

## **Training on Making Hand Washing Liquid Soap from Green Tea at PKK Mothers in Kranggan Village, Dolanharjo, Klaten as an Effort to Improve Community Health and Economy**

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**Abstrak:** Teh hijau merupakan tanaman yang memiliki kandungan fitokimia yaitu polifenol, alkaloid, minyak volatil, polisakarida, asam amino, lipid, vitamin C. Flavonoid memiliki aktivitas sebagai antioksidan, antiinflamasi, antialergi, dan antibakteri. Kelebihan tersebut dapat ditingkatkan kemanfaatan serta nilai ekonomisnya dengan cara dibuat dalam bentuk sabun cair. Penambahan teh hijau diharapkan mampu menambah efek antioksidan pada sediaan sabun yang dibuat. Tujuan dari kegiatan pengabdian ini adalah untuk memberikan pelatihan tentang pembuatan sabun cair cuci tangan dari seduhan daun teh hijau. Kegiatan pelatihan pembuatan sabun cair cuci tangan dengan tambahan teh hijau dilakukan sebagai upaya meningkatkan kemandirian kesehatan dan memberikan bekal wirausaha bagi komunitas PKK di Desa Kranggan, Polanharjo, Klaten. Pelatihan dihadiri oleh 20 peserta dengan metode presentasi dan praktik pembuatan sabun cair cuci tangan. Hasil dari kegiatan pengabdian ini adalah masyarakat mengetahui cara pembuatan sabun cuci tangan dari teh hijau dan mengetahui fungsi dari bahan yang digunakan dalam proses pembuatan sabun cuci tangan.

**Kata Kunci:** pelatihan, pengabdian, sabun cair, teh hijau

**Abstract:** Green tea is a plant that contains phytochemicals, namely polyphenols, alkaloids, volatile oils, polysaccharides, amino acids, lipids, and vitamin C. Flavonoids have antioxidant, anti-inflammatory, anti-allergic, and antibacterial activity. These advantages can be increased in terms of benefits and economic value by making it in the form of liquid soap. The addition of green tea is expected to increase the antioxidant effect of the soap preparations made. The study aims to provide training on making liquid hand-washing soap from steeping green tea leaves. The training activity for making liquid hand-washing soap with the addition of green tea was carried out as an effort to increase health independence and provide entrepreneurial provisions for the PKK community in Kranggan Village, Polanharjo, Klaten. The training was attended by 20 participants with presentation methods and practice in making liquid hand-washing soap. The result of this service activity is that the community knows how to make hand-washing soap from green tea and knows the function of the ingredients used in the process of making hand-washing soap.

**Keywords:** training, devotion, liquid soap, green tea

## Introduction

Green tea is a plant found in Indonesia and has quite a lot of fans. The phytochemical content in tea leaves is polyphenols (*Catechin* and flavonoids), *alkaloids* (*caffeine*, *theobromine*, *theophylline*, etc.), volatile oils, polysaccharides, amino acids, lipids, vitamins (vitamin A, vitamin B1, vitamin B2, vitamin B3, vitamin C, and vitamin E), inorganic components (such as aluminum, fluorine, and manganese) and others. Polyphenols are important components in tea leaves that have many roles for health. Flavonoids have activity as antioxidant, anti-inflammatory, antiallergic, and anti-bacterial. Green tea contains six of the most active catechin components, namely *catechin*, *gallicocatechin*, *epicatechin*, *epigallocatechin*, *epicatechin gallate* and *epigallocatechin gallate* (EGCG) (Novilla et al. 2017). Pharmacologically, green tea consumption has also been linked to the prevention of various types of cancer, including lung, colon, esophagus, mouth, stomach, small intestine, kidney, pancreas, and mammary glands. Some epidemiological research and clinical trials suggest that green tea (as well as black tea and oolong tea to a lesser extent) may reduce the risk of many chronic diseases (Shrivastava, Pateriya, and Singh 2018).

