

# Capacity Building for Community in Selopamioro Village, Imogiri District, Bantul District, Yogyakarta, through Land Optimization and Biopharmaceutical Products

Djoko Santosa<sup>1,3\*</sup>, Siwi Indarti<sup>2,4</sup>, Indah Purwantini<sup>1,3</sup>, Lilies Setyowati<sup>4</sup>

<sup>1</sup>Research Group for Medicinal Plants and Natural Products, Pharmacy, Universitas Gadjah Mada

<sup>2</sup>Plant Protection, Agriculture, Universitas Gadjah Mada

<sup>3</sup>Biological Pharmacy, Pharmacy, Universitas Gadjah Mada

<sup>4</sup>Agrotechnology Innovation Center, Universitas Gadjah Mada

\*Corresponding author's email: santosadjoko5346@yahoo.co.id

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## ABSTRACT

Herbal beverage products are part of the Indonesian cultural heritage, providing health benefits for generations. The Covid-19 pandemic has encouraged all parties to find solutions to handle and prevent the spread of the virus. One of the many efforts is using herbal medicine to increase the body's immunity. The purpose of this community service activity was to provide counseling on the role of herbal beverage products in increasing the immune system to maintain body health in the community, especially the members of the women farmers' group or *Kelompok Wanita Tani (KWT) Lestari Maju* in Selopamioro Village, Imogiri District, Bantul Regency, Special Region of Yogyakarta. The counseling participants were provided with direct materials on the role of herbal beverage products in increasing the body's immune system, followed by active discussions. The average pre-test and post-test scores of extension participants increased by 25%. This result indicates an increase in participants' knowledge about the role of herbal beverage products in increasing immunity. It is hoped that in the future, community assistance can be implemented in the manufacture of herbal medicine to increase immunity. In addition, it can provide knowledge and independent skill to prevent disease, especially for the people of Selopamioro Village, Imogiri District, Bantul Regency, Yogyakarta.

**Keywords:** Biopharmaceutical products, Capacity building, Land optimization.

## 1 Introduction

The business development of the herbal product field is growing rapidly. This is marked by consumer awareness in paying attention to health, which has risen. Various ways are taken to get optimal health. According to the World Health Organization (WHO), one way to maintain health is to consume healthy nutrition from natural ingredients or herbs and choose healthy food products, such as fruits and vegetables, balanced with the carbohydrates and proteins needed [1]-[3]. It is easier for consumers to see environmentally friendly products now. The movement to consume herbal products is a form of concern for the environment and health. As a result, it faces the challenge of creating consumers who care about a healthy lifestyle. Currently, not only in urban areas prioritize healthy lifestyles, but it also has begun to develop in rural areas. Many existing large yards can be used to cultivate herbal plants, such as in the Selopamioro Village area, which is a tourist village, where most people have yards that have not been utilized optimally.

### 1.1 Human Resource Potential

One hundred fifty farmers participated in managing Gama Giri Mandiri land in Selopamioro Village, Mangunan Village, Girirejo Village, and Sriharjo Village. According to the work background, 30% were pure farmers, and 70% were sideline farmers. Most people around Gama Giri are laborers and employees.

In contrast, the second most are people engaged in *keris* crafts, especially in Giri Rejo Village, and wood



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crafts in Banyusumurup village. However, the target of this program was limited to herbal farmers in Selopamioro Village, Imogiri District, Bantul Regency, Yogyakarta Province.

Before the Gama Herbal Garden program was launched, the people of Mangunan village had known herbal plants, especially *empon-empon*, for a long time. They plant *empon-empon* plants between perennials such as mahogany, teak, acacia, or *sono keling*. Hence, the availability of ingredients such as ginger, turmeric, and aromatic ginger can be considered relatively sufficient. Sukareme Village, adjacent to Mangunan Village, once won the national Herbal Village competition with its *empon-empon* plants. At the same time, Selopamioro Village is a village that is still pioneering the development of this herbal product. Therefore, it is essential to re-socialize the herbal plants, but the residents still need to increase awareness to make their herbal products increase their selling value.

