

Exploring the Health Potential of Kombucha Tea: Empowering the Community of Koto Perambahan Village

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Abstract. This study explores the potential of kombucha tea in increasing the awareness and skills of the residents of Koto Perambahan Village regarding a healthy lifestyle. Through community engagement activities, this research aims to provide understanding and skills to the community regarding the production and benefits of kombucha tea. This beverage is considered to have the potential to improve digestive health, regulate blood pressure, and reduce blood glucose levels. The community engagement team delivered the material through lectures, discussions, and Q&A sessions, attended by 30 participants from the local community. This activity successfully enhanced their understanding of probiotic beverages and the skills involved in their production. Participants also experienced the variety of flavors in kombucha tea. Thus, this training is expected to increase the awareness and skills of the community in adopting a healthy lifestyle and create economic opportunities through kombucha tea production. Overall, this research has a positive impact on improving the quality of life in the village community.

Keywords: Kombucha Tea, Probiotic Beverage Production, Community Empowerment..

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1. INTRODUCTION

As public awareness of how to maintain their health has increased, so have their attitudes and behaviors. The awareness of the importance of personal health has led to a shift toward more proactive behaviors in efforts to maintain and improve well-being. One prevention strategy that is gaining more attention is through the consumption of foods and beverages with the potential to provide health benefits. In this context, herbal tea emerges as an interesting example of a functional beverage because it contains natural ingredients with the potential to positively influence health.

In general, herbal tea differs from traditional tea, which is usually brewed from *Camellia Sinensis* leaves. Herbal tea is not limited to one type of plant or leaf but is made from various other plant materials, such as leaves, fruits, bark, seeds, flowers, and various other natural ingredients (Zho et al., 2013). This diversity of raw materials provides a wide range of aromas, flavors, and health

benefits associated with various types of herbal teas. One of the main attractions of consuming herbal tea is its potential to offer diverse health benefits. Some identified benefits include maintaining heart health, reducing stress levels, providing a calming effect, strengthening the immune system, and other advantages (Ravikumar, 2014). These benefits have sparked public interest in seeking more natural and healthy alternatives in beverages, leading to the increased popularity of herbal tea.

Herbal tea also comes in many variations and different names, reflecting the diversity of ingredients used in its preparation. One increasingly popular example of herbal tea is kombucha tea. Kombucha tea is a traditional beverage that is quite intriguing because it results from fermentation by a symbiotic culture of bacteria and yeast (SCOBY) (Suhardini & Zubaidah, 2016). The bacteria found in SCOBY include *Acetobacter xylinum*, while the yeast coexisting with these bacteria comes from genera such as *Saccharomyces*, *Zygosaccharomyces*, *Pichia*, and *Brettanomyces* (Susanti et al., 2023). SCOBY is used in the fermentation and production of kombucha, resulting in a refreshing, slightly sweet, and fizzy tea. The appearance of SCOBY can vary but is typically solid, round, elastic, and cloudy, with a mild vinegar-like odor.

Kombucha tea has long been believed to provide various health benefits. Some of its key benefits include its ability to improve digestion and prevent hypertension. This beverage is rich in natural probiotics that play a vital role in enhancing the growth of beneficial bacteria in the intestines, which, in turn, helps improve digestion and address common digestive issues (Muqoffa, 2021). Furthermore, based on several previous studies, it is known that the consumption of probiotics, such as those contained in kombucha tea, can have a positive impact on blood pressure control. This provides an additional benefit by helping to prevent high blood pressure, a serious and common health issue. Moreover, Lukitawati (2013) also revealed in her research that kombucha tea may play a role in lowering blood glucose levels. This is good news for individuals struggling with blood sugar regulation.

Kombucha tea is also known for its antioxidant activity, with increased antioxidant activity attributed to the presence of free phenolics produced during fermentation. Therefore, the higher the level of phenolics produced, the higher the antioxidant activity. The advantages of kombucha tea over regular tea include a higher content of organic acids, vitamins, and amino acids (Bishop et al., 2022 in Meinardus Dwi Rantisari Thayeb et al., 2023). Thus, kombucha tea is not only a refreshing beverage but also a valuable addition to overall health, especially in terms of digestion, blood pressure control, and blood glucose regulation. This combination of benefits has made kombucha tea increasingly popular in the world of health and fitness.

2. THEORETICAL STUDIES

The Exploration of the Health Potential of Kombucha Tea is an initiative aimed at investigating and understanding the health potential contained in the beverage known as kombucha tea. This program aims to delve deeper into the potential health benefits that may be associated with kombucha tea, with a focus on its content and its impact on human well-being.

