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Dissemination of the Utilization of Rhizome Plants as Herbal Beverage Products in Braja Gemilang Village

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ABSTRACT

The dissemination of the utilization of rhizome plants as the main ingredient in producing health beverages has been conducted in Braja Gemilang Village. This program aims to enhance the community's understanding and skills in processing rhizomes into herbal drinks with significant health benefits. Rhizome plants such as ginger, turmeric, galangal, and lemongrass were chosen due to their bioactive compounds, which have been proven to positively impact health, such as boosting the immune system, reducing inflammation, and improving digestion. The community service methods applied included dissemination and demonstrations of herbal drink production using rhizome plants. Meanwhile, the writing methodology utilizes experiments and primary data from observations and related literature. The program also introduced processing techniques, ranging from cutting and drying to packaging in practical tea bags. The results of this activity showed high enthusiasm from the community, as evidenced by their active participation during the program. Community members actively asked questions regarding the benefits, preparation methods, and consumption of rhizome-based beverages as an alternative healthy drink and a potential new business opportunity for the residents of Braja Gemilang Village.

1. Introduction

Health is an invaluable asset, serving as a cornerstone for our lives. Good health enables us to live life to the fullest, both physically and mentally. By maintaining health, we can enhance productivity and quality of life, as the best investment is an investment in health (Anwar and Julia, 2021). In today's era, an increasing number of people are aware of the importance of health and are adopting healthy lifestyles. One popular alternative is the use of medicinal plants, particularly rhizome plants.

Medicinal plants, also known as biopharmaceuticals, are plants with properties and benefits that can be used to prevent or cure various diseases due to their active compounds. These plants are commonly referred to as family medicinal plants (TOGA) in communities. TOGA serves as an accessible resource for communities to use medicinal plants for disease prevention, health improvement, and treatment (Fitria *et al.*, 2022).

Rhizome plants, which grow underground and serve as food reserves, contain various bioactive compounds beneficial for health, such as curcumin, gingerol, and zingiberene. One popular use of rhizome plants is herbal beverages. Herbal beverages are drinks made from natural ingredients with specific health benefits (Novriansyah *et al.*, 2020). Rhizome plants such as ginger, turmeric, galangal, and temulawak are well-known for their health benefits. Rhizomes are considered an alternative remedy due to their affordability and the widespread belief that traditional medicines are safer for consumption. Research shows that family medicinal plants not only provide health benefits but also help preserve tradition, reduce medical costs, and utilize unproductive land (Maryani *et al.*, 2020).

Braja Gemilang Village, where the majority of residents work in the agricultural sector, has significant potential for developing rhizome-based products. With most residents being farmers and a large amount of underutilized land, the village has opportunities to expand agribusiness, especially in cultivating rhizome plants like ginger, turmeric, galangal, and lemongrass. Therefore, community service initiatives in Braja Gemilang Village are necessary to enhance knowledge of rhizome plant cultivation and agricultural product processing, particularly medicinal plants. These initiatives aim to promote the use of herbal plants for health and to develop agribusiness-based micro-enterprises.

2. Method

The method used in this article uses an experimental method to determine the effectiveness of rhizome plants as raw materials for making healthy drinks. The data used in writing this article were obtained from primary data, various literature, and previous research on rhizome plants as raw materials for making healthy drinks or rhizome drinks.

2.1 Time and Place

The socialization event for rhizome-based beverages was held on Tuesday, July 16, 2024. The event took place at the Braja Gemilang Village Health Center (Puskesmas), located in Hamlet 4 of Braja Gemilang Village. The stages of this program included observing the potential of rhizome plants as herbal beverages, preparing samples of rhizome-based drinks, preparing materials in the form of printed media to facilitate the socialization process, conducting the socialization of rhizome beverages to the residents of Braja Gemilang Village, and evaluating the outcomes of the socialization activity.

2.2 Tool and Material

The tools used included an oven, knife, cloth, scale, containers, spoons, and baking trays. The materials used consisted of 1.2 kg of ginger, 400 g of galangal, 300 g of lemongrass, 600 g of turmeric, and tea bags.

