

Education and Innovation of Mangrove-Based Products for the Health of Coastal Communities in Muaragembong

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ABSTRACT (English)

*This community service program aims to enhance the understanding and skills of the coastal community in Muaragembong in utilizing the potential of the pidada mangrove (*Sonneratia sp.*) for health products. Despite its significant health benefits, including antioxidant, antibacterial, and anti-inflammatory properties, the utilization of pidada mangrove by the local community remains limited. This program was conducted through socialization, training, and hands-on workshops, educating participants on how to process pidada mangrove into health products such as herbal drinks, supplements, and skincare items. Before the training, only 28% of participants were aware of the health benefits of pidada mangrove, but after the training, 87% demonstrated a strong understanding of the topic. Post-training assessments showed a significant increase in knowledge, with the average quiz score rising from 45% to 89%. The majority of participants acknowledged that they had gained a better understanding of the potential of pidada mangrove and felt confident in developing small-scale products based on this resource. This program not only improves the community's health but also provides economic opportunities through the sustainable use of natural resources, thereby supporting mangrove ecosystem conservation.*

Keywords: *Pidada Mangrove; Health Products; Sustainable Community Development*

INTRODUCTION

Mangroves are ecosystems that play a crucial role in maintaining coastal environmental balance while also providing ecological and economic benefits to the surrounding communities. One type of mangrove with significant potential is the pidada mangrove (*Sonneratia sp.*), known for its bioactive compounds with health benefits. Several studies have shown that pidada mangrove extract contains antioxidant, antibacterial, and anti-inflammatory compounds that can be utilized in the production of health products such as herbal drinks, supplements, and skincare products.

Muaragembong District, located on the coast of Bekasi Regency, has a vast mangrove ecosystem potential. However, the utilization of pidada mangrove by the local community remains limited, particularly in the health sector. This is due to a lack of knowledge and skills among the community in processing pidada mangrove into value-added products. Additionally, socio-economic factors and limited access to technology have further hindered the optimal utilization of these natural resources. (Hakim et al., 2023) Therefore, an education and innovation program is needed to raise awareness and enhance the capacity of the community to sustainably utilize local natural resources (Fridayani et al., 2024).

This community service program aims to educate the coastal communities of Muaragembong about the health benefits of pidada mangrove and introduce innovations in processing this natural material into health products. Through a participatory approach,

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this program is expected to increase community understanding of the potential of pidada mangrove and provide practical skills in processing and marketing natural-based products. Training sessions, hands-on workshops, and collaborative efforts with local stakeholders will be key components of this initiative to ensure the sustainability of the program.

Furthermore, this initiative aligns with broader environmental conservation efforts, as promoting the sustainable use of mangrove resources can contribute to ecosystem preservation (Chong, 2006). By integrating economic incentives with conservation strategies, the community can be encouraged to take an active role in protecting and maintaining mangrove forests (Pham et al., 2022). This approach not only benefits public health but also fosters long-term environmental stewardship.

In addition to raising community awareness, this program also aims to support mangrove ecosystem conservation efforts by providing economic value to the local community. Thus, the community not only gains health benefits but can also improve their economic well-being through the sustainable use of local resources. It is hoped that this program can serve as a model for empowering coastal communities in wisely and effectively utilizing biodiversity. By fostering collaboration between academia, local governments, and community groups, this initiative can serve as a stepping stone towards long-term sustainable development in coastal regions.

This program is part of an international community service initiative under the broader theme of Sustainable Tourism & Tourism Potential Development, in collaboration with Sunway University Malaysia and the Muaragembong District, Bekasi. Through this partnership, the program seeks to empower local communities by promoting the sustainable utilization of mangrove resources, particularly the pidada mangrove (*Sonneratia* sp.), to improve public health and economic well-being while supporting environmental conservation efforts.

METHOD

Time and Place.

This community service program will be held on August 30, 2024, from 09:00 AM to 03:00 PM WIB, conducted in person at the Auditorium of the Muaragembong District Office, Bekasi.

Target Audience.

1. Pokdarwis of Muaragembong District
2. Pokdarwis of Bekasi Regency
3. Pokdarwis of Pantai Bhakti Village, Pantai Sederhana Village, Jayasakti Village, Pantai Bahagia Village, Pantai Mekar Village
4. Village Heads of Pantai Bhakti, Pantai Sederhana, Jayasakti, Pantai Bahagia, Pantai Mekar
5. Traders
6. Fishermen
7. Fish Pond Farmers
8. PKK (Family Welfare Movement)
9. Pantai Bhakti Cooperative
10. University Students
11. General Public
12. Tourists
13. Lecturers of FEBIS
14. Lecturers of Pharmacy

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15. Lecturers of Law
16. Lecturers of Engineering
17. District Stakeholders

Method of Service.

