



COMMUNITY EMPOWERMENT IN PROCESSING CELERY (*APIUM GRAVEOLENS L*) AS HAND SANITIZER IN NEIGHBOURHOOD (RW) NUMBER 05 OF BABAKAN LOA STREET, NORTH CIMAH

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Abstract Background: The corona virus diseases 19 (COVID-19) pandemic has continued to infect the world's population in the last two years, including in Indonesia which the number of positive cases of the corona virus is already above 1.5 million people. In our country, health protocol that is effective enough to prevent transmission of the corona virus is known as 5M, including washing hands thoroughly. For maximum results, it is recommended to wash your hands for at least 20 seconds several times a day. To kill viruses and other pathogenic bacteria, it is recommended to wash hands using soap or hand sanitizer with alcohol or other antibacterial substances at least 60% concentration.

Method used is technology transfer through counseling, training and mentoring in the neighbourhood (RW) 05 Babakan Loa Street, Cimahi Utara area is processing celery to be used as a hand sanitizer.

Result: After receiving learning materials and demonstration from team, each participants who are represented by the Chair of RW 05 Babakan Loa Street, North Cimahi, received handbooks which containing guidelines for processing celery as hand sanitizer. In addition, participant also received materials and equipment needed for processing celery as hand sanitizer so that can do experience independently or in team work.

Conclusion: So that, this activity can help implement health protocols in terms of washing hands and preventing the spread of COVID-19.

Keywords: *celery; community empowerment; counseling; hand sanitizer*

Background

Along with the times, human awareness to maintain health also increase as the technology that helps everything more practical and easier. Maintaining hand hygiene is very important because all daily activities carried out start from the hands so that hands are often contaminated with bacteria which can be harmful for health. The spread of bacteria can be directly through touching and shaking hands which will then be passed to the mouth and will enter the intestinal tract. Therefore, maintaining hand hygiene and hygiene is very important to do.

One of the most common and simple ways to keep your hands clean is by cleaning hands and fingers with soap and running water. Clean and hygienic hands can reduce the risk of harmful bacteria that can enter the body. However, with increasing busyness, sometimes washing hands is considered a troublesome activity, therefore causing an increasing need for practical products, namely waterless hand sanitizers that contain antiseptic ingredients or what are often called hand sanitizers.

Hand sanitizer is an alcohol-based hand cleanser that is used to reduce contaminant bacteria up to 99.9% that is growing by using it without rinsing with water. This liquid has various ingredients that are very fast in killing microorganisms found on the hands' skin⁽¹⁾. Hand antiseptic aims to remove dirt and microbiota that stick to our hands⁽²⁾. The use of hand antiseptics is currently getting a fairly positive response from the public considering the increasing number of antiseptic brands on the market so that the types of hand sanitizer products are increasingly diverse both in composition and packaging methods.

Most of the hand sanitizer antiseptic products in market are alcohol-based, which can cause burning, skin irritation, or dry skin, then making them uncomfortable when used repeatedly. These impacts are the reasons for making hand sanitizer products made from plants as the alternative one. One of the plants that has antibacterial properties is celery (*A. graveolens* L)⁽³⁾

Celery (*A. graveolens* L) is a type of vegetable that has a menthol and typical of celery aroma. Celery is usually use as a complementary ingredient in processed foods, but it turns out that celery contains several useful compounds such as flavonoids, saponins, tannins, essential oils, apigenin, choline, vitamins A, B, C, and also the bitter taste of asparagine. Among the following compounds there are those that have antibacterial properties, namely flavonoids, saponins, tannins