2.3 Working Procedure

2.3.1 Size Reduction

Ginger, turmeric, and galangal are peeled and cleaned under running water to remove any dirt. Lemongrass is peeled to remove the outer layers and cleaned under running water. All ingredients are then sliced thinly to a size of 1–2 cm using a knife.

2.3.2 Drying

The thinly sliced ginger, turmeric, galangal, and lemongrass are dried in an oven for 3 hours at a temperature of 80–90°C until completely dry.

2.3.3 Preparation of Rhizome Beverages

A mixture of ginger: turmeric:galangal:lemongrass in a ratio of 4:2:1.2:1 is thoroughly blended until homogeneous, then packed into empty tea bags.

2.4 Consumption Method

To consume the rhizome beverage, prepare a glass and a spoon. Take one rhizome tea bag and steep it in 200 mL of warm water. Add honey or sugar and a squeeze of lime or lemon juice to taste, then stir well. For optimal benefits, it is recommended to consume this beverage twice a day.

3. Results and Discussion

The observation phase was conducted on June 26, 2024, in Braja Gemilang Village. This observation involved direct coordination with the village head and the administrative staff of Braja Gemilang. The village's strategic location, at the westernmost edge of East Lampung Regency, where the majority of residents work as farmers and cultivators, made the rhizome beverage program highly suitable for implementation. Considering that the community is already familiar with cultivation processes for crops such as corn, rubber, oranges, and cassava, the lack of knowledge about rhizome cultivation techniques became the main motivation for this activity. The objective is to improve the community's understanding and skills in rhizome cultivation and its utilization as herbal beverage products. The socialization aimed to provide insights and understanding to the community about the Rhizome beverage program.

Before the rhizome beverage socialization activity was held, product samples of the rhizome beverage were prepared to be distributed to the residents of Braja Gemilang Village. These samples were created to give an idea of what the rhizome beverage product looks like and to allow the community to taste it. In addition to preparing samples, materials on the benefits of rhizome beverages were prepared in hard copy format as tools for delivering information during the event. It is hoped that the availability of rhizome beverage samples and printed materials will enhance the community's enthusiasm for socialization activity.

The production of rhizome beverages using natural ingredients such as ginger, turmeric, galangal, and lemongrass is an effort to transform traditional medicinal plants into easy-to-consume products with health benefits. The socialization and production program for rhizome beverages was conducted over three days. The activities included preparing tools and materials, cutting and drying rhizomes, packaging, and explaining the benefits and consumption methods of rhizome beverages.

After the tools and materials were prepared, the first step was cutting the rhizome ingredients. Each ingredient (ginger, turmeric, galangal, and lemongrass) was chopped into small pieces. The purpose of cutting the ingredients was to facilitate faster drying in the oven and easier extraction when steeped. The next step was drying the materials. The small pieces were placed in an oven at an appropriate temperature, typically around 89–90°C. The drying process continued until the materials were

thoroughly dried with no remaining moisture. This step was crucial to ensure the ingredients could be stored for a long time without spoiling or developing mold.

Once dried, the ingredients were packaged into tea bags in a ratio of 4:2:1.2:1 for ginger, turmeric, galangal, and lemongrass. Packaging the rhizome beverage in tea bags makes it convenient to use, requiring only steeping in hot water to enjoy the drink. After packaging, the tea bags were stored in airtight containers to maintain their quality.



Figure 1. Preparation of Raw Materials for Making Rhizome Drinks.

As part of the activities, a socialization session was conducted for the residents of Braja Gemilang Village. The rhizome beverage socialization was carried out using a lecture method, where materials were presented directly to the community. To facilitate the socialization process, printed media such as posters highlighting the benefits of rhizome plants as herbal beverages were used. Additionally, samples of rhizome beverages were prepared to serve as examples of ready-to-consume products. The socialization took place alongside a health check-up event for elderly residents of Braja Gemilang Village.

The community's enthusiasm was evident throughout the activity, as seen in their active participation and questions about the benefits, preparation, and consumption of rhizome beverages. The session was held at the Braja Gemilang Village Health Center (Puskesmas) and was attended by elderly women and local residents. The activity began with a presentation on the importance of consuming healthy beverages made from natural ingredients, followed by a demonstration of rhizome beverage preparation, and concluded with a Q&A session on the benefits of the ingredients used in making rhizome beverages.