In order to achieve this goal, the Exploration of the Health Potential of Kombucha Tea program may involve various activities such as scientific research, laboratory testing, nutritional analysis, and in-depth literature review. Through these activities, the program seeks to identify various active components within kombucha tea that may provide health benefits, such as antioxidant potential, probiotic properties, or positive effects on the digestive system.

Furthermore, this program may also include public outreach and education for interested communities or audiences, with the aim of disseminating knowledge about kombucha tea and how to

consume it wisely to support health. The Exploration of the Health Potential of Kombucha Tea represents an initial step in gaining a deeper understanding of the health benefits of this beverage and can help guide further research and the development of practical applications for the general public.

3. METHOD

This community service activity was carried out in the village of Koto Perambahan, Kampa District, using lecture, discussion, and question-and-answer methods. The use of the lecture method was 50%, practical activities 25%, and question-and-answer sessions 25%. These methods were employed to ensure that the material presented was easily understood by the participants. The community service team delivered the material through lectures. Participants listened attentively and observed during this educational activity. It was followed by discussions and question-and-answer sessions between the participants and the facilitators. The discussion method was used to revisit the material that had been presented, allowing for interactive communication between participants and between participants and facilitators (Sabardila et al., 2020). The lecture method was used to convey information about the definition of kombucha tea, its contents, its health benefits, and the process of making kombucha tea to produce a health beverage that can be made independently on a household scale.

The stages of the activity in this method included observation and coordination, making kombucha tea testers, delivering kombucha tea material, and providing training on making kombucha tea. There were 30 participants in this community service activity, consisting of the residents of Koto Perambahan village.

4. RESULTS AND DISCUSSION

4.1 Observation and Coordination

Observation and coordination activities were carried out in the Koto Perambahan Village Office Hall with the Village Head and Village officials as shown in the following figure.



Figure 1 Observation Activity

The lack of awareness among rural communities about the importance of a healthy lifestyle is a crucial issue that needs to be taken seriously. Rural inhabitants often lack adequate knowledge about the types of foods and beverages that can strengthen their immune systems. For example, in the village of Koto Perambahan, there has been no focused educational effort regarding probiotic beverages that offer significant health benefits. In this context, an innovative and creative approach is required to address these issues and enhance the rural community's understanding and awareness of the importance of a healthy lifestyle and the consumption of immune-boosting foods.

To address these challenges, the community engagement team has identified a highly promising solution: providing training on the production of probiotic beverages such as kombucha tea. Through this approach, we hope that rural communities can more easily access comprehensive information about foods and beverages that support their immune systems. Kombucha tea, as a natural probiotic beverage, has the potential to improve digestive health, assist in blood pressure regulation, and even reduce blood glucose levels. Therefore, we are creating opportunities for rural communities to enhance their understanding and skills in adopting healthier lifestyles.

Initiatives like this training program represent a crucial first step in raising awareness among rural communities about the importance of a healthy lifestyle. By imparting knowledge and skills to rural communities, it is hoped that they will be able to take concrete steps toward healthier living, ultimately positively impacting their overall quality of life. The essential role of the community engagement team is to be the primary driving force in guiding rural communities toward positive lifestyle changes. With effective collaboration and ongoing efforts, we can create a significant impact in improving the health and quality of life of rural communities.

4.2 Preparation of Kombucha Tea Tester

The fermentation of kombucha tea indeed requires a relatively long time, typically ranging from 12 to 14 days, to achieve the desired fermentation level. Following this initial stage, it is usually followed by a second fermentation for an additional 1 to 3 days. The purpose of this second fermentation stage is to enhance the depth of flavor and create the distinctive carbonation sensation characteristic of kombucha tea. Through this second fermentation process, the beverage can become more diverse in terms of the flavors and aromas it produces, as shown in the following image.



Figure 2 Preparation of Kombucha Tea Tester

After the fermentation process is complete, the result of making kombucha tea typically yields about 2 jars of the beverage. It's important to remember that finished kombucha tea should be stored properly. One common way to do this is by keeping it in the refrigerator. This action will help slow down further fermentation. If finished kombucha tea is left at room temperature for an extended period, fermentation will continue, which can result in the drink becoming overly sour or excessively carbonated (Puspitasari, 2017). Therefore, refrigerating it is the best choice to maintain the quality and safety of your kombucha tea.

4.3 Socialisation of Kombucha Tea Materials

The counselling event on kombucha tea material was attended by 30 residents and took place at the Kampa Sultanate Palace field. The materials included information about the human digestive system, the relationship between probiotics and health, the benefits of probiotics for health, the history of kombucha tea, and the health benefits of kombucha. The people of Koto Peerambahan Village showed high enthusiasm in attending this counselling event. Many participants actively asked questions to the counsellor. The enthusiasm of the participants is also reflected in Figure . Some of the questions asked by the participants included topics such as where to purchase the scoby, signs of successful or failed fermentation, factors affecting fermentation failure, length of kombucha tea storage, how to identify kombucha scoby that is no longer suitable for use, and other benefits of scoby that is no longer used. as for the extension activities as shown in the following figure.