Green tea is quite well known in the community but its utilization is not optimal. This is because information related to green tea and its properties is less socialized. According to the results of the study, until now the consumption of black tea is 70% while green tea is only 20%. One reason for this percentage is a lack of awareness about green tea and research investment. Green tea along with caffeine that gives it its characteristic taste, bitterness and stimulating effect, is also rich in a group of chemicals, called catechins polyphenols (commonly known as tannins, which contribute to bitter and astringent taste) and provide antioxidant properties (Ratnani and Malik 2022). According to research, the phenol content and antioxidant activity of green tea are higher compared to black tea. Phenol levels and antioxidant activity have a positive correlation where the higher the phenol content of tea, the higher the antioxidant activity (Maslov et al. 2021). Green tea has the highest polyphenol content and 2-3 times less caffeine content than black tea.

The content of various active chemical compounds in green tea can not only provide health benefits if drunk, but can also provide benefits if used on the skin area (as a topical preparation). According to research, the use of green tea fermented water can increase skin moisture, reduce the amount of red beets and poriphyrins, and significantly improve the health of the skin area if used every day (Liao et al. 2022). The potential of green tea can be used as an ingredient in making liquid soap that not only functions to remove dirt and germs, but has more value for skin health (Oyetakinwhite, Tribout, and Baron 2012).

Based on the description above, the D3 Pharmacy study program of Indonusa Polytechnic Surakarta innovates to make liquid soap using steeping green tea. Liquid soap is able to emulsify water, dirt/oil. Liquid soap is effective for removing dirt that sticks to the surface of the skin both water-soluble and fat-soluble and cleans odors on the skin and gives a pleasant smell (Dimpudus, Yamlean, and Yudistira 2017). Liquid soap has several advantages over solid soap, namely liquid soap is more hygienic, more profitable, practical and economical.

The people of Kranggan, Polanharjo, Klaten Village, especially among mothers, generally work as housewives. The provision of education and training on the use of green

tea steeping can add insight and skills, which are expected to be used as entrepreneurial ideas, as well as increase knowledge about health. Tea which is generally only consumed by drinking, it can be used for the manufacture of other products, namely hand washing liquid soap.

## Method

The implementation of this service activity began by collaborating with the PKK Mother community in Kranggan Village, Polanharjo, Klaten. Various problems and inputs were extracted from the management to organize activities in order to increase knowledge and skills about health.

The results of the initial discussion obtained several inputs and problems, including: 1) there are still few extension or educational activities about medicinal plants in the area; 2) high enthusiasm from PKK administrators if soap making training is held; 3) input related to the high need for hand washing liquid soap among the Kranggan Village Community. The results of the discussion were followed up by the service team from D3 Pharmacy Polytechnic Indonusa by holding a training activity on making hand soap using green tea steeping water. The stages of service activities are depicted through the diagram in Figure 1.

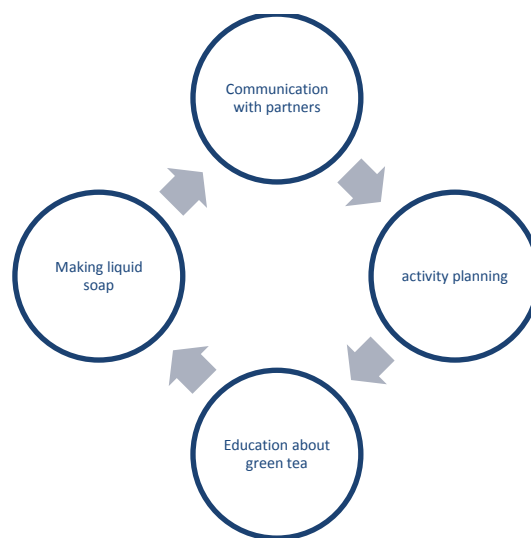


Figure 1. Stages of Community Service Implementation

The target of this service activity is all members of the Family Welfare Development (PKK) of Kranggan Village, Polanharjo, Klaten totaling 20 people. Service executors are lecturers who collaborate with students. The place of implementation of the activity is in the village hall of Kranggan Village, Polanharjo, Klaten.