## 1.2 The Potential of Herbal Products

*Jamu* as a herbal medicine has become part of Indonesia's culture and natural wealth [4], and the results of the Basic Health Research show that the consumption of *jamu* by Indonesian people is more than 80%. *Jamu* is part of traditional medicine. Traditional medicine has developed widely in many countries and has become significantly popular. Indonesia is wealthy in medicinal plants and herbal ingredients in the form of *jamu* from various tribes across regions from Sabang to Merauke. *Jamu* is the nation's ancestral heritage that has been used for generations to treat and maintain health. Research shows that 49.53% of Indonesia's population consumes *jamu* to maintain health and treat illness [5]. As many as 95.6% of the population consuming *jamu* have stated that they felt the benefits of drinking *jamu* [6]. The results of the 2010 Basic Health Research or Riset Kesehatan Dasar (Riskesdas) also showed that of the people who consumed *jamu*. More than half of the people (55.3%) consumed *jamu* in liquid form (infusum/decoct), while the remaining (44.7%) consumed *jamu* in the form of powder, chopped, and pills/capsules/tablets [7].

This herbal product business opportunity is increasingly attractive and promising. An easy-to-see indicator is a proliferation of shops and traders selling herbal products. Mass media, such as magazines and newspapers, often discuss herbal products and their business opportunities. This directly impacts the increase of public trust in herbal products every day.

## 1.3 Natural Resource Potential

Access to Selopamioro Village is straightforward. There is a highway on the south side which is the main road from Imogiri to Dlingo and Patuk, and on the south side, it is bordered by an alternative road from Imogiri, all in good condition. Selopamioro Village is located 10 km from the center of Yogyakarta city, which is about 3 hours if one goes through the Giwangan Bus Terminal. From the Giwangan Bus Terminal, the village is approximately 30 km away and takes 45 minutes at most. From the UGM campus, Selopamioro Village is about 45 km away. If one uses the downtown route, it takes about 2 hours and 15 minutes, whereas if one takes the north and south ring routes, it only takes about 2 hours.

The topography of Selopamioro Village is generally wavy and hilly, with thin to medium tillage. The slope level of Selopamioro Village varies greatly from slope class 10% - 15%, 15% -25%, and 25% - 45%. The water sources in Selopamioro Village consist of rainwater, springs, and rivers. Rainfall in Selopamioro Village ranges from 1,600 mm – 2,000 mm, so if the management is good enough, crop drought is avoidable. Seeing the potential of natural resources, Selopamioro Village has great natural resource potential, such as cassava, wood, and fruits.

## 2 Community Service Method

This activity is addressed to the members of the Women Farmers Group or *Kelompok Wanita Tani (KWT) Lestari Maju*. This village is a fostered village of the UGM Agrotechnology Innovation Center. Based on


information obtained from KWT Lestari Maju, this village arrangement has many yards that have not been utilized optimally but has business opportunities in developing herbal beverage products. According to information from the head of Selopamioro Village, the people of Selopamioro Village have never received counseling about the role of herbal plant cultivation and the development of herbal beverage products in increasing body immunity.

People generally need information about herbal plants' benefits, especially in increasing the body's immune system. The community needs to know the types of plants, the procedure for making them, and the doses for their use. They need to take on important notes in consuming *jamu*/herbal products, especially for someone with contraindications to *jamu* (1). This counseling was delivered by a biopharmaceutical expert and lecturer from the Faculty of Pharmacy, Dr.Djoko Santosa, M.Si., through a pocketbook about the benefits of *jamu* in preventing several diseases. The books were distributed to all counseling participants. It is hoped that the counseling participants will later become agents of transmitting educational information to families and the broader community in the village.

The counseling methods applied include:

1) Measuring the knowledge about the role of herbal plants for the body; 2) counseling on the role of *jamu* as herbal medicine in increasing the body's immunity during the pandemic; 3) procedures for making herbal product beverages; 4) counseling on herbal plant cultivation in residents' yards; 5) active discussion of question and answer participants. The measurement of the knowledge of the KWT Lestari Maju members was carried out at the beginning before being given counseling and after getting counseling. This measurement aimed to determine participants' level of knowledge about the consumption of herbal drinks.

