Training on the Utilization of Green Grass Jelly for Food and Beverage Ingredients: Participatory Training-Based Intervention

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Abstract
This community service program aimed to empower local communities by enhancing their knowledge and skills in utilizing green grass jelly (*Cyclea barbata* Miers) as an alternative ingredient for healthy food and beverage products. Conducted over three days, the training involved 12 participants with diverse backgrounds, including homemakers, youth, and micro-entrepreneurs. The program adopted a participatory training approach that combined theoretical knowledge with hands-on practice, including plant identification, jelly extraction techniques, hygiene practices, and product innovation. Pre- and post-training assessments revealed significant improvement in participants' understanding and abilities. Initially, only 25% of participants were familiar with the plant's benefits and usage. After the training, 100% of participants demonstrated comprehension of the nutritional value and processing methods, and 75% successfully created product variants such as fruit-infused jelly drinks and herbal puddings. The training encouraged creativity and showed the potential of green grass jelly as a sustainable, low-cost, and health-promoting ingredient suitable for micro-entrepreneurial ventures. The program concluded that community-based food innovation training can serve as an effective model for promoting local resources, enhancing food security, and developing rural economies. It also emphasized the importance of combining traditional knowledge with modern food processing techniques to generate added value and marketable products.

Keywords: *Grass jelly, Community service, For food and beverage, Participatory training-based intervention*

INTRODUCTION

Indonesia, as a country rich in biodiversity, is home to a wide variety of traditional plants with significant nutritional and medicinal values. One such plant is green grass jelly (*Cyclea barbata* Miers), commonly known in the local language as *cincau hijau*. This plant has long been used by Indonesian communities as a natural ingredient in refreshing beverages and herbal remedies. The mucilaginous extract from its leaves is known to have cooling properties, commonly utilized to soothe digestive disorders, reduce body heat, and treat mild gastrointestinal ailments (Putra et al., 2020). Despite its popularity in traditional markets and street food culture, the scientific and economic potential of green grass jelly remains underutilized, especially in rural and semi-urban areas.

In recent years, the global food industry has shown increasing interest in functional foods—foods that provide health benefits beyond basic nutrition. This trend has opened opportunities for local plants such as green grass jelly to be innovatively processed and presented in contemporary forms to meet modern consumer demands. Studies have revealed that green grass jelly contains various bioactive compounds, including flavonoids, saponins, and phenolic compounds, which possess antioxidant, anti-inflammatory, and antimicrobial properties (Ningsih

& Herawati, 2021). These attributes position green grass jelly as not only a culinary ingredient but also as a potential contributor to public health if properly promoted and integrated into daily diets.

However, community awareness about the full benefits of green grass jelly and its processing methods remains limited. Many people, particularly the younger generation, are unfamiliar with the plant, let alone its cultivation or culinary use. This is compounded by the lack of structured education and training on how to prepare and preserve the plant in hygienic and appealing ways. As a result, green grass jelly is often perceived as a niche ingredient, mainly associated with traditional drinks, and not as a versatile component of modern food products (Wulandari et al., 2022).

In line with national development goals in food diversification and community empowerment, it is necessary to equip local communities with the knowledge and skills to process indigenous food resources like *Cyclea barbata*. Empowering communities to explore and utilize these resources can simultaneously support food security**,** nutrition education, and microenterprise development. Food-based training programs have been proven effective in encouraging entrepreneurial behavior, especially when focused on practical, low-cost technologies that use locally available ingredients (Rahayu & Susanto, 2019).

The utilization of green grass jelly can be further developed through innovation in food and beverage products, such as infused drinks, desserts, ice cream, jelly-based snacks, and functional herbal teas. When combined with contemporary packaging and digital marketing strategies, these products have the potential to reach wider markets, both locally and internationally. Therefore, training programs that combine traditional knowledge with entrepreneurial insight can play a pivotal role in strengthening rural economic resilience.

This community-based approach not only enhances knowledge and skills but also fosters **social collaboration**, **self-reliance**, and **creative problem solving**—all essential components in building sustainable livelihoods. Moreover, this initiative aligns with the Sustainable Development Goals (SDGs), particularly Goal 2 (Zero Hunger) and Goal 8 (Decent Work and Economic Growth), by encouraging inclusive participation in food-based innovation (United Nations, 2020).

Through this article, we document the planning, implementation, and outcomes of the training on green grass jelly utilization. We aim to highlight the importance of local plant resources in food innovation and community development, while also contributing to academic discourse on grassroots food entrepreneurship and environmental sustainability.

