

Empowering Cihideung Village Farmers in Using Rose Flowers as Pharmaceutical Raw Materials

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Abstract

Roses (*Rosa Damascene Mill*) are the most prominent crops of the Cihideung Village community. During the COVID-19 pandemic, flower farmers needed help with marketing, so many of the roses were unused. These empowerment activities aim to increase the public's knowledge and capacity to use roses as a pharmaceutical. The activities are carried out offline in the form of workshops. The raw materials are fresh rose flowers, tools, ingredients for making rose water infusions, soap, and oil. Analysis of outcome was assessed using questionnaires before and after the workshop as well as observation of the enthusiasm of participants during the activity. The results showed an improvement in the knowledge and skills of the public regarding the use of roses. The community also provided guides for the improvement of their capacity independently and access to the technical video through YouTube. Activity publications are delivered in digital media as a promotion. The full support of the provincial government and local villages will strengthen the synergy and sustainability of these activities, and hopefully, in the future, this knowledge can improve and become an independent enterprise of the community of Cihideung Villages.

Keywords: Roses; workshops, Cihideung villages, pharmaceutical

INTRODUCTION

Cihideung Village is located north of Bandung City, precisely in the Parongpong District, West Bandung Regency, about 20 km from the center of Bandung City. It can be reached by vehicle in about 30 minutes. (Priyanto & Suseno, 2020)(Yapari et al., 2017). Ornamental plant cultivation is one source of income for the people of Cihideung Village, and this location has long been known as the most complete plant center in Bandung. (Yapari et al., 2017).



Figure 1. Profile of Cihideung Village, Parongpong District

Since 1988, most of the residents of Cihideung Village have been ornamental flower farmers, starting from a collaboration with PT. Bunga Nusantara Cisarua-Bogor, and since 2010, the life of ornamental flower farmers has changed to an agribusiness system. The demand for these decorative flowers is enormous, especially for decorating wedding parties, religious holidays, New Year, and the needs of flower shops (florists) and hotels. Direct contributions from the decorative flower sector support social and economic progress. Cihideung Village is famous for flower tourism. (Priyanto & Suseno, 2020)(Yapari et al., 2017). One of the ornamental plants many flower farmers produce in Cihideung Village is roses (*Rosa Damascene Mill*). Roses are the most famous decorative flowers in the world and are widely used for therapy. This flower is from the Middle East but has been cultivated worldwide.

Cihideung Village flower farmers are currently one of the leading suppliers of flowers in the West Java area. Still, since the COVID-19 pandemic, the activity of Cihideung Village flower farmers has dramatically reduced and even tends to collapse. Flower farmers in Cihideung Village generally still use simple planting and harvesting methods. Demand for flowers has also decreased so much that flowers picked are often left to wither or sold at cheap prices. The COVID-19 pandemic, which has been going on for almost a year, will affect the commercialization of roses as one of the ornamental flowers produced by farmers in Cihideung Village. Flower farmers rely heavily on celebratory activities such as weddings, graduations, and other events. However, after the COVID-19 pandemic, various activities that invite the masses are limited or even prohibited so that flower farmers can lose up to millions per month. These conditions will, of course, affect the economic conditions of the family and society. This decline in financial capacity will impact other aspects of life, which is crucial. The freshness of roses lasts approximately six (6) days, so the flower must be used quickly and appropriately. Rose flowers (*Rosa Damascene Mill*) are excellent pharmaceutical raw materials because they contain various secondary metabolites that can be used for making excellent herbal medicines, such as essential oils and rose water.. (Boskabady et al., 2011)(Fruits, 2009) Rose flower oil can be used as a skin moisturizer, acne

medication, and even aromatherapy for relaxation and reducing anxiety. (Mohebitabar et al., 2017).

Based on the above, the community service team considers that efforts are needed to increase the knowledge and skills of flower farmers in Cihideung Village in terms of using roses as a source of pharmaceutical raw materials. This right will likely provide an alternative for the community in the use of roses. Of course, it is expected to improve the economy of families and communities by commercializing products made from natural ingredients from roses. In the end, the products produced indirectly play a role in enhancing the level of public health through preventive and promotive efforts.

