown in Figure 4, is the variation in participants' understanding, which may be attributed to differences in educational background and prior experience. This finding suggests that future training programs should consider tailoring the material to accommodate participants' diverse backgrounds, thus improving overall comprehension.

Figure 4. Discussion and Q&A session of service activities

Figure 5. Documentation at the closing of service activities

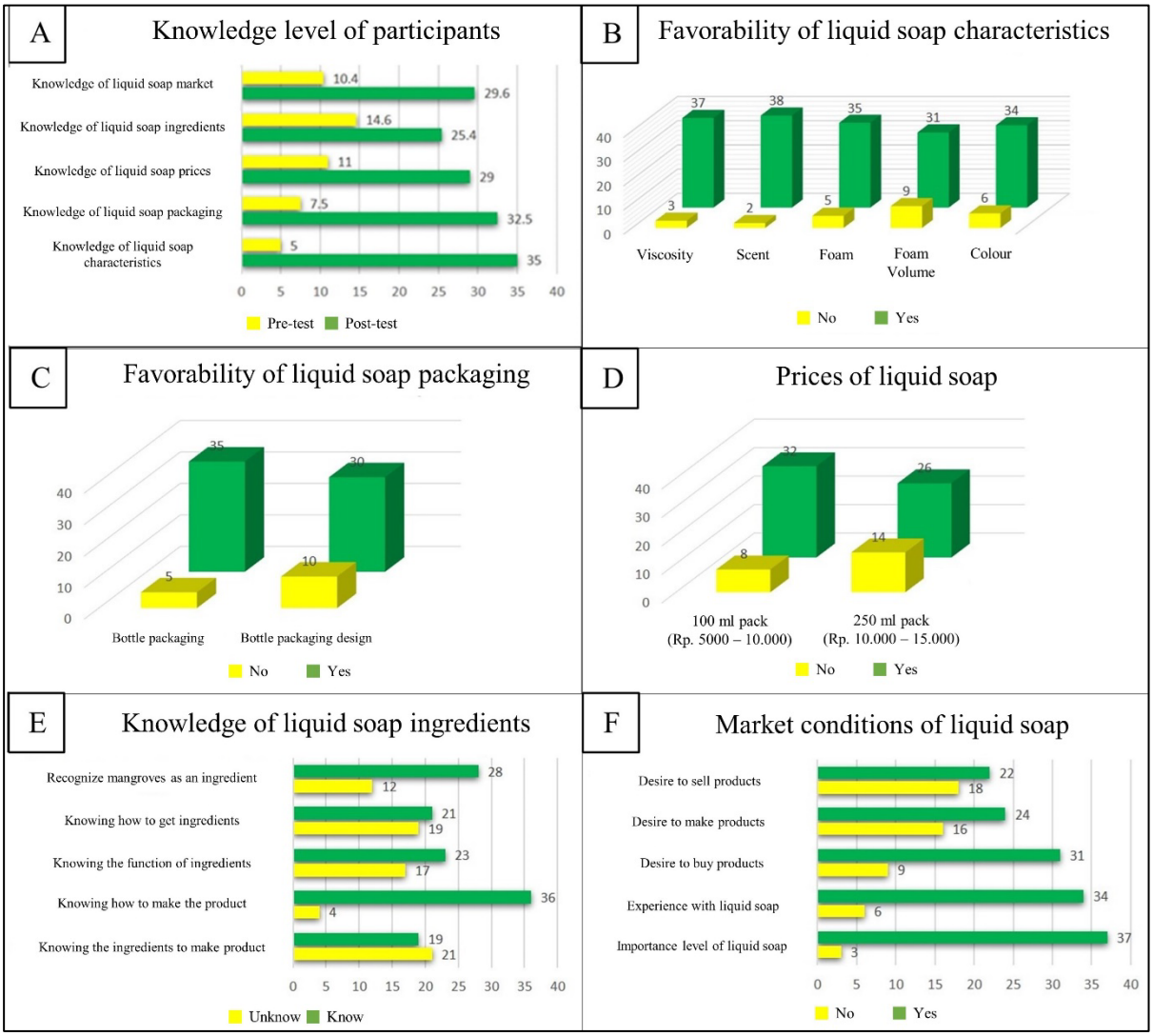

Figure 6. Results of the community service questionnaire, (A) Participants' ability achievements; (B) Characteristics of liquid soap; (C) Liquid soap packaging; (D) Liquid soap price; (E) Liquid soap composition; (F) Liquid soap market conditions