Socialization and Group Discussion

Description: Participants will learn about the potential of mangrove forests for ecotourism and health products, such as herbal medicine and cosmetics. Group discussions will explore ways to develop mangrove ecotourism and the health benefits of this ecosystem.

Activities: Socialization on mangrove utilization and discussions on ecotourism development and health products derived from mangroves.

Success Indicators.

1. Participants' level of understanding before and after the training.
2. Survey or quiz results indicating increased knowledge.
3. Percentage of participants acknowledging improved understanding.

RESULTS AND DISCUSSION

The community service activities conducted in Muaragembong focused on educating the coastal community about the benefits of *Sonneratia caseolaris* (Pidada Mangrove) and developing innovative health products from this plant. The results are categorized into two main aspects: the level of participants' understanding before and after the training, and the impact of the training on their knowledge and awareness.

Participants' Level of Understanding Before and After Training

A pre-training survey was conducted to assess participants' baseline knowledge regarding the benefits of mangrove-based products for health. The results indicated that only 28% of participants had prior knowledge of the health benefits of Pidada mangrove, while the remaining 72% had little or no knowledge on the subject.

Following the educational sessions and hands-on workshops, a post-training survey was administered. The findings demonstrated a significant improvement in understanding, with 87% of participants showing a strong grasp of the material covered. Specifically:

92% of participants understood the antioxidant and antibacterial properties of Pidada mangrove.

85% were able to identify various innovative products that could be developed from Pidada, such as herbal tea, syrup, and skincare products.

80% expressed confidence in explaining the benefits of these products to others in their community.

Survey or Quiz Results Indicating Increased Knowledge

To quantitatively measure the knowledge gained, participants were given a post-training quiz. The average quiz score increased from 45% (pre-training) to 89% (post-training), indicating a substantial knowledge gain. Additionally, discussions and Q&A sessions further reinforced learning, as participants actively engaged in clarifying doubts and sharing insights.

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Percentage of Participants Acknowledging Improved Understanding

At the end of the program, participants were asked to self-assess their learning outcomes. The results showed that 91% of participants acknowledged an improved understanding of the role of Pidada mangrove in health and product innovation. Many participants expressed interest in applying this knowledge to develop small-scale businesses related to Pidada-based products.

Discussion

The significant improvement in participants' understanding and interest indicates that targeted education and hands-on training can effectively enhance awareness about local natural resources. The high level of knowledge retention suggests that practical demonstrations and community engagement are crucial in knowledge dissemination. Moreover, the enthusiasm for product innovation highlights the potential for economic empowerment through sustainable use of mangrove resources.

The results address the initial problem identified in the introduction, where limited awareness and underutilization of mangrove-based health products were challenges in the community. The program successfully provided knowledge and skills that can contribute to both health improvement and economic opportunities for the coastal community in Muaragembong.



Piticture 1; Implementation of community service



Pitcture 2; Audiance of community service

BIBLIOGRAPHY

- Chong, V. C. (2006). Sustainable utilization and management of mangrove ecosystems of Malaysia. *Aquatic Ecosystem Health & Management*, 9(2), 249–260.
- Fridayani, H. D., Hakim, M. L., & Chiang, L. C. (2024). Inclusive Development through Smart Environmental Strategies and Digital Innovation: Empowering Informal Businesses in Semarang, Indonesia. *E3S Web of Conferences*, 594, 2002.
- Hakim, M. L., Hanif, N. A., & Prasetyo, S. (2023). PENGEMBANGAN SEKTOR PARIWISATA HALAL MELALUI SMART TOURISM DI INDONESIA DAN DUBAI. *The Indonesian Journal of Public Administration (IJPA)*, 9(2), 66–76.
- Pham, T. T., Vu, T. P., Hoang, T. L., Dao, T. L. C., Nguyen, D. T., Pham, D. C., Dao, L. H. T., Nguyen, V. T., & Hoang, N. V. H. (2022). The effectiveness of financial incentives for addressing mangrove loss in northern Vietnam. *Frontiers in Forests and Global Change*, 4, 709073.