Community service activities begin by providing scientific exposure to green tea and its health benefits. The presentation of the material is carried out directly. The implementation of counseling uses projectors so that people do not get bored and are expected to focus on discussion.

After providing education about green tea, activities were carried out by practicing

making liquid soap. Participants were divided into 2 groups and accompanied by students as trainers. All ingredients have been prepared before the activity, as stated in the Table 1 formula. The tools used are beakers, stirring rods, bottles for packaging and product labels. After making it, all participants tried to use the soap to wash their hands. At the end of the activity, a discussion and post test were held to find out the participants' understanding of the community service activities that had been given.

Table 1. Green tea liquid soap formula

No	Material	Composition
1	Texapone	12,5 %
2	NaCl	2,0 %
3	Carbopol	1,0 %
4	Citric acid	0,2 %
5	Sodium Benzoate	0,2 %
6	Sanisol	0,2 %
7	<i>Essence</i>	To taste
8	Dye	To taste
9	Green tea steeping water	Add up to 100%

## Result

This community service activity is carried out based on the needs of the people of Kranggan Village, Polanharjo, Klaten. The people of the area have never received training on making products such as soap or the like. Education about the efficacy of traditional medicine is also still little obtained. This training is useful to provide education about the efficacy of green tea, as well as provide skills and knowledge about making hand washing liquid soap. The people of Kranggan Village have a fairly good awareness about health, including hand washing habits. This activity answers the challenges of health development in accordance with the Regulation of the Minister of Health of the Republic of Indonesia Number 39 of 2016 concerning Guidelines for the Implementation of the Healthy Indonesia Program with a Family Approach, where the goal of health development is to increase awareness, willingness, and ability to live a healthy life for everyone so that the highest degree of public health can be realized. This means the creation of Indonesian people, nations, and states whose inhabitants, throughout the territory of the Republic of Indonesia, live with behavior and in a healthy environment (Ministry of Health 2016).

The service activity was attended by 20 women of PKK administrators in Kranggan Village, Polanharjo, Klaten. The output of this activity is that participants can find out the health benefits of green tea and have skills and knowledge in making hand soap from steeping green tea. All participants were very enthusiastic in listening to the presentation about green tea (Figure 2).



Figure 2. Counseling activities on green tea

Tea plants with various chemical compounds have many health benefits. Several studies prove its excellent antioxidant ability (Nazliniwaty, Hanum, and Laila 2020), can be used to lose weight and reduce body fat (Wulandari and Rahmanisa 2016), as an antibacterial in the mouth (S.Jayakeerthana 2016), and many other benefits. These various benefits can be obtained by brewing, or extracted. Many factors can affect the quality of extracts and steeping, such as the method, the amount of solvent or the duration of extraction/brewing.

The activity continued with the practice of making hand washing liquid soap. The materials used as in Table 1 were introduced to all participants who participated in the activity. The functions of some of these materials include:

1. Texapon, serves to remove fat and dirt. Texapon is a surfactant that is widely used in various products such as dish soap, shampoo, hand soap, etc. The advantages are easily decomposed by nature, easily tolerated by the body, and the clean power is quite good although not as strong as those made from ABS (*Alkyl Benzene Sulfonate*) and LAS (*Linear Alkylbenzene Sulfonate*). The composition of the texapon in soap will also affect the foam produced (Mardiah et al. 2021).
2. NaCl (Sodium Chloride), is a salt that functions as a thickener in the soap produced.
3. Carbopol, is a *gelling agent* used to increase the viscosity (viscosity) of the soap produced.
4. Citric acid, in soap serves as an antibacterial as well as a stain remover. In addition, citric acid can also be used to dissolve substances of an oil nature (Sary et al. 2020)
5. Sodium Benzoate, is a chemical that functions as a preservative (Sary et al. 2020)
6. Sanisol, serves as a disinfectant
7. *Essence*, serves as a fragrance giver in soap

These ingredients are mixed by dissolving Carbopol in hot water. The solution is added with NaCl stirred until homogeneous. The mixture is added with texapon, and the tea steeping water is then stirred until homogeneous. The last step is added with sodium benzoate, citric acid, sanisol and stirred until homogeneous. Add *essence* and color, then stir until homogeneous. In this activity, all participants practice mixing these ingredients to produce ready-to-use soap.