The results of this study highlight the positive impact of using mangrove leaf extracts in the creation of liquid soap, both in terms of practical application and community empowerment. This training program has proven to be a successful initiative for improving local economic opportunities. Moreover, it aligns with Sustainable Development Goals (SDGs) such as Goal 12 (Responsible Consumption and Production) and Goal 14 (Life Below Water), emphasizing the need for sustainable practices in coastal areas. The integration of local policy-making related to mangrove conservation and community development is also essential for the long-term success of such initiatives. Expanding this project to other coastal communities with similar resources could further enhance its impact, promoting sustainable practices and economic resilience in vulnerable regions.

While this training initiative has proven effective, further research and development are necessary to optimize the program's scalability and accessibility, ensuring that similar communities can also benefit from the knowledge and skills gained in sustainable liquid soap production.

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CONCLUSION

The training on making beauty liquid soap from *Sonneratia caseolaris* mangrove leaf extracts, involving 40 participants in Sungsang IV Village, effectively improved their knowledge, as demonstrated by significant pre-and post-test results. Despite variations due to participants' diverse backgrounds, the participatory approach fostered strong engagement and practical skill transfer. This study highlights the economic potential of underutilized mangrove species, contributing to sustainable development goals. Limitations include the study's short duration and localized scope, suggesting future research on long-term impacts and scalability. Overall, it provides a model for sustainable community empowerment and eco-friendly product innovation.

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Acknowledgment

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Editor Decision

6 pesan

spekta ie <spekta@ie.uad.ac.id> 17 Oktober 2024 pukul 10.46
Kepada: rozirwan@unsri.ac.id

Dear Dr Rozirwan

Thank you for your submission to SPEKTA . We appreciate your contribution and are pleased to inform you that your manuscript titled "Training on Making Mangrove-Based Beauty Soap Innovation Products in Sungsang IV Village, South Sumatra" is currently pending acceptance.

To finalize the review process and issue the acceptance letter, we kindly ask you to complete the payment of IDR 750.063 (63 is the last two digits of the manuscript ID) by October 20, 2024.

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Dear Editor,

We would like to confirm that we have successfully completed the payment for the publication fee of our article titled "Training on Making Mangrove-Based Beauty Soap Innovation Products in Sungsang IV Village, South Sumatra". We greatly appreciate the opportunity to publish in your esteemed journal and would like to express our sincere thanks for your assistance throughout the submission process.

Furthermore, we kindly request your support in considering the publication of our article in the upcoming June 2025 issue, if possible. Greatly appreciate your help in accommodating this request.

Thank you once again for your kind assistance, and we look forward to your response.

Warm regards,
[Kutipan teks disembunyikan]
--
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Dear Editor

Terimakasih atas penerimaan artikel kami yang berjudul "Training on Making Mangrove-Based Beauty Soap Innovation Products in Sungsang IV Village, South Sumatra". Apakah artikel kami tersebut bisa diterbitkan pada Volume 4 No 1 (Bulan April 2025) ?

Terimakasih
Mohon informasinya
[Kutipan teks disembunyikan]
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Artikel bapak akan kami terbitkan pada volume 6 no 1 Juni 2025
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Detail transfer

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BIZ ID	20241021BNINIDJA01000 240289204
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Training on Making Mangrove-Based Beauty Soap Innovation Products in Sungsang IV Village, South Sumatra

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ABSTRACT

Background: In an effort to enhance the utilization of mangrove forests based on local coastal resources, a community service initiative was conducted in Sungsang Village, Banyuasin Regency, on 25-26 September 2024. The training focused on teaching 40 participants how to produce beauty liquid soap from *Sonneratia caseolaris* (mangrove) leaf extract.
Contribution: This activity Contributes to improve the technical skills of making beauty liquid soap from mangrove plants as an effort to optimize the utilization of mangrove forest vegetation in Sungsang Village.
Method: The method of this service activity is a training in making liquid soap through product prototype demonstration and direct assistance.
Results: In general, the participants' knowledge about making beauty liquid soap from mangroves has increased after undergoing training activities.
Conclusion: The pre-test and post-test evaluation of the 40 participants showed a significant improvement in their understanding, with the evaluation graph showing a shift from low to better levels of knowledge. While there were variations in the level of understanding about beauty liquid soap.