**Table 1: Capacity Building for Selopamioro Village**

2022		2024
1. KWT consolidation and revitalization Selopamioro		1. Drafting training for P-IRT, BPOM, and LPPOM MUI Halal Certification YOG
2. Smart Farming biopharmaceuticals for herbal raw materials consist of: <i>Cymbopogon citratus</i> , <i>Orthosiphon aristatus</i> , <i>Andrographis paniculata</i> , and <b>Nucleus</b> and <b>Plasma</b> based <i>Centella asiatica</i>		2. Submission of P-IRT Licensing, BPOM and halal certification LPPOM MUI Special Region of Yogyakarta
3. Herbal beverage product training with environmentally friendly drying technology		3. Mass production of herbal beverages based on smart farming biopharmaceuticals
4. Training on the standardization of herbal raw materials for the production of herbal beverages		4. Information and communication technology-based marketing training
5. Production of herbal drinks from smart farming biopharmaceuticals		5. KWT institutional strengthening Selopamioro towards autonomy Herbal-based Selopamioro Village

The results of measurements before counseling were used as an illustration of initial knowledge, which then would be compared with the results of measurements after receiving counseling. The knowledge measurement was done by answering questions about the body's immunity and the benefit of *jamu* as herbal medicine. The stages of evaluation in this community service activity include: evaluating counseling and evaluating understanding of the role of *jamu* as herbal medicine in increasing body immunity. The evaluation

of counseling to participants includes initial, process, and final evaluation. The initial evaluation was conducted by giving the KWT Lestari Maju members a pre-test containing questions about the counseling material. Process evaluation was done by looking at the participants' responses through the questions or feedback provided during the discussion. The final evaluation was conducted by giving the participants a post-test with the same questions as the pre-test questions. Post-test scores were compared with pre-test scores. If the post-test score were higher than the pre-test value, the counseling activities provided would have increased the counseling participants' knowledge. The results of this comparison can be used as a parameter for increasing participants' knowledge after receiving counseling about the role of *jamu* as herbal medicine to prevent disease and increase immunity.

Table 1 above depicts the action plan for the Capacity Building project. In year 2022, the plan comprises mostly of educating the local community through counselling and training. Once they are established, the KWT Lestari Maju will hopefully be able to sustain and improve the production of herbal drinks from smart farming biopharmaceuticals so that in 2024, all the products will be qualified for certifications and licensing to be mass produced.

### 3 Results and Discussions

The counselling on developing KWT Lestari Maju was done through innovation in developing processed products from herbal plants. Product manufacturing training was conducted twice on Tuesday, 11 May 2022, at 09.00-13.00 WIB, and 20 June 2022. One socialization on herbal plant cultivation on 12 July 2022 at the KWT Lestari Maju Secretariat, counselling was held regarding the importance of developing the utilization of herbal plants by a research team from PIAT UGM.



**Figure 1:** Implementation of Counseling on the Role of Biopharmaceutical Plants

As shown in Figure 1, the participants were given an explanation of the benefits of medicinal plants for the body. The instructor also conveyed the intent and purpose of holding counseling to KWT, namely to empower women farmers as producers of herbal products. After that, it was continued with the delivery of counseling material, starting with a question and answer to KWT about what was meant by herbal plants, their benefits, and dangers to the body.

Participants were explained about counseling activities on introducing types of herbal plants, their benefits for the body, the definition of body immunity, how it works, and the immune system's role in preventing infection. The community needs to have an understanding of the immune system to determine the proper steps in efforts to prevent and treat diseases. The body has natural immunity and adaptive or acquired immunity. Natural immunity will be active by involving cells that can kill foreign substances in the body. In contrast, adaptive immunity will involve lymphocytes (T and B) cells by producing antibodies as an immune response. In good body conditions, natural and adaptive immune reactions maintain body immunity.

Providing counseling about cultivation development that is carried out is cultivation using yards or land with fertilizers and pesticides that are friendly to the environment. In this counseling, the facilitator invited

the KWT members to adopt a healthy life through drinking *jamu*, improving KWT members' welfare, and producing powdered herbal drinks with a higher selling value than natural products.



**Figure 2:** Counseling activities on the socialization of herbal plants and training on making powder drink products (not described in the text)

The training, held on Wednesday, 20 May 2022, at the KWT Lestari Maju Siluk Secretariat, Selopamioro, was preceded by delivering materials on making instant lemongrass ginger from local ginger to the training participants as documented in Figure 2. The materials were delivered by an expert, Dr. Djoko Santosa, S.Si., M.Si., followed by a question and answer session between the presenter and the training participants. The material and the practice of making instant ginger lemongrass were also explained. KWT members assisted with the work. The implementation of the training went smoothly, and the ginger produced was as desired. The participants had great enthusiasm to learn and listen to this training. Finally, the participants asked about the tips and tricks for making instant ginger, so there was no failure. To close the event, all participants and the experts present commemorated the training with a photo shown in Figure 3.