MATERIALS AND METHODS

Community empowerment activities in Cihideung Village were carried out in the form of workshops whose actions not only provided theory to increase knowledge but also demonstrations and direct practice in making simple rose preparations that could be done directly by the community. This method is expected to provide a comprehensive experience for participants, which can be implemented later.

The material was provided by resource persons from Bandung Islamic University who are experts on the use of medicinal plants and also how to make simple medicinal plants. The Community Service Team also created a guidebook and video to provide examples of making rose preparations, which the community can use in making rose water preparations, rose soap, and rose oil. Of the three (3) targeted trials, only rose water and rose soap will be practiced directly by workshop participants due to the availability of tools and materials. Meanwhile, making rose oil requires special tools, so you can only watch the video shown, and it can also be accessed via the Youtube official of the Faculty Medicine of Unisba.

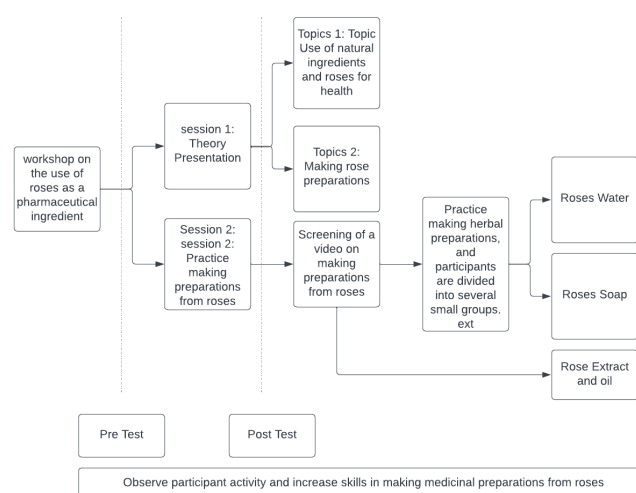


Figure 2. The flow of workshop activities to empower the Cihideung Village community in using roses as a pharmaceutical ingredient

The materials needed to make rose water preparations are: Fresh rose petals. distilled water. a filter, an infusion pan, a measuring cup, a closed container such as a bottle. The ingredients needed to make rose soap are the primary soap material; it can also be alkali, a mixture of sodium hydroxide and potassium hydroxide, used for gel soap. These two materials can be easily obtained online. Other ingredients for making rose soap are fresh rose flowers or rose dye and fragrance, while for making rose oil, ingredients for making rose extract are needed, which require fresh roses and ethanol or hex solvent, as well as equipment for maceration, including an evaporator and distillation.

Making Rose Water

The simple technique used to make rose water preparations is boiling. Boiling is the easiest and fastest way to make rose water. The manufacturing technique starts with preparing 2-3 fresh roses, separating the petals, and cleaning them with water to remove dirt. The rose petals are then soaked in an infusion pot containing 1 ½ glasses of distilled water. Place the infusion pot on the stove and bring the water to a simmer. Cover until boiling. Leave for 15 to 30 minutes or until the petals lose their color or change color. Please turn off the heat and let it cool completely, then filter it using a sieve or soft cloth to separate the petals and rose water. Once done, discard the petals. Rose water is stored in a closed bottle or container. A spray bottle or jar is the best way to keep rose water. (Meena, 2005) (Damayanti & Fitriana, n.d.)(Mohebitabar et al., 2017)(Meena, 2005) (Bruno, 2019).

Rose soap making

In making this soap, you can also use rose ethanol extract as a soap base mixture; however, in practice, participants in making this extract are only introduced via video. The technique is straightforward: the soap ingredients are melted, mixed with roses or other ingredients, and then molded and cooled. The results will show the shape of the rose soap that matches what you want.