1. Introduction

Based on its geographical location, Sungsang Village, Banyuasin Regency, is situated at coordinates 104°52'59.5" to 104°55'6.6" East, in the Musi River Estuary, adjacent to the Bangka

Strait. The village covers an area of 178,369.20 km² and is home to 1,471 families, with most residents working as fishermen due to the abundant marine resources [1],[2]. The village also contains extensive mangrove forests, including *Sonneratia caseolaris* (pedada), a species commonly found along the coast [3]. While the fruits of *S. caseolaris* have traditionally been used for food and beverages, other parts of the plant, such as the leaves, remain underutilized despite their bioactive potential [4],[5].

A significant gap in the utilization of *S. caseolaris* lies in the community's limited knowledge and access to technology for processing it into higher-value products [6]–[8]. An initial survey revealed that the local population lacks awareness of the antioxidant properties found in *S. caseolaris* leaves, which contain compounds like flavonoids and phenolic acids known for their antioxidant activity [9]. Studies have demonstrated that the antioxidant activity of *S. caseolaris* leaves, measured through DPPH and FRAP assays, is comparable to that of well-known antioxidants such as green tea and vitamin C, indicating their potential to be harnessed for eco-friendly beauty products [10], [11].

Liquid soap, created through a saponification process between potassium hydroxide (KOH) and vegetable oil, offers several advantages, including ease of use, efficiency, and bacterial resistance [12],[13]. By leveraging the antioxidant properties of *S. caseolaris* leaves, this research addresses gaps in product development while aligning with the rising demand for sustainable and natural cosmetics in both local and international markets [14]. The eco-friendly beauty product market is projected to grow at a compound annual growth rate (CAGR) of 5.6% through 2026, presenting significant opportunities for *S. caseolaris*-based innovations.

This study contributes to local economic empowerment by offering alternative livelihoods through mangrove-based product innovations. To address the community's limited understanding of *S. caseolaris*, targeted educational programs, and workshops will be organized to teach sustainable harvesting techniques, the extraction of antioxidant compounds, and product development strategies. Collaborations with local organizations and educational institutions will facilitate knowledge transfer and provide ongoing support, enabling the community to transition into eco-friendly product manufacturing. This approach exemplifies how the development of eco-friendly beauty products can foster both economic resilience and environmental sustainability.

2. Method

The community service activities were carried out in Sungsang IV Village, Banyuasin Regency, South Sumatra, in September 2023. The target partners were community groups from Sungsang IV Village consisting of approximately 40 people. Participant selection criteria include socio-economic background, previous experience in craft activities or home production, and balanced gender representation. This community service activity was assisted by Sungsang IV Village officials, students, and a team of lecturers. The method of implementing this service includes training in liquid soap production through product prototype demonstrations and direct assistance [15].

The stages of community service activities include: 1) Site Monitoring and Preparation: An initial survey was conducted to identify the presence of mangrove plant resources in the surrounding environment, ensuring the availability of raw materials for liquid soap production. Licensing and coordination with local village officials are important for collecting community group data and administrative arrangements; 2) Gradual and Controlled Liquid Soap Making Training: The training session was organized into four sessions, each lasting approximately three hours. The sessions include an introduction to liquid soap production, detailed instructions on the production process, hands-on practice, and training review and evaluation; 3) Activity Monitoring and Evaluation: Monitoring was conducted throughout the training to ensure understanding and skill acquisition.

A detailed flowchart of these stages is included to visualize the step-by-step process of the service activities and ensure clarity in the implementation plan. Figure 1 Flowchart of the Community Service Process. Various media aids such as slides, projectors, screens, and brochures were used to deliver the materials manner clearly and engagingly. Educational materials are provided in the form of slides and videos to help participants easily understand the technique of making liquid soap from mangrove leaves [15].