Figure 3 Counselling on kombucha tea material

The speaker patiently answered and provided detailed explanations for each question posed by the participants. Scoby, which is an abbreviation for "symbiotic culture of bacteria and yeast" or the symbiosis of bacteria and yeast, is used in the kombucha tea fermentation process. The success of fermentation can be identified by the distinctive aroma of fermentation that emerges, as explained by Nur et al. (2023). On the other hand, signs of failed fermentation include an aroma resembling stale tea and the possible growth of contaminant molds on the surface of the kombucha tea. Kombucha mold can have various colors, including red, yellow, and brown.

Several factors that can affect the failure of the fermentation process include the lack of cleanliness of equipment and ingredients, insufficient sugar content, and less than ideal environmental conditions during the fermentation process, such as inappropriate humidity, direct sunlight exposure, or exposure to kitchen smoke. All of these factors can influence the final outcome of the kombucha tea fermentation process. The shelf life of ready-to-consume kombucha tea is approximately two weeks when stored in the refrigerator. This is because the fermentation process still continues at a slow pace in cold temperatures and eventually produces the final product, which is vinegar. The vinegar produced from kombucha tea can also be used as a substitute for factory-made cooking vinegar. Expired or aged kombucha scoby is characterized by becoming darker brown in

color and thinner or easily torn. An aged or expired scoby can be utilized as liquid fertilizer (Saddam et al., 2022). Meanwhile, a healthy scoby can also be used for a facial mask or skincare purposes according to specific guidelines (Ziemlewska et al., 2021).

4.4 Kombucha Tea Making Training

The kombucha-making training session began with an explanation of the kombucha tea-making process guided by Kukerta students. This approach was chosen to optimize the use of time, given that the kombucha tea-making process is quite time-consuming due to involving two distinct fermentation stages. After the explanation was given, training participants were invited to participate in a hands-on practice session to mix the main components in kombucha tea-making, such as sweet tea, SCOBY (Symbiotic Culture Of Bacteria and Yeast), and kombucha starter. Through this practical stage, training participants could directly experience how to combine these ingredients to create a healthy and delicious kombucha beverage.

After tasting the results of the beverages they created, some of the community service participants provided testimonials through direct interviews. They shared their experiences after trying kombucha tea, with several aspects including the distinctive aroma and taste of this beverage. Furthermore, participants also noted that the acidity level of kombucha can vary from one individual to another, so some people felt that the acidity level was already suitable for their preferences, while others might find it too acidic. This indicates that kombucha tea has unique characteristics and can be customized to individual tastes.

The kombucha-making training has proven to be an effective way to provide practical understanding to the community about how to make and appreciate probiotic beverages, which also support health and economic aspects. Based on research conducted by Arlofa et al. (2019), which concluded that kombucha is one of the health beverage products that can provide additional income for partners. One production stage of kombucha can produce as much as 196 liters or 784 bottled units, which are marketed at a price of 10,000 per bottle (Arlofa et al., 2019). This skill-oriented activity is expected to enhance the participants' knowledge and provide additional skills to the community, create a positive impact, especially on a healthy lifestyle, and promote the development of health-beneficial beverage products, especially for skin health and beauty (Meinar Dwi Rantisari Thayeb et al., 2023).

It can also be seen from the training participants who were able to directly observe how to make kombucha beverages. Some participants provided testimonials through direct interviews after tasting the beverages they created, sharing their experiences, including the unique aroma and taste of kombucha. They also realized that the acidity level of kombucha can vary among individuals, indicating that this beverage can be tailored to individual preferences. The achievement of the training's objectives is to provide practical understanding to the community about how to make and appreciate probiotic kombucha beverages. This aims to raise awareness among the public about the benefits of kombucha and provide skills in its production while considering the possible variations in taste.

5. CONCLUSION

This research aims to raise awareness among the community about the benefits of kombucha tea as a natural probiotic beverage with the potential to support health. Through community engagement activities in the village of Koto Perambahan, various methods were employed, including lectures, discussions, and practical training on making kombucha tea. The results of this research

show that the community gained a deeper understanding of the benefits of kombucha tea, its fermentation process, and even opened up economic opportunities through kombucha tea production. Thus, this research successfully introduced the community to a probiotic beverage that has the potential to enhance their health and quality of life.

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