



Training on making handwash Ag nanoparticle of Sesbania leaf extract for Fatayat NU

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ARTICLE INFO	ABSTRACT
<p>Article history Received: 2023-07-31 Revised: 2023-09-09 Accepted: 2023-09-12 Published: 2023-10-04</p> <p>Keywords Ag Nanoparticles Fatayat NU Handwash soap</p>	<p><i>In order to strengthen the skills and creativity of Fatayat Nahdlatul Ulama (NU) members, Handwash soap making training is a useful activity. Soap making training can provide Fatayat NU members with the opportunity to acquire new skills. In this training, participants will learn various techniques and methods in making quality soap. This community service activity can also provide information and knowledge to Fatayat NU women about making Sesbania leaf extract nanoparticle handwash soap. Based on the evaluation results, it shows an increase in the knowledge of Fatayat NU about making handwash. With an increase in the average value of pretest results from 40 and posttest 75 This community service is an effective means of disseminating information and knowledge about hygiene, health, and the importance of washing hands with soap.</i></p>
<p>Kata Kunci Fatayat NU Nanopartikel Ag Sabun cuci tangan</p>	<p>Pelatihan pembuatan nanopartikel Ag pencuci tangan ekstrak daun sesbania untuk Fatayat NU. Dalam rangka meningkatkan keterampilan dan kreativitas anggota Fatayat Nahdlatul Ulama (NU), pelatihan pembuatan sabun cuci tangan merupakan salah satu kegiatan yang solutif. Pelatihan pembuatan sabun dapat memberikan kesempatan kepada anggota Fatayat NU untuk memperoleh keterampilan baru. Dalam pelatihan ini peserta mempelajari berbagai teknik dan metode dalam pembuatan sabun berkualitas. Kegiatan pengabdian kepada masyarakat ini juga dapat memberikan informasi dan pengetahuan kepada perempuan Fatayat NU tentang pembuatan sabun cuci tangan nanopartikel ekstrak daun Sesbania. Berdasarkan hasil evaluasi menunjukkan adanya peningkatan pengetahuan perempuan fatayat Nu tentang cara mencuci tangan. Dengan peningkatan nilai rata-rata hasil pretest dari 40 dan posttest 75. Pengabdian masyarakat ini merupakan sarana yang efektif dalam menyebarkan informasi dan pengetahuan tentang kebersihan, kesehatan, dan pentingnya cuci tangan pakai sabun.</p>
<p style="text-align: right;">Copyright © 2023, Amananti et al This is an open access article under the CC-BY-SA license</p> <div style="text-align: right;">  </div> <p><i>How to cite:</i> Amananti, W., Kusnadi, K., & Fatmawati, N. A. (2023). Training on making handwash Ag nanoparticle of Sesbania leaf extract for Fatayat NU. <i>Journal of Community Service and Empowerment</i>, 4(3), 545-551. https://doi.org/10.22219/jcse.v4i3.28275</p>	

INTRODUCTION

Fatayat Nahdlatul Ulama (NU) is a women's organization under the auspices of Nahdlatul Ulama, one of the largest Islamic organizations in Indonesia. The Fatayat NU empowerment program aims to encourage the role and positive contribution of women in society, as well as provide opportunities for them to develop their potential and skills. (Hendrawan et al., 2022). There are several Fatayat NU empowerment programs including Skills and Training. This program focuses on providing training and skills to Fatayat NU members in various fields, such as entrepreneurship, craft making, agriculture, and information technology skills (Hidayat et al., 2020). With these new skills, Fatayat NU members can become more independent and have the opportunity to contribute to the economy of their families and communities.

Health Program This program includes health campaigns, education about reproductive health, and disease prevention. The aim is to increase the awareness and understanding of Fatayat NU members regarding the importance of health and

the role of women in maintaining family health (Chasanah et al., 2022). Economic Empowerment This program aims to provide access and opportunities for Fatayat NU members to be involved in economic ventures. This could be a micro business credit program, entrepreneurship training, or capital assistance to help them start their own business (Hafiz & Sungaidi 2021).

Through these various programs, it is hoped that Fatayat NU members will be able to develop their potential, improve their quality of life, and make a positive contribution to society and the nation. This program is also in line with the spirit of equality and independence for women, as well as Islamic values which encourage the empowerment of all members of the ummah, regardless of gender (Surachman 2019). Improving skills and creativity in making handwash for Fatayat NU can be a positive and beneficial step. Making handwash independently can not only meet their daily needs, but can also teach Fatayat NU members new skills and increase their creativity in creating useful products (Febriani 2021).