Figure 3. Participants practice making hand soap

In practical activities, participants were explained about the function of each material used. The critical points in soap making are also explained so that the soap produced has good quality. These critical points include the speed of stirring, the melting temperature of Carbopol, and the amount of foaming agent added. Soap that has been successfully made, packaged in bottles and labeled as product identity (Figure 4).



Figure 4. Green Tea Hand Wash Liquid Soap Products

The soap that had been made by the participants was then used for hand washing (Figure 5). The impressions of participants who have used their soap were conveyed through post-training discussions.



Figure 5. Participants try soap products from the training

The last stage of this activity is discussion and question and answer. Participants are given questions (*post test*) to test their understanding of the material and practices provided. From the post-test results given, the majority of participants were able to correctly answer all the questions given (Table 2).

Table 2. Comparison of knowledge of citizens before and after training

Question	Number of citizens who answered correctly	
	Before training	After training
Name 3 health benefits of green tea!	7	20
What are antioxidants?	5	20
What are the chemical compounds that can have health effects on green tea?	0	12
What are the ingredients that can be used to make hand soap?	0	20
What is the use of texapon in soap making?	0	20
What is the use of Carbopol in soap making?	0	18

## Discussion

According to statistical data, the comparison of the number of residents in Kranggan Village, Polanharjo, Klaten is almost the same between men and women. The age range also varies from 0 to 75 years (Central Bureau of Statistics 2020). Awareness of good health in Kranggan Village can be seen from the many handwashing facilities in every public facility. People's enthusiasm about training for health improvement is very good. With this liquid soap making training, the community has broadened their insight into medicinal plants, as well as increased their skills in making household products. The community really hopes for a similar training that raises the manufacture of products from medicinal plants.

The results of this activity can be followed up with the development of other products such as replacing tea steeping with steeping other medicinal plants, such as gotu kola, patikan kebo, and essential oils that have good antibacterial abilities. In addition, it can also make preparations in other forms such as dish soap, solid soap, paper soap, etc. The development of family medicinal plants is also another potential thing that can be developed in the Kranggan Village area.

## Conclusion

Community service activities on "Training on Making Hand Washing Liquid Soap from Green Tea as Antioxidants" at PKK mothers in Kranggan Village, Polanharjo, Klaten provided social benefits, because quite a lot of people contributed to the activity. Participants know

about the content of green tea leaves, such as phenol, caffeine, vitamin C, catechins, etc. Participants know the benefits of green tea such as antioxidants, antihyperlipids, anticancer, etc. Participants were able to make hand soap from steeping green tea. Participants also knew the function of the ingredients used in making hand soap, such as carbopol as a thickener, texapon as a foam producer, etc. This activity is expected to continue to be carried out in a sustainable manner to realize health independence in the community.

## Acknowledgements

We would like to thank the management of PKK Kranggan Village, Polanharjo, Klaten who have welcomed and are enthusiastic about the community service activities that have been carried out, and are willing to work together as partners so that this activity can run smoothly. We would also like to thank all officials of Kranggan, Polanharjo, Klaten Village who have helped technically in the implementation of this activity.