Traditional medicines, including *jamu* as herbal medicine, are intended to maintain the immune system so that it stays good. If it aims to improve the immune system, it is only needed when the body's condition is not good. Medicinal plants can improve the function of the immune system, activate and suppress specific immune cells, and enhance the immune response and defense system. In addition, some of these plants can ward off free radical compounds and have anti-inflammatory activity.

In the second part of the counseling activities, the types of traditional medicine were explained to the participants. Traditional medicine can be intended for preventing, treating, and improving a disease. Two types of traditional medicines are finished products and homemade/household products. Homemade/household products require good knowledge of manufacturing. In general, the initial stage is the preparation of materials that can be done by making medicinal plants *Simplicia*. Several things that need to be considered are the correct identity of the plant and whether the *simplicia* used is of good quality (appearance, size, color, smell, and taste). It is also essential to observe if *Simplicia* has been contaminated/infected with mold or toxic substances, which may cause harmful effects on health.

The third part explains the procedures for making good *jamu*. What makes a good *jamu* is safety, quality, and efficacy. Therefore, the processing of *jamu* as herbal medicine in the household must be carried out properly by paying attention to tools, places, personal hygiene, sorting, washing, draining, chopping, and boiling. Consumption and storage; *Jamu* should be consumed as soon as possible after it is made, and if it is to be stored, it should be stored in glass bottles, not plastic bottles of used mineral water. This is to maintain the quality of the *jamu*.

In the final part, the participants were given information on consuming *jamu* and things to pay attention to. The consumption of herbal medicine must be careful in certain groups of individuals, namely individuals

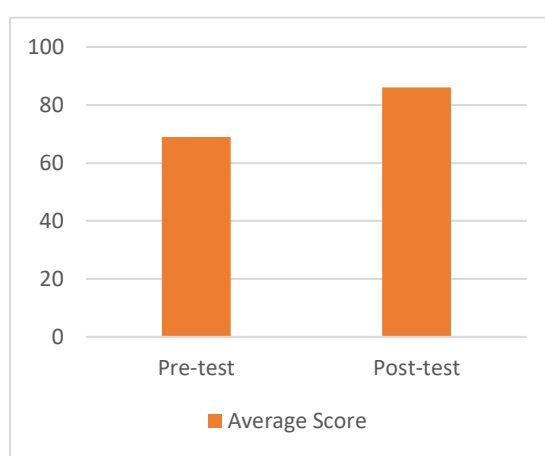


who have allergies, risk groups (infants, children, pregnant women, senior citizens), and people who are undergoing drug therapy from a doctor. Excessive doses and combinations should be avoided. In addition, information about long-term use and the risk of unwanted side effects must also be informed to participants, so it is necessary to consult a doctor or pharmacist when using traditional medicine with other medicines.



**Figure 3:** KWT Lestari Maju Counseling Participants

Providing information about the role of herbal medicine makes people more aware of how to use medicinal plants properly and safely. It educates the public about cultivating herbal plants in their yards.



**Figure 4:** Average Scores of the Counseling Participants' Pre-Test and Post-Test

During the question-and-answer discussion session, the participants responded actively, as seen from questions based on personal experience or phenomena that occur in society, especially related to drug use. The assessment of the evaluation of this counseling activity is seen based on the scores of the participants' pre-test and post-test. As presented in Figure 4, the average participant's pre-test score was 69, and the post-test score was 86. Based on the average value, it shows that the participants' knowledge increased by 17%. The increase in the average score is a parameter of the success of this counseling activity.

#### 4 Conclusions

The result of the Capacity Building activities for residents of Selopamioro, Imogiri District, Bantul Regency, Yogyakarta, is optimizing land and biopharmaceutical products. Counseling about the role of *jamu* as herbal medicine to prevent disease and increase immunity during the pandemic increase the knowledge of KWT Lestari Maju members. This increase in knowledge is hoped to encourage positive attitudes and actions. In addition, it is hoped that the participants can provide broadly to change the behavior of families and communities and make KWT Lestari Maju a production house for herbal beverages, namely herbal drinks made from ginger and lemongrass and herbal drinks based on guava fruit and *empon-empon*. The KWT Lestari

Maju members are very active and have the potential to develop into an important institution to support Selopamiro Village to compete in Bantul and Indonesia. In addition, they can also help increase the community capacity in efforts to improve health status independently and to increase income in the Siluk area, Selopamiro.

#### 4.1 Publisher's Note

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