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YOGHURT AND FENNEL LEAVES EXTRACT BASED LIQUID SOAP PRODUCTION WORKSHOP AT AL ILYAS ARJASARI BOARDING SCHOOL IN BANDUNG

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ABSTRACT

The Boarding School partner has many students but the habit of washing their hands before eating is not accompanied by washing with soap. This is a concern because washing with soap ensures the disappearance of pathogenic microbes. Teaching the importance of washing hands with soap before meals aims to raise awareness about the benefits of maintaining hygiene and supplementary nutrition could improve health. We trained the pupils in the Boarding School to make liquid hand-washing soap and yoghurt to stimulate a hygienic lifestyle, provide in-house supplementary nutrition, and gain economic benefit from the products. The hygienic lifestyle knowledge was delivered through a presentation in an open-class setting, while soap and yoghurt production skills were taught by an in-hand workshop, followed by post-monitoring for both activities. The yoghurt was produced by fermentation, and the soap was made by formulating a macerate of fennel leaf extracted into hand-washing soap. The pupils' knowledge of hygienic lifestyles improved with an average score of 68 to 90.

Keywords: workshop; hand liquid soap; yoghurt; fennel leaves extract

INTRODUCTION

Healthy and hygienic lifestyle practices are still challenging in some communities in Bandung District, including properly washing hands with soap before meals, resulting in health disorders such as diarrhea. This is also seen in one Boarding School. Though there are some resources that can be used to promote a healthy and hygienic lifestyle, such as fennel leaves milk, its utilization is still limited. Few clinical tests have been tempted with fennel leaves extracted against harmful bacteria and it showed high impact against harmful bacteria (Atwaa *et al.*, 2022).

This community service activity aims to increase students' understanding of the importance of personal and environmental hygiene as a preventive measure against infectious diseases. Sanitation challenges in Islamic boarding schools, especially in

dormitories with limited facilities, are the main reason for carrying out this activity.

As part of this activity, students are empowered to maintain the cleanliness of the Islamic boarding school environment independently. Through this training, they not only gain knowledge about the importance of cleanliness. Additionally, students gain practical skills that can be directly implemented in daily life. This approach encourages them to adopt clean and healthy living principles, both within the Islamic boarding school and in their broader lives outside of it.

This activity is an important example for other Islamic boarding schools in Arjasari District and its surroundings. The collaboration between UBK and Al-Ilyas Islamic Boarding School shows how higher education, and Islamic boarding schools can work together to create positive changes that benefit the health of students and the surrounding community.

Yoghurt results from Milk fermentation involve the use of lactic acid bacteria such as *Lactobacillus bulgaricus*, *Streptococcus thermophilus*, *Lactobacillus acidophilus*, and *Bifidobacterium*.

This process produces Yoghurt, which contains probiotics. Probiotics are described as live microorganisms which, when consumed in adequate amounts, confer a health benefit on the host (Savaiano *et al*., 2021). Studies have demonstrated that probiotic yogurt can maintain high levels of viable bacterial strains, even when incorporated into other products (Atwaa *et al.,* 2022). These probiotic strains have been shown to have potential health effects when present in sufficient quantities (at least 106 cfu/mL) (Atwaa *et al.*, 2022).

Yoghurt is highly beneficial for the skin as it provides essential nutrients like calcium, protein, and vitamin D. Research by Rum *et al.*, (2021), highlights that Yoghurt contains potent antioxidants with an IC50 value of 15.54. Additionally, a study showed that the essential oil (EO) extracted from fennel leaves is rich in limonene and trans-anethole (Elbaz *et al*., 2024). Analysis of the antioxidant activity of these EOs showed that the E1 and E4 cultivars, grown under both conventional and organic farming

methods, had the lowest IC50 values, averaging 0.052 and 0.045 mg/mL, respectively. Fennel leaf extract contains high antioxidants and anti-inflammation, which are suitable for the skin (Pacifico *et al.*, 2015). Yoghurt is a fermented food rich in nutrients beneficial to health. It contains vitamins such as B6, B12, D, and K, as well as protein, calcium, lactic acid, and beneficial bacteria (Rum *et al.*, 2023).