Making Rose Oil

Rose oil can be produced using methods including maceration. The raw material used is rose crowns soaked in solvent in a ratio of 1:3. The solvents used are ethanol and n-hexane. The maceration process was carried out by stirring manually for 1 minute at room temperature and leaving it for 12 hours in a closed and dark place (without exposure to light). The results of maceration in the form of the rose extract are separated by filtering and squeezing the flowers. The filtrate containing rose flower oil was evaporated using a rotary vacuum evaporator. Maceration uses ethanol at a temperature of 60 °C for 20 minutes, while maceration uses n-hexane at a temperature of 55 °C for 10 minutes. The main components of essential oil from roses with ethanol and n-hexane solvents are phenyl ethyl alcohol (2.73%) and (31.69%), respectively. (Khan & Rehman, 2005)(Çiçek et al., 2022)

In carrying out this workshop, participants did not directly make rose oil due to the limited availability of facilities. The participants followed the procedure for making rose oil through a video that was shown during the event.

After the workshop activities, participant evaluations were provided to follow the workshop outcome to improve knowledge and participant skills in making rose preparations. This is to assess the sustainability of the workshops that have been provided and also evaluate the programs that are being carried out to see the effectiveness of the community service carried out. It is hoped that the program carried out can help the community overcome some of the problems they are facing. Evaluation of participants' knowledge and skills in the use of roses was assessed using questionnaires given before and after the assessment, as well as direct observation through observation of participants' activity and involvement during the workshop.

RESULT

The community empowerment workshop in Cihideung Village was carried out in three major stages, namely preparation, implementation, and evaluation. In the preparation stage, various activities are carried out to finalize the performance of the service that will be carried out, starting with the activity licensing process, situation analysis or surveys with the local community and related sectors, as well as the preparation of materials and sources that are by the objectives of this community service. Furthermore, activities to increase the knowledge and skills of ornamental farmers are carried out offline by paying attention to health protocols established by the local area in the form of a "Workshop on empowering ornamental farmers in Cihideung Village in using roses as pharmaceutical raw materials."

The workshop participants comprised around 60 participants consisting of flower farmers, PKK cadres, youth organizations, and Cihideung Village officials who were enthusiastic about participating in the activity from start to finish. The workshop was held on Wednesday, April 7, 2021, at the Cihideung Village Hall in two sessions: the first session was a theoretical presentation regarding the use of roses, and the second session was the practice of making rose oil, rose water, and rose soap.

Presentation of the theory regarding the use of roses

The resource persons for this session were pharmacology lecturers from the Faculty of Medicine and pharmacy lecturers from the Islamic University of Bandung. The topics given in this session were regarding the use of natural ingredients and roses as pharmaceutical ingredients and techniques for making pharmaceutical preparations from roses, such as rose water, rose soap, and rose oil. The first speaker explained the characteristics of natural ingredients, their differences from modern medicine, and the use of medicinal plants in general for preventive, curative, and promotive efforts to improve public health.

The second resource person from Pharmacy explained the various ways that can be used to make herbal preparations from roses, from the simplest to more technically complex methods, because the scale is larger. The public was introduced to how to prepare herbal raw materials for making medicinal preparations, how to make infusions,

rose soap, and rose extracts, and how to identify rose oil. The techniques provided are simple and implementable so that people can immediately practice them for several preparations. Each type of preparation has advantages and disadvantages, so the best preparation is one that suits the aims and objectives to be achieved.

Practice Making Rose Oil, Rose Water, and Rose Soap

The method of making preparations from roses begins with a video showing how to make rose water, rose soap, and rose oil so that participants get a direct visualization of the demonstration of how to make them. This video was made at the Unisba Pharmacy Laboratory involving lecturers from the Unisba Medical Faculty community service team.

The participants provide the availability of materials and tools for this practical session and coordinate with the village government and ornamental farmer groups in the village. Direct involvement of the community in providing facilities and infrastructure for this practice will give direct experience for the district to be directly involved in making rose oil and rose water preparations so that the community can implement it.

In this session, participants were divided into several groups and then directly practiced making rose water and rose soap with rose oil, the process from the video.