In order to strengthen the skills and creativity of Fatayat Nahdlatul Ulama (NU) members, Handwash soap making training is a useful activity. This article will discuss the importance of soap making training for Fatayat NU and the benefits that can be obtained from this training. Soap making training can provide opportunities for Fatayat NU members to acquire new skills. In this training, participants will learn various techniques and methods in making quality soap. These skills can be used for personal needs or as capital to start an independent soap business (Hidayat et al. 2020).

Silver nanoparticles are tiny particles of silver with dimensions in the nanometer range, typically ranging from 1 to 100 nanometers (nm) (Xia et al. 2018). They are a type of nanomaterial that has gained significant attention in various fields, including science, technology, and medicine, due to their unique properties and wide range of potential applications. Silver nanoparticles exhibit strong antibacterial properties (Guerrero et al. 2022). They can inhibit the growth of a wide variety of bacteria, making them useful in medical applications such as wound dressings, antibacterial coatings for medical devices, and antimicrobial textiles. Silver nanoparticles can serve as catalysts in chemical reactions, enhancing the rate of reactions in various industrial processes, including the synthesis of chemicals and the removal of pollutants. Due to their small size and high surface area, silver nanoparticles can enhance the electrical conductivity of materials. They are used in conductive inks for printed electronics, touch screens, and flexible electronics. Silver nanoparticles exhibit unique optical properties, including surface plasmon resonance (SPR), which can be tuned by adjusting their size and shape. This property makes them valuable in applications like sensors, imaging, and enhancing the efficiency of solar cells. Silver nanoparticles are investigated for their potential in drug delivery systems, cancer therapy, and imaging agents in the field of nanomedicine. (Kundu et al., 2022). They can be used in photothermal therapy, where their ability to absorb light and convert it into heat is exploited to selectively target and destroy cancer cells. Silver nanoparticles are used in clothing and textiles for their antimicrobial properties, helping to reduce odor and maintain freshness in clothing. Silver nanoparticles can be incorporated into water purification systems to remove contaminants and pathogens effectively. They are used in food packaging materials to extend the shelf life of perishable products by inhibiting the growth of bacteria and fungi. Silver nanoparticles are employed in the development of highly sensitive electrochemical sensors for detecting various analytes, including heavy metals, biomolecules, and toxins.

Silver nanoparticles (Ag) are silver particles with very small sizes, in the nanometer range (1 nanometer is equal to 1 billion parts of a meter) (Arunachalam et al. 2015). The use of silver nanoparticles has been the subject of significant research in recent years, especially in applications such as antibacterial, antimicrobial, and many other applications (Aryan et al., 2021). While the use of silver nanoparticles can have many benefits, it is important to understand that their impact on the environment must also be considered. The small size of silver nanoparticles can make them more easily dispersed in the environment and can have an impact on living organisms, including aquatic organisms such as fish and plankton. (Baek et al. 2018). Therefore, studies of its toxicity and impact on the organism must be carried out to ensure safe use. Silver nanoparticle production can require significant resources, including silver itself. Consider the use of sustainable resources in silver nanoparticle production to reduce environmental impact (Rahim et al., 2020).

Waste from the production and use of silver nanoparticles must be managed properly to avoid environmental contamination. This includes safe processing and disposal. In addition to silver nanoparticles, consider more environmentally friendly alternatives whenever possible. For example, the use of green chemicals or technologies that are more environmentally friendly in the same application (Alabdallah & Hasan, 2021). Silver nanoparticles synthesized using plant extracts are one of the methods used in nanotechnology to produce silver nanoparticles with special properties. Plant extracts contain various chemical compounds, including compounds that can act as reducing agents in the process of forming silver nanoparticles (Xi et al. 2022).

The use of leaf extract nanoparticle handwash soap refers to a soap formulation containing nanoparticles and extracts from the leaves of certain plants. The idea behind using nanoparticles is to increase the penetration and effectiveness of the leaf extracts in the soap, thereby providing additional benefits to the skin. (Martien et al. 2012). Sesbania leaves contain active compounds such as polyphenols, flavonoids, and other substances that have antioxidant, anti-inflammatory, antimicrobial, and maybe even some skin healing properties. However, some of these compounds may have large particle sizes and chemical structures that make it difficult to penetrate the skin in their simple forms.