IMPLEMENTATION METHOD

The novelty side of this method is the simplification of procedure to make leaf extract and liquid soap, because usually the procedure is long and sophisticated. The workshop provides training using visual media such as projectors and slides, as well as hands-on practice that teach students how to make hand washing soap and bath soap from natural ingredients, such as Yoghurt and fennel leaves. Apart from that, students are also trained to make Yoghurt which is rich in calcium and protein, which is beneficial for body health and skin care.

The approach taken in this training not only teaches the production of body care products based on natural basics but also integrates the concept of Health and hygiene in a comprehensive manner. The use of two natural ingredients that are very beneficial, namely yogurt and fennel leaves to produce soap that is not only effective in cleaning but also supports skin and body health. Yogurt, which contains probiotics and essential nutrients, improves the quality of the soap by adding moisturizing and protective properties to the skin. Meanwhile, fennel leaf extract, known for its antioxidant and anti-inflammatory properties, provides additional benefits in reducing inflammation and protecting the skin from environmental damage.

The training combines theory and hands-on practice, allowing students to not only learn passively but also actively engage in the manufacture of the products they will use. Thus, this approach optimizes applied learning that can be directly applied in everyday life, while increasing awareness of the importance of utilizing natural ingredients to support a healthy and hygienic lifestyle.

RESULT AND DISCUSSION

The activity was implemented in several stages. On Sunday, November 17, 2024, there was a presentation on Clean and Healthy Lifestyle (PHBS) using In Focus and Microsoft PowerPoint. On Wednesday, November 20, 2024, from 9:00 to 11:00 AM, training sessions include Yoghurt production, the extraction of fennel leaves, and the production of liquid soap.

Figure 1. Training In Yoghurt Production

The event ran smoothly, with the community showing great enthusiasm during the PHBS PowerPoint presentation by Mrs. Lia Marliani and the Yoghurt-making demonstration by Mrs. Ira Adiyati Rum. The Yoghurt-making process begins with preparing the ingredients. Cow's milk is first pasteurized at 80°C for about 10 minutes. Pasteurization used thermometers to ensure that the milk temperature is precisely 80^{O} celcius. After pasteurization, the milk is left to cool until it reaches 37°C. At this point, the bacterial starter is added and mixed thoroughly. The mixture is then incubated at room temperature for 36 hours before being stored in the refrigerator. The purpose of storing it in the refrigerator is to finish and stop the fermentation, otherwise the yogurt will be too sour.

The community was highly engaged and asked numerous questions, as there is a cattle farm located near Boarding School Al Ilyas, Bandung district locations, and the community has not diversified milk into additional businesses that make yoghurt. The activities on the second day were centered on training participants to make liquid hand-washing soap, utilizing the Yoghurt prepared on the first day and fennel leaves as the active ingredient.

Figure 2. Liquid soap created from Yoghurt and fennel leaf extract

Figure 3. Member Of Al Ilyas Boarding School, a few students and lecturers from Universitas Bhakti Kencana Bandung

Sodium lauryl sulfate is a common ingredient in liquid soap formulations, functioning as a surfactant. It dissolves well in water and blends easily with salt. Additionally, sodium lauryl sulfate offers benefits such as chemical stability in cleaning and the ability to lower surface tension.

DMDM Hydantoin is commonly used in cosmetic products like shampoos, hair conditioners, hair gels, and skincare items. It serves as a highly effective antimicrobial preservative. This clear liquid is water-soluble, making it suitable for various formulations. The maximum concentration limit for semi-solid preparations is 0.6%, with the expectation that no microbial growth will occur within the given time frame.

CONCLUSION

The lecturer team hopes that, following this workshop, the community have the skills to make liquid hand soap using natural ingredients which is abundant in Arjasari district (which is cow milk and fennel leaves). Few test has been tempted with fennel leaves extract against harmful bacteria and it showed high impact against harmful bacteria (Partonowati *et al.*, 2021).

This could potentially develop into a better hygiene lifestyle at the boarding house, new business opportunities and enhance the well-being of the local community.

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