## Reference

- Central Bureau of Statistics, Klaten Regency. 2020. *Polanharjo District in 2020 Figures*.
- Dimpudus, Stefanie Amelia, Paulina V Y Yamlean, and Adithya Yudistira. 2017. "Formulation of Antiseptic Liquid Soap Preparation of Henna Water Flower Ethanol Extract (*Impatiens Balsamina* L.) and test its effectiveness against *Staphylococcus aureus* bacteria in vitro." *PHARMACON Scientific Journal of Pharmacy-UNSRAT* 6, no. 3: 208–15.
- Ministry of Health, Indonesia. 2016. "REGULATION OF THE MINISTER OF HEALTH OF THE REPUBLIC OF INDONESIA NUMBER 39 OF 2016 CONCERNING GUIDELINES FOR THE IMPLEMENTATION OF THE HEALTHY INDONESIA PROGRAM WITH A FAMILY APPROACH."
- Liao, Ruofen, Tory Parker, Kelly Bellerose, David Vollmer, and Xuesheng Han. 2022. "A Green Tea Containing Skincare System Improves Skin Health and Beauty in Adults : An Exploratory Controlled Clinical Study."
- Mardiah, Ainun, Rozalinda, Ratna Dewi, Sehani, Desvi Emti, and Herlinda. 2021. "SNKPM Article 2021 LIQUID SOAP MAKING TRAINING AS A HOUSEHOLD ENTREPRENEUR OPPORTUNITY IN PEKANBARU CITY." *Dynamicia : Journal of Community Service* 5, no. 5: 1211–18. <https://doi.org/10.31849/dinamisia.v5i5.7788>.
- Maslov, O. Yu, S. V. Kolisnyk, M. A. Komisarenko, O. V. Kolisnyk, and S. V. Ponomarenko. 2021. "Antioxidant Activity of Green Tea Leaves (*Camellia Sinensis* L.) Liquid Extracts." *Pharmacologyonline* 3: 291–98.
- Nazliniwaty, ., T. Ismanelly Hanum, and Lia Laila. 2020. "Antioxidant Activity Test of Green Tea (*Camellia Sinensis* L. Kuntze) Ethanolic Extract Using DPPH Method,"



no. August: 752–54. <https://doi.org/10.5220/0010087307520754>.

Novilla, Arina, Dedi Somantri Djahuri, Betty Nurhayati, Dwi Davidson Rihibiha, Ervi Afifah, and Wahyu Widowati. 2017. "Anti-Inflammatory Properties of Oolong Tea (Camellia Sinensis) Ethanol Extract and Epigallocatechin Gallate in LPS-Induced RAW 264.7 Cells." *Asian Pacific Journal of Tropical Biomedicine* 7, no. 11: 1005–9. <https://doi.org/10.1016/j.apjtb.2017.10.002>.

Oyetaquinwhite, Patricia, Heather Tribout, and Elma Baron. 2012. "Protective Mechanisms of Green Tea Polyphenols in Skin" 2012. <https://doi.org/10.1155/2012/560682>.

Ratnani, Sonia, and Sarika Malik. 2022. "Therapeutic Properties of Green Tea: A Review." *Journal of Multidisciplinary Applied Natural Science* 2, no. 2: 90–102. <https://doi.org/10.47352/jmans.2774-3047.117>.

S.Jayakeerthana. 2016. "Benefits of Green Tea : A Review." *Journal of Pharmaceutical Sciences and Research* 8, no. 10: 1184–87. [https://doi.org/10.1016/S0899-9007\(99\)00301-9](https://doi.org/10.1016/S0899-9007(99)00301-9).

Sary, Novita, Diana Mulyani, Sri Widiastuti, Alifudin Yusuf, and Try Prasetyo Wibowo. 2020. "Development of Liquid Dish Soap Products Based on Lime Peel Essential Oil to Improve the Economy of the People of Loano Village, Loano District, Purworejo." *Analysis of Minimum Service Standards in Outpatient Installations at Semarang City Hospital* 3, no. November: 103–11.

Shrivastava, R R, P Pateriya, and M Singh. 2018. "Green Tea -A Short Review." *Int J Ind Herbs Drugs* 3, nos. 2: 12–21. <https://www.saap.org.in/journals/index.php/herbsanddrugs/article/view/70>. Retrieved 21 November 2022.

Wulandari, Riska, and Soraya Rahmanisa. 2016. "Effect of green tea extract on weight loss in adolescents." *Majority* 5, nos. 2: 106–11.