By using nanoparticle technology, the leaf extract can be broken down into very small particles with nanometer size. This allows them to penetrate deeper into the skin, increasing the penetration and effectiveness of the active substances contained in the leaf extract. Benefits of Soap Making Training for Business Potential. With the soap-making skills acquired through training, Fatayat NU members can run small businesses or home industries in producing and selling soap independently. The market potential for natural soaps is increasing, especially for consumers who are concerned about the environment and skin health (Praharsiwi 2021).

Economic Empowerment This training will empower Fatayat NU members, especially women, by providing the opportunity to have additional sources of income. With the ability to make soap, they can become independent entrepreneurs and contribute to the economy of their families and communities (Wahyuni 2018). By prioritizing natural ingredients in soap making, training participants will be educated about the importance of using environmentally friendly products. This will have an impact on reducing chemical waste and pollution produced by conventional soap (Tivani et al., 2021) .

METHOD

Community service in the manufacture of handwash soap is an activity that is very useful for improving public health and hygiene. Here are the steps of the implementation method, Preliminary study to identify community needs related to handwash soap, their level of awareness about the importance of cleanliness, as well as potential health problems that can be overcome by using handwash soap. making Sesbania Leaf Extract Handwash which was carried out at the Harapan Bersama Polytechnic Pharmacy Laboratory. In carrying out community service activities, Fatayat NU women actively participate in these activities.

In this community service activity, participants are directly involved in the process of making soap so that they can understand practically how to make safe and effective soap. In community service activities also provide Education about Cleanliness and Use of Handwash Soap.

Table 1. Hand Wash Formulations

No	Material	Concentration
1	Ag + Sesbania leaf extract	2 ml
2	SLS	45g
3	Na ₂ SO ₄	30g
4	STTP	15g
5	Citric Acid	7,5g
6	Cocos Oil	10g
7	Aquades	500 ml

This community service activity provides information about the importance of cleanliness, especially in maintaining healthy hands, as well as the benefits of using handwash soap regularly. In this activity also given an explanation of the correct hand washing technique. Evaluation of this PKM activity is by looking at the results of the pretest and posttest given before and after implementation to be able to provide an overview of the success of the PKM activity.

RESULTS AND DISCUSSION

Community service in the manufacture of Sesbania leaf extract nanoparticle handwash is a form of service activity that has great benefits for the community. In this context, community service aims to increase the knowledge of Fatayat Nu women in Pacul Village about making Sesbania leaf extract nanoparticle soap which is carried out in two stages. The first stage was the manufacture of Sesbania Leaf Extract Handwash which was carried out at the Harapan Bersama Polytechnic Pharmacy Laboratory. With the handwash formula that has been prepared (Figure 1).



Figure 1. Preparation of material producing handwash in laboratory.

The next stage is community service activities in the women's Fatayat NU in Pacul Village. Before starting the community service activities, a pretest was first carried out. The pretest was conducted to measure the knowledge of Fatayat NU about making handwash soap Ag nanoparticles of *Sesbania* leaf extract. The pretest was carried out by distributing questionnaires. Pretest and posttest are two types of tests used in research or community service, the aim of which is to have different objectives in measuring changes or effects of a particular intervention or treatment. Pretest is a test carried out before administering a particular intervention or treatment. The goal is to measure conditions or variables that will be changed or tested after the intervention (Figure 2).

The pretest provides an initial description of the variables being studied so that researchers can understand the initial situation before the intervention is carried out. Pretests can be used to identify participants who meet the requirements or have certain initial characteristics that you want to test in the research. Posttest is a test carried out after intervention or treatment has been given to participants or research objects. The aim is to measure the impact or changes that occur after the intervention. The posttest is used to assess the extent to which the intervention or treatment has been successful or unsuccessful in achieving the research objectives. By comparing the posttest results with the pretest results, researchers can identify changes or effects that occur as a result of the intervention. The average value of the questionnaire results is 40.



Figure 2. Pretest Activities

The next stage is the core activity, namely the socialization of making handwash soap. Starting from the socialization of Increasing Awareness and Implementation of Cleanliness (Figure 3). Through community service in making handwash, the community gets education about the importance of washing hands with soap regularly to prevent the spread of disease and maintain health (Ambarwati et al., 2021). This awareness is then applied in everyday life, helping to reduce the risk of infection and infectious disease (Hestiyantari et al. 2020).



Figure 3. Outreach activities to increase awareness and practice of hand hygiene

The next activity is making handwash. In community activities, they are actively involved, starting from training in making handwash to the packaging process. Thus, people become more independent because they have new knowledge and skills that can be used to help themselves and community members (Figure 4).