Evaluation and Activity Outcomes

Changes in participants' knowledge and skills were assessed using a questionnaire given before and after the activity started. Sixty participants took part in the PKM event, but 26 people filled in the evaluation of the pre-test and post-test results; the rest only filled in one piece, so the analysis was carried out on 26 participants.

The results of the data analysis show that, in general, there is an increase in public knowledge regarding traditional medicine, including roses. However, the growth still needs to appear not significant. This result could be influenced by various things, including not all participants filled out the questionnaire, so it wasn't easy to assess more real conditions. The time of data collection may also influence the results obtained because data collection for activities carried out in the community is somewhat different from other scientific activities, which can be more structured and timely so that in the future, it is necessary to think about appropriate techniques and time to obtain more accurate data from the target community.

The average test scores of participants, both pre-test and post-test, were then averaged and categorized into three groups: the level of sound knowledge is 68-100, the level of sufficient knowledge is 34-67, and below 34 is the story of poor understanding. After the analysis was carried out, the level of community knowledge after carrying out activities regarding knowledge of the use of traditional medicines, including bunya, rose to nine people who had good knowledge (34.6%) and 17 people who had sufficient knowledge (65.4%).

These results are excellent input for improving future PKM implementation techniques and data collection techniques for evaluating program success so that activity objectives can be more transparent. Communities are groups of people that

vary significantly in terms of education levels socio-cultural and economic backgrounds, so the techniques for providing materials and guidance need to be more individualized. Guidance techniques also need variations and more facilitators to accommodate small groups in society.

Observations made by the team during the activity implementation process from start to finish showed enthusiasm from the participants regarding the material presented because using natural materials such as rose flowers for medicinal ingredients was one of the exciting topics that the public wanted to know about. The discussion and question and answer process also went well in the session providing material. During the activity implementation process, almost all participants were active in the activity and were directly involved in making rose water and rose soap. According to the participants, the technique exemplified was relatively easy to follow, and they were confident to try making this rose preparation again independently at another time.

This community empowerment activity also produced a guidebook for making Rose Preparations as a pharmaceutical ingredient, which has received a copyright. Then, this activity was promoted in two publications, namely publication in the Mind of the People newspaper on April 15, 2021, page 6, and publication on the online media Pripas Id on April 9, 2021. <https://pripas.id/fk-unisba-gelar-bisnis-peningkatkan-besar-pecepatan-bunga-mawar/>. Videos of activities can also be seen on the official YouTube of FK uUnisba at the links below: <https://youtu.be/buFAXnpMYk0> , https://youtu.be/lhYZ_m6pF-k and https://youtu.be/bGn9AA_Mxb0.

DISCUSSION

Community empowerment activities in Cihideung Village are a form of applying the superior research results of the Unisba Faculty of Medicine following the urgency and needs of the community. This service provides solutions to community problems, and it is hoped that after this, it can be developed to form community groups that are economically and socially independent previously equipped with good knowledge and skills.

People around the world, including Indonesia, currently use many herbs as traditional medicine. Many advantages can be gained by using herbs as conventional medicine because they are simple to obtain, generally more economical, and are expected to have milder side effects than chemical drugs. Traditional medicines also contain many active substances that are very good for treating secondary metabolites, such as tannins, anthocyanins, phenols, essential oils, and flavonoids. Herbal medicines also have broad therapeutic effects because of their potential as antioxidants, antihypertension, antilipidemia, anti-inflammatory, and other therapeutic effects. However, these effects will not appear in the acute period.(Çiçek et al., 2022) Roses are a high source of antioxidants, so consuming roses is taboo; even abroad, roses are an excellent culinary ingredient. The use of roses to maintain health can be developed widely, considering that its potential is also significant. Roses can be grown into pharmaceutical preparations such as rose water or oil. This water can last for one week at room temperature and can be stored in the refrigerator for up to one

month.(Damayanti & Fitriana, n.d.)(Mohebitabar et al., 2017)(Meena, 2005) (Bruno, 2019) Indonesia can produce rose oil, one of the flower oil products with export quality. The benefits of rose oil are for perfume, cosmetics, and medicine. The method for producing rose oil can be using maceration methods. Making rose oil begins with a maceration process. The yield from the maceration of rose flower oil with ethanol solvent was 8.76%, while n-hexane solvent yielded 0.34 %.(Damayanti & Fitriana, n.d.)(Mohebitabar et al., 2017)