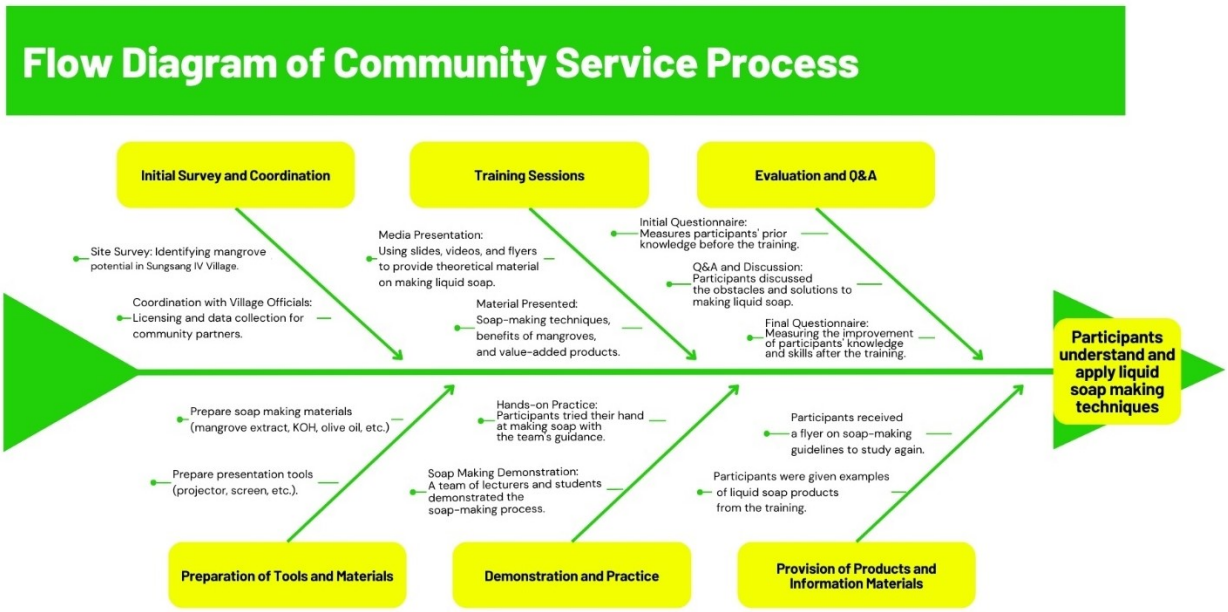

Figure 1. Flow Diagram of Community Service Process

Upon completion, participants received the liquid soap products they had made, along with an educational brochure to reinforce the information learned for relearning. Demonstrations were led by university students, who guided participants through each step in using the tools and materials. Tools and materials used in this activity included mangrove leaf extract, red ginger extract, KOH, distilled water, citric acid, olive oil, glycerin, aminone, food coloring, fragrance, stainless steel bowl, electric stove, and glass jar.

Before the demonstration, the participants filled out a pre-training questionnaire to assess their initial knowledge of liquid soap production [16], [17]. A questions and answer session

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followed, allowing participants to discuss problems and solutions related to liquid soap production and sustainable utilization of mangroves. Afterward, participants were given a post-training questionnaire to evaluate the increased knowledge and skills gained from the community service activity [15],[18].

3. Results and Discussion

Training in making liquid soap innovation products is crucial for improving the knowledge and skills of participants/community groups in Sungsang IV Village. The results of the pre-test and post-test evaluations show a significant increase in participants' understanding of the process of making beauty liquid soap from *Sonneratia caseolaris* mangrove leaf extract. As demonstrated in Figure 2, the training agenda involved 40 participants from Sungsang IV Village, providing a comprehensive learning experience. The evaluations reflect the effectiveness of the training, indicated by the shift in participants' knowledge from "don't know" to "know" in various aspects of liquid soap production.

To increase the rigor of the research results, graphs were added Figure 3 that quantitatively illustrate the improvement of participants' knowledge and skills post-training. For example, Figure 6 presents the results of the community service questionnaire showing the percentage increase in understanding of participants' skill attainment, liquid soap characteristics, packaging methods, pricing strategies, composition, and market conditions. This quantitative data underscores the effectiveness of the training program in fostering practical skills and theoretical knowledge.