The socialization aimed to provide the community with an understanding of the health benefits of rhizome beverages, the process of making them, and how they can produce these beverages at home. Residents were informed about the properties of each rhizome used, along with practical brewing methods, such as steeping rhizome tea bags in hot water. They were also encouraged to consume these beverages daily as a preventative health measure.

Beyond health benefits, the economic potential of producing rhizome beverages was also highlighted. Residents were encouraged to consider rhizome beverage production as a microenterprise that could increase household income.



Figure 2. Rhizome Drink Socialization Activities.

Rhizome beverages, consisting of ginger, turmeric, galangal, and lemongrass, offer various health benefits. Ginger (*Zingiber officinale*) is one of the rhizomes that has been used in traditional remedies for a long time. Ginger contains the active compound gingerol, which acts as an immunomodulator by regulating cytokine storms and also functions as an antioxidant. Additionally, ginger contains curcumin, caffeic acid, and beta-carotene, all of which play important roles in neutralizing free radicals and boosting the immune system (Kusumo *et al.*, 2020). Lemongrass (*Andropogon nardus*) contains essential oils, with the main component being citral, which makes up about 45%. Citral has potential as an immunosuppressant by inhibiting the release of pro-inflammatory cytokines such as IL-1 β and IL-6, as well as promoting the production of IL-10. Furthermore, lemongrass contains flavonoids, saponins, and steroid/triterpenoids that can enhance lymphocyte proliferation, which plays a role in maintaining immune function. Lemongrass also has diuretic properties, which help detoxify the body, lower blood pressure, and reduce anxiety and stress. Lemongrass beverages are also beneficial for digestion and skin health (Noena & Base, 2021).

Turmeric (*Curcuma domestica*) is known for its curcuminoid content, particularly curcumin, which makes up 40-60% of the total content of turmeric. Curcumin has immunostimulatory effects that can increase the number of leukocytes and eosinophils, thereby strengthening the body's resistance to infections. Research also shows that curcumin in turmeric can enhance tissue function and aid in the recovery process after exposure to pathogens. Turmeric helps improve liver function, reduces the risk of heart disease, and has potential in combating various chronic diseases (Manurung & Mose, 2019).

Galangal (*Alpinia galanga*) contains essential oils, with components such as camphor, cineole, and cinnamic acid. The essential oil from galangal rhizomes has strong antimicrobial and antifungal properties, making it effective in treating microbial and fungal infections. Galangal rhizomes are also used to address digestive issues and improve overall health (Fatimah *et al.*, 2023).



Figure 3. Rhizome Drink Products.

After the socialization of utilizing rhizome plants as herbal beverage products in Braja Gemilang Village was conducted, an evaluation was carried out to measure the effectiveness and impact of the activity on the participants. This evaluation involved 30 participants, including elderly women and the general public. The evaluation method used was a questionnaire, which was distributed to the participants after the activity was completed. The questionnaire assessed several key aspects, such as the participants' understanding of the benefits of rhizome plants, the clarity of the demonstration, the ease of practicing rhizome beverage preparation, and the overall satisfaction with the activity. Each question was rated on a scale of 1 to 5, with 1 representing the lowest rating (very dissatisfied/very unknowledgeable) and 5 representing the highest rating (very satisfied/very knowledgeable). The results of the evaluation were then summarized in the following Table 1.

Table 1. Results of the Evaluation of the Rhizome Drink Socialization Activity

Question	Presentage (%)				
	Scale				
	1	2	3	4	5
Understanding the benefits of rhizome plants	0	3	10	40	47
Clarity of demonstration of making rhizome drink	0	0	13	37	50
Easy of practicing yourself at home	3	7	17	47	26
Satisfaction with overall activities	0	0	13	40	47

The results of the questionnaire from 30 respondents showed that the majority of participants were satisfied and understood the material presented during the socialization activity. For example, in the question about understanding the benefits of rhizome plants, 87% of respondents (a combination of ratings 4 and 5) indicated a good to excellent understanding. The clarity of the demonstration also received positive feedback, with 50% of respondents giving a rating of 5. Although a small percentage of respondents (about 10-20%) reported some difficulty in practicing the preparation at home, overall satisfaction with the activity remained high, with 87% of respondents giving ratings of 4 and 5. These results indicate that the socialization activity successfully increased the community's understanding of rhizome plants. The high evaluation results reflect the strong enthusiasm of the community towards the socialization of rhizome plant utilization. The good understanding, clarity of the demonstration, and overall satisfaction suggest that participants actively engaged in the activity and found it beneficial. The active participation of 30 respondents in completing the questionnaire also indicates a great interest in the material presented and a willingness to become further involved.