The essential oil in roses is a pharmaceutical or cosmetic ingredient with high sales value. Unfortunately, the rose oil content is minimal, only around 0.2 percent of the raw flower, so if you take just one cc of rose oil, you need a lot of simple ingredients.(Hongratanaworakit, 2009). This is why genuine rose oil is costly and can be made into a particular business in Cihideung Village. Various stages are needed in creating a commercial business or community unit, but knowledge in this direction is essential as a provision for future development.

CONCLUSIONS AND RECOMMENDATIONS

The Community Service in Cihideung Village can be carried out well as an initial effort to increase the community's knowledge and skills in using roses as a pharmaceutical ingredient. The knowledge and skills of ornamental farmers in Cihideung Village can be the initial foundation for developing this program into an independent community business with high economic value. Growing production of roses preparation requires cooperation from the community, local government support, and industry partnerships.

After this workshop, it is necessary to carry out several follow-up activities to maintain the program's sustainability. Assistance to business partner groups in making rose pharmaceutical preparations. Initiation in the production and marketing of products resulting from the manufacture of rose flower pharmaceutical preparations

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REFERENCES

- Boskabady, M. H., Shafei, M. N., Saberi, Z., & Amini, S. (2011). *Pharmacological Effects of Rosa Damascena*. 14(4), 295–307.
- Bruno, L. (2019). 濟無No Title No Title. In *Journal of Chemical Information and Modeling* (Vol. 53, Issue 9). <https://doi.org/10.1017/CBO9781107415324.004>

- Çiçek, H., Kaya, H. S., Kilic, C., Savas, M., & Ravichandran, S. (2022). Medical Effects of Products Obtained From Wild Rose Plant. *Journal of Chemistry and Nutritional Biochemistry*, 3(2), 59–64. <https://doi.org/10.48185/jcnb.v3i2.561>
- Damayanti, A., & Fitriana, A. (n.d.). *Jurnal Bahan Alam Terbarukan*. 1(2), 1–8.
- Fruits, L. (2009). *Variations in Chemical Compositions of Rosa damascena Mill . and Rosa Variations in Chemical Compositions of Rosa damascena Mill . and Rosa canina L . Fruits. November 2008*. <https://doi.org/10.17221/5/2009-CJFS>
- Hongratanaworakit, T. (2009). Relaxing effect of rose oil on humans. *Natural Product Communications*, 4(2), 291–296. <https://doi.org/10.1177/1934578x0900400226>
- Khan, M., & Rehman, S. (2005). Extraction and analysis of essential oil of Rosa species. *Int. J. Agric. Biol, Table I*, 973–974.
<http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Extraction+and+Analysis+of+Essential+Oil+of+Rosa+species#0>
- Meena, B. (2005). *Chemical Composition of Rose Water Volatiles Chemical Composition of Rose Water Volatiles. May*.
<https://doi.org/10.1080/10412905.2005.9698897>
- Mohebitabar, S., Shirazi, M., Bioos, S., & Rahimi, R. (2017). *Therapeutic efficacy of rose oil : A comprehensive review of clinical evidence*. 7(3), 206–213.
- Priyanto, J. A., & Suseno, S. H. (2020). *Partisipasi Masyarakat Desa Cihideung Ilir Dalam Perencanaan Pembangunan Desa Sebelum dan Sesudah Wabah Covid-19 (Society Participation Of Cihideung Ilir Community In Village Development Planning Before And After During*. 2(5), 701–708.
- Yapari, S., Empowerment, C., Supporting, I. N., Of, D., Village, T., & Barat, B. (2017). *Pemberdayaan Masyarakat dalam Mendukung Pengembangan Desa Wisata Cihideung ,. 3*, 59–74.