METHODOLOGY

Research Design; This community service program was designed as a participatory training-based intervention, focusing on increasing knowledge and practical skills in utilizing green grass jelly (*Cyclea barbata* Miers) for food and beverage production. The approach used was a qualitative-descriptive method combined with action-based training, which aimed to empower participants through direct involvement in learning, discussion, and product-making sessions. The implementation followed a community-based participatory framework, which emphasizes equal engagement, practical relevance, and mutual benefit (Kemmis & McTaggart, 2005)

Location and Time; The training was conducted in sorowajan baru banguntapan, from June 5-7 2024. The location was selected based on the availability of green grass jelly plants and the community's interest in developing local food innovations. The training took place over three consecutive days, with a total duration of approximately 12 contact hours**.**

Participants**:** A total of 12 participants took part in the training program. The selection was based on voluntary participation, announced through community networks and local leaders. The demographic composition included: 5 homemakers (42%), 4 youth (33%), 3 culinary micro-entrepreneurs (25%)

Participants were selected to represent different age groups and skill levels to foster knowledge transfer and peer learning during the sessions. All participants agreed to provide informed consent and participate in pre- and post-training evaluations.

Training Stages; The training was carried out in three stages:

Introduction and Theoretical Session (Day 1); This session introduced the botanical characteristics of green grass jelly, its nutritional benefits, and its health-related properties. Materials were

presented using PowerPoint, printed modules, and short videos. Key topics included: Botanical identification of *Cyclea barbata,* Bioactive components (flavonoids, saponins, antioxidants), Traditional vs modern preparation techniques (Literature basis: Ningsih & Herawati, 2021; Putra et al., 2020)

P ractical Demonstration and Product Development (Day 2); On the second day, participants were guided through hands-on sessions: Leaf extraction and jelly formulation using lime water, Hygiene and storage methods, Diversification: grass jelly drinks, fruit-infused jelly, jelly puddings, and herbal desserts**.** Each participant was encouraged to try at least two types of product creation**.** This stage emphasized food hygiene**,** texture optimization**,** and natural flavor combination (Wulandari et al., 2022).

Product Packaging and Feedback Session (Day 3); Participants received basic instruction on eco-friendly packaging and labeling. A small exhibition was held where each participant presented their products and received peer and facilitator feedback. An evaluation was conducted through pre- and post-training surveys and observation checklists**.**

Data Collection and Analysis; Data was collected using**:** Pre- and post-training questionnaires to assess knowledge gain, Observation sheets during practice sessions to assess skill acquisition, Participant feedback forms to evaluate satisfaction and suggestions. The data were analyzed descriptively and compared to identify improvements in understanding and product quality. Narrative insights were also obtained through brief structured interviews**.**

Ethical Considerations; All participants gave verbal and written consent prior to participation. They were informed of the goals of the program, the voluntary nature of their involvement, and their right to withdraw at any time. All materials used were non-toxic and safe for consumption.

RESULTS AND DISCUSSION

RESULTS

The training program on the utilization of green grass jelly (*Cyclea barbata* Miers) was successfully conducted with the participation of 12 individuals from various backgrounds**.** The implementation spanned three days, combining theory, practice, and product innovation sessions**.**

At the beginning of the training, participants filled out a pre-training questionnaire that assessed their initial understanding of green grass jelly. Results showed that: Only 25% of participants could correctly identify the plant and its uses, 58% were aware that green grass jelly is traditionally used in beverages, but had never made it themselves, none of the participants had ever processed green grass jelly into modern culinary products.