Figure 2. Providing material for service activities

The findings of this study align with previous research that highlights the potential of mangrove extracts as natural antibacterial agents in cosmetic products. Similar studies have demonstrated the effectiveness of S. aseolaris in promoting health and reducing reliance on synthetic compounds such as triclosan [19]–[21], which are commonly used in commercial liquid soaps but pose health risks due to bacterial resistance and potential allergic reactions [22],[23]. The use of mangrove leaf extracts offers a safer, eco-friendly alternative, reflecting

growing trends in sustainable beauty product innovations. Previous works, such as those referenced in [8],[9], have shown that using ethanol in the maceration process, followed by rotary evaporation, results in a crude extract rich in beneficial secondary metabolites [24], [25].

The success of this training program has significant implications for the economic empowerment of coastal communities in Sungsang IV Village. By teaching participants how to utilize natural resources such as mangroves, this training contributes to the development of local industry while also raising awareness of the importance of sustainable resource management [26]. The practical skills acquired can be immediately applied to enhance the livelihood of the community, fostering a local business ecosystem centered around environmentally friendly products. Furthermore, the substitution of synthetic chemicals like triclosan with natural alternatives emphasizes the broader movement toward safer cosmetic products, as supported by the discussion in [11],[12].

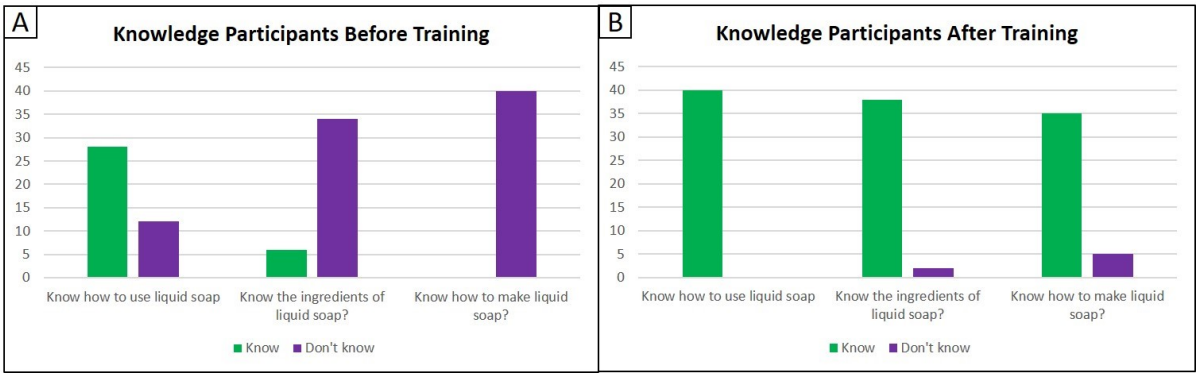

Figure 3. (A) Knowledge participants before training, (B) Knowledge participants after training.

A key strength of this study is the highly participatory approach adopted during the training, which included hands-on demonstrations and active engagement through Q&A sessions, as depicted in Figures 4, Figure 5. This method proved effective in increasing participant interest and knowledge retention. However, a limitation identified from the post-training evaluation, shown in Figure 4, is the variation in participants' understanding, which may be attributed to differences in educational background and prior experience. This finding suggests that future training programs should consider tailoring the material to accommodate participants' diverse backgrounds, thus improving overall comprehension.

Figure 4. Discussion and Q&A session of service activities

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Figure 5. Documentation at the closing of service activities