Figure 4. Photos of soap making activities

Sesbania leaf extract nanoparticle handwash made from natural and eco-friendly. Sesbania leaves (*Sesbania grandiflora*) are a bioreductant that can be used in the synthesis of silver nanoparticles. This plant contains phytochemical compounds such as flavonoids, tannins, alkaloids, saponins and terpenoids (Das, Paul Das, and Velusamy 2013). This bioactive compound can act as a reducing and stabilizing agent in the synthesis of silver nanoparticles because it has an -OH group which is able to donate electrons to ions (Aryan et al. 2021). Making handwash can use materials that are easily obtained from the surrounding environment, such as vegetable oil and other natural ingredients. By utilizing Sesbania leaf extract, this activity can help reduce dependence on chemical cleaning products that have a negative impact on the environment. (Rosmainar 2021).

The last stage of this community service activity is the post test. The posttest was conducted to find out how much the public's knowledge about the manufacture of handwash soap increased. By using a questionnaire to measure the level of knowledge. Based on the results of the posttest, it shows that the average value of the posttest results is 75. This shows that with this service activity, the community's knowledge about making handwash soap has increased.

This PKM activity can also provide information and knowledge to NU fatayat woman. This community service is an effective means of disseminating information and knowledge about hygiene, health, and the importance of washing hands with soap. This knowledge can be the foundation for better behavior changes in maintaining health and hygiene. Community service for making handwash is a form of social intervention that focuses on a preventive and sustainable approach in improving the quality of life of the community. By actively involving the community, this approach can create changes that have a positive impact and are sustainable in the long term.

Fatayat NU's training programs for women, such as training programs in various areas of expertise, have a number of advantages that can have a positive impact on their development. Fatayat is an organization or association of young Muslim women which usually focuses on developing personality, religion and social skills. In this training, NU fatayat women have skills development. The training program helps Fatayat NU women to develop various skills, such as communication skills, leadership, problem solving, and technical skills related to specific training areas. This can help them become more independent and qualified individuals.

This activity can also increase self-confidence. Through training and participation in various activities, Fatayat women can build their self-confidence. This can help them to be more confident in public speaking, interacting with others, and dealing with life's challenges. This activity can also increase network formation. Training programs often provide opportunities for Fatayat women to meet peers who share similar interests and goals. This can help them build a strong social network and expand their circle of friends. Some training programs also include a social awareness component, which helps Fatayat NU women understand their role in society and inspires them to contribute positively to solving social problems. Training programs can help Fatayat women plan their future better. This may involve job skills training, further educational preparation, or career guidance. Training programs can help Fatayat NU women understand how to apply Islamic values in their daily lives, including in modern and complex contexts.

Handwash making training activities can have various benefits for organizations like Fatayat. Fatayat is an Islamic women's organization that is active in various social, religious and educational activities. One of the main benefits of soap making is that it creates additional income opportunities. By teaching Fatayat members how to make soap, the organization can help them create products that can be sold, assist in meeting their economic needs, and support women's economic

independence. Soap making training can improve the skills and knowledge of Fatayat members in simple chemistry, product manufacturing processes, and small business management. These are skills that can be beneficial in various aspects of their lives. Fatayat members who have received soap making training may decide to run a small soap business. Fatayat organizations can provide additional support in the form of business training, business planning, and access to resources to help them plan, manage, and expand their businesses. This training can also be a tool for empowering women, because they can feel more confident and independent in taking roles in economic activities. This is consistent with Fatayat's mission to mobilize women to play an active role in society (Hidayat et al., 2020).

Handwash made by Fatayat members can be sold as a sustainable and environmentally friendly product if the ingredients used are natural and organic. This is in line with the spirit of environmental conservation held by many Islamic organizations. Handwash is an important product in maintaining cleanliness and health. By teaching how to make soap, the Fatayat organization can promote better hygiene practices among its members and their communities. Handwash making training can enable Fatayat members to interact and collaborate with other members, build networks, and increase solidarity within the organization. They can share experiences, ideas and support with each other.

CONCLUSION

Community service activities have been carried out regarding the manufacture of Sesbania leaf extract Ag nanoparticle handwash for Fatayat NU women in Pacul Village. This PKM activity can also provide information and knowledge to NU fatayat women about making Sesbania leaf extract nanoparticle handwash soap. Based on the results of the evaluation, it showed that there was an increase in the knowledge of Fatayat Nu woman about making handwash. With an increase in the average pretest result of 40 and post test 75, this community service is an effective means of disseminating information and knowledge about hygiene, health, and the importance of washing hands with soap.

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