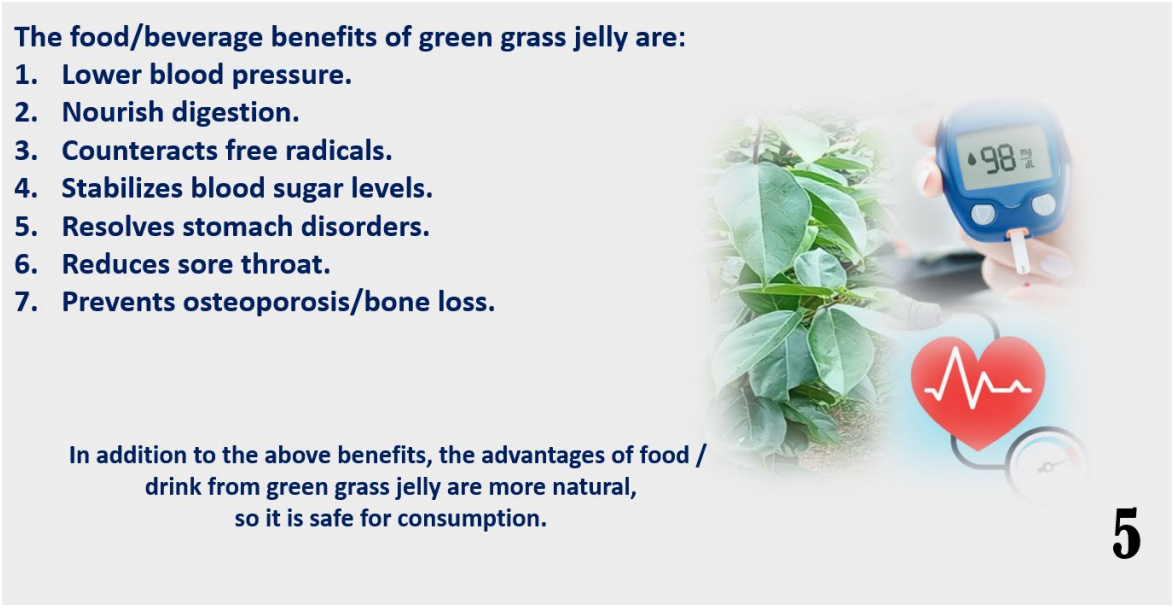


Figure 1. Material of training

After the training, a post-training evaluation indicated a significant improvement; 100**%** of participants could explain the basic nutritional properties of *Cyclea barbata*, 92**%** were able to demonstrate correct processing techniques, including extraction and gelling using lime water, 75**%** successfully created at least two product variants such as fruit jelly drink and herbal jelly pudding.

In addition to skill development, participants showed high levels of enthusiasm and engagement during practice sessions. The grass jelly drink with passion fruit **and the** layered jelly herbal pudding were the two most popular products created. The practical sessions also revealed creativity, with some participants using local ingredients such as palm sugar, pandan, and coconut milk to enhance flavor and presentation.

One participant, a young micro-entrepreneur, commented: "I never thought that a plant in our backyard could be turned into something that sells. This training gave me a new idea for a seasonal beverage menu." This observation reinforces the notion that experiential learning combined with local knowledge can foster innovation and entrepreneurship (Wulandari et al., 2022). Furthermore, integrating traditional ingredients into modern culinary formats aligns with consumer trends seeking natural and health-promoting foods (Wikandari et al., 2020).

DISCUSSION

The results of this PKM activity support the findings of previous studies on the importance of training and community-based innovation in food processing. According to Rahayu and Susanto (2019), when rural communities are empowered through structured culinary training, their potential for micro-entrepreneurship significantly increases. The participants' ability to transform a traditionally undervalued plant into viable food products also shows alignment with the concept of value-added food processing**.** As emphasized by Giyarsih et al. (2021), processing local plants not only extends shelf life and improves product appeal but also enhances economic value at the household level.

Another key aspect is the integration of sustainability and health**,** as green grass jelly is naturally grown without pesticides, has low-calorie content, and does not require complicated equipment to process. This makes it highly suitable for small-scale production in rural and semi-urban communities. The social aspect of the training was also important. Participants collaborated, shared recipes, and supported each other, which aligns with the community-based learning model, where learning is collective, contextual, and relevant to daily life (Kemmis & McTaggart, 2005). Such an environment helps sustain long-term motivation and continuous innovation.



Figur 2. one type of processed green grass jelly as a healthy drink

CONCLUSION

The training program on the utilization of green grass jelly (*Cyclea barbata* Miers) has demonstrated that local food resources, when accompanied by appropriate knowledge and skill-

building interventions, can be transformed into valuable assets for community development and micro-entrepreneurship. Through a participatory and practical learning approach, 12 participants successfully enhanced their understanding of the nutritional and economic potential of green grass jelly, as well as their ability to process it into diverse, appealing, and health-oriented food and beverage products.

The training not only improved technical competencies in food preparation and hygiene, but also fostered creativity, confidence, and motivation among participants to explore local innovations. Several product variants such as fruit-based jelly drinks and herbal puddings were produced with positive feedback, indicating both market potential and adaptability to modern culinary preferences. Importantly, this activity highlighted the significance of empowering communities through simple, low-cost technologies that utilize easily accessible natural ingredients. It also confirmed the value of integrating traditional knowledge with entrepreneurial thinking to support sustainable livelihoods, food diversification, and health promotion.

In conclusion, green grass jelly holds great promise as a functional food ingredient that can be optimized through community-based training. Future programs should consider scaling this model by involving wider community groups, incorporating packaging and marketing strategies, and fostering collaborations with small food industries and health agencies to ensure long-term impact and sustainability

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