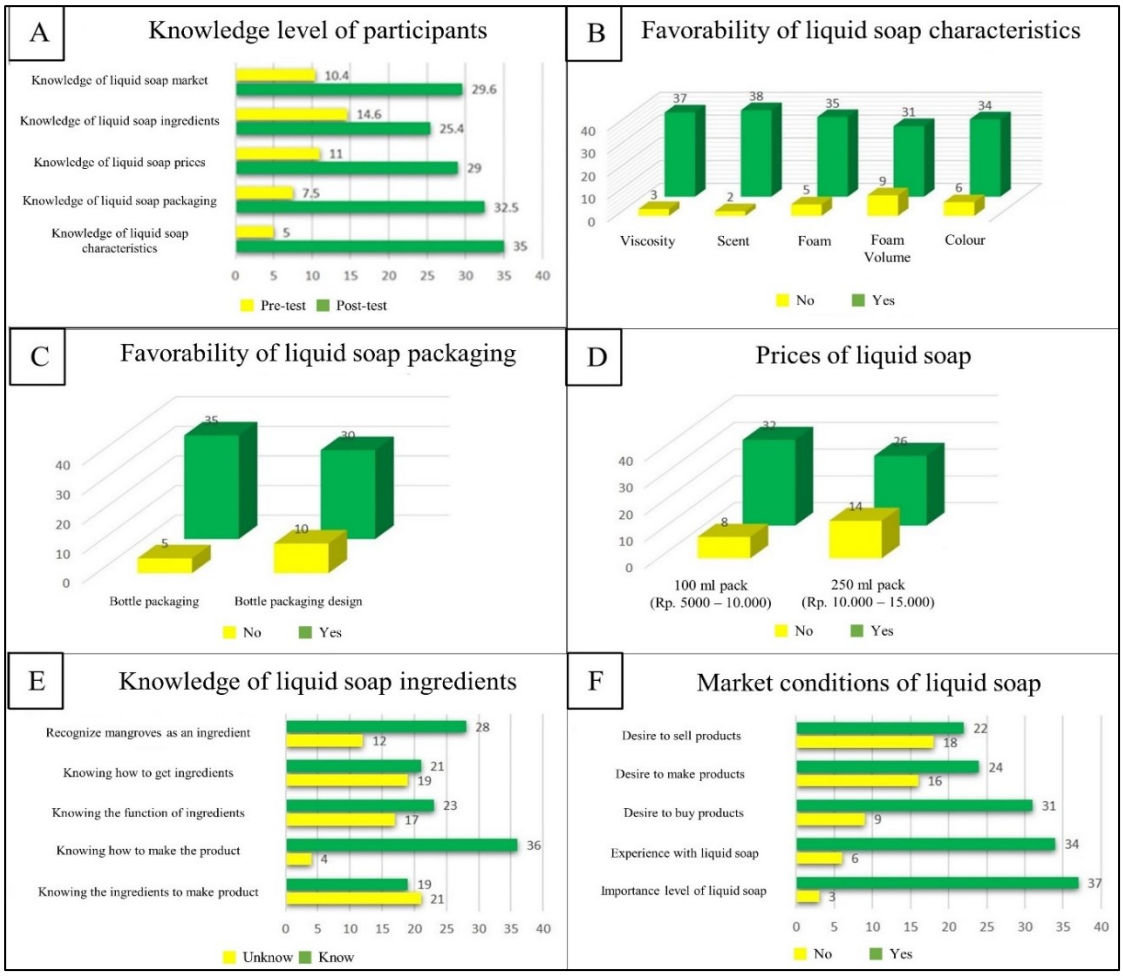

Figure 6. Results of the community service questionnaire, (A) Participants' ability achievements; (B) Characteristics of liquid soap; (C) Liquid soap packaging; (D) Liquid soap price; (E) Liquid soap composition; (F) Liquid soap market conditions

The results of this study highlight the positive impact of using mangrove leaf extracts in the creation of liquid soap, both in terms of practical application and community empowerment. This training program has proven to be a successful initiative for improving local economic opportunities. Moreover, it aligns with Sustainable Development Goals (SDGs) such as Goal 12

(Responsible Consumption and Production) and Goal 14 (Life Below Water), emphasizing the need for sustainable practices in coastal areas. The integration of local policy-making related to mangrove conservation and community development is also essential for the long-term success of such initiatives. Expanding this project to other coastal communities with similar resources could further enhance its impact, promoting sustainable practices and economic resilience in vulnerable regions.

While this training initiative has proven effective, further research and development are necessary to optimize the program's scalability and accessibility, ensuring that similar communities can also benefit from the knowledge and skills gained in sustainable liquid soap production.

4. Conclusion

The training on making beauty liquid soap from *Sonneratia caseolaris* mangrove leaf extracts, involving 40 participants in Sungsang IV Village, effectively improved their knowledge, as demonstrated by significant pre-and post-test results. Despite variations due to participants' diverse backgrounds, the participatory approach fostered strong engagement and practical skill transfer. This study highlights the economic potential of underutilized mangrove species, contributing to sustainable development goals. Limitations include the study's short duration and localized scope, suggesting future research on long-term impacts and scalability. Overall, it provides a model for sustainable community empowerment and eco-friendly product innovation.

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