APPENDIX

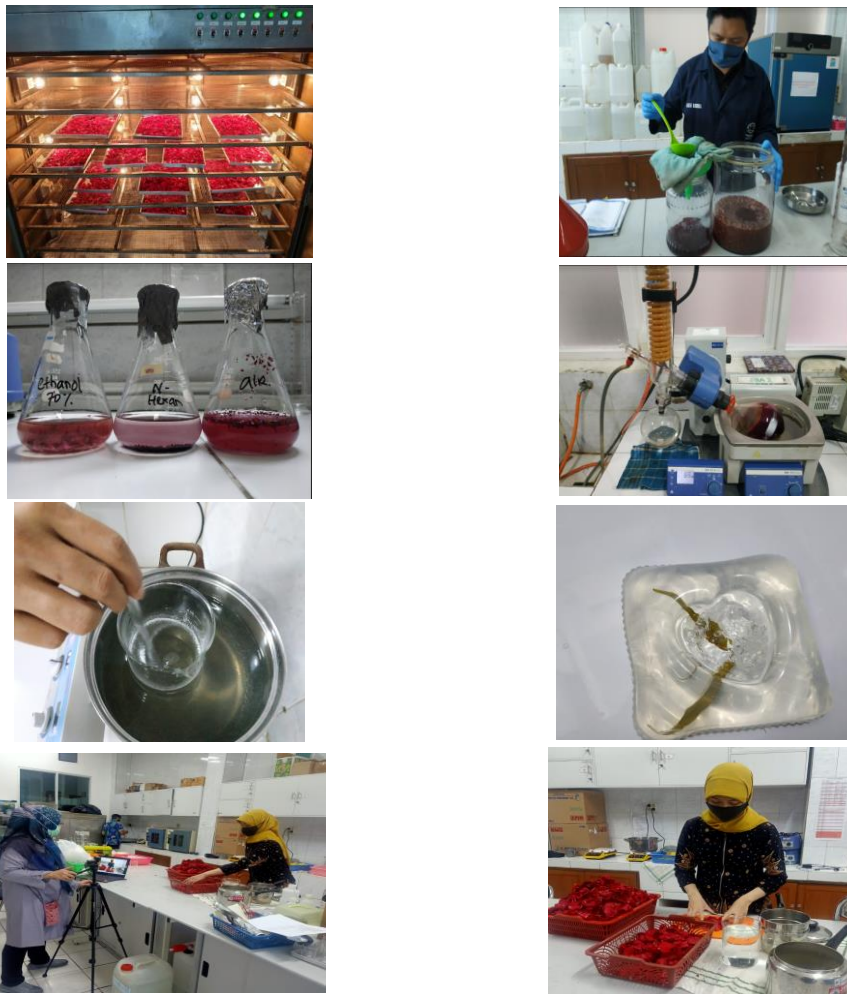


Figure 3. Making a video on making rose preparations



Figure 4. Guide to the Use of Roses as a Pharmaceutical Ingredient



Figure 5. Practice of Making Rose Water and Rose Soap

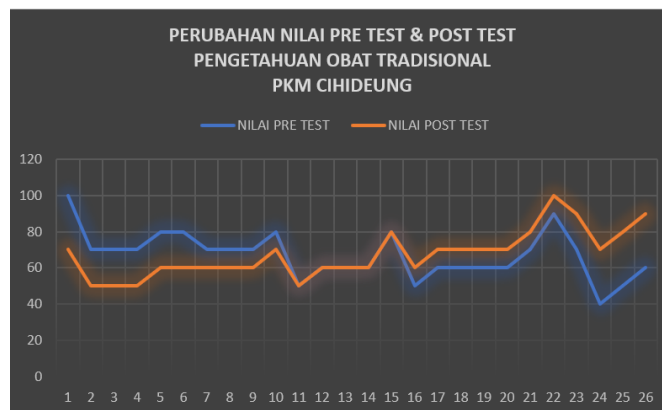


Figure 6. Graph of Changes in Pre Test and Post Test Values for PKM Cihideung Traditional Medicine Knowledge