Socialization can play an important role in increasing community understanding. Based on an activity conducted in Bandung, socialization regarding the use of Family Medicinal Plants (TOGA) has been proven to improve knowledge and awareness of the community about the importance of planting medicinal plants. With socialization activities, training, and guidance, the community becomes more aware of the benefits of traditional medicinal plants, which in turn can be used to improve public health overall ([Amalia et al., 2021](#)).

4. Conclusions

The utilization of rhizome plants as an alternative to commercial medicine is highly necessary, particularly for the residents of Braja Gemilang Village, to encourage them to be more active, productive, and innovative. The socialization of rhizome beverage production can enhance the knowledge of Braja Gemilang residents about the health benefits of rhizome plants. In addition to being economical, rhizome plants are also easily and readily available. Moreover, their simple preparation process makes them suitable for daily consumption.

7. References

- Amalia, R., Suhariyanti, E., & Aliva, M. (2021). Peningkatan Kesehatan Masyarakat Melalui Sosialisasi Penggunaan Tanaman Obat Keluarga (Toga) di Lingkungan Bandung. *AS-SYIFA: Jurnal Pengabdian dan Pemberdayaan Kesehatan Masyarakat*, 2(1), 31-36.
- Anwar, F., & Julia, P. (2021). Analisis Strategi Pembinaan Kesehatan Mental Oleh Guru Pengasuh Sekolah Berasrama Di Aceh Besar Pada Masa Pandemi. *Jurnal Edukasi: Jurnal Bimbingan Konseling*. 7(1), 64-83.
- Fatimah, F., Wiharti T., Hanik R., (2023). Ethnobotanical Study of Identification of Traditional Medicinal Plants in the Community of Kedungombo Village, Baturetno District, Wonogiri Regency. *Jurnal Biologi Tropis*, 23(2), 235-247.
- Fitria, M., Widiya, W., Rahmi, N., Mentari, N., & Tari, S. M. (2022). Efektivitas Pemanfaatan Tanaman Obat (Biofarmaka) Sebagai Produk Unggulan Masyarakat di Wilayah Kerja Puskesmas Patumbak. *Jurnal Abdimas Mutiara*, 3(2), 486-493.
- Kusumo A., Wiyoga F., Perdana H., Khairunnisa I., Suhandi I., Prastika S., (2020). Jamu Tradisional Indonesia: Tingkatkan Imunitas Tubuh Secara Alami Selama Pandemi. *Jurnal Layanan Masyarakat (Journal of Public Services)*, 4(2), 465.
- Manurung N., & Mose I., (2019). Pemanfaatan kunyit (*Curcuma domestica* Val) Sebagai Immunostimulan pada Ikan Bawal (*Colossoma macropomum*). *Budidaya Perairan*, 7(1), 21-25.
- Maryani, M., Ratnasari, I., & Handayani, T. (2020). Pemanfaatan Tanaman Obat Sebagai Upaya, Swamedikasi di Kelurahan Tangkiling Kecamatan Bukit Batu Kota Palangka Raya. *Jurnal Layanan Masyarakat (Journal of Public Service)*, 4(1), 84–90.
- Noena R.A., Base N.H. (2021). Inventarisasi Tanaman dan Ramuan Tradisional Etnis Sulawesi Selatan sebagai Immunomodulator. *Jurnal Kesehatan Yamas Makasar*. 5(2), 42–49.
- Novriansyah, Y., Setiono, S., Harahab, D. F., & Asman, M. (2022). Pelatihan Pembuatan Minuman Herbal Rimpang Dan Pembudidayaannya Masa Pandemi Covid-19. *JMM (Jurnal Masyarakat Mandiri)*, 6(4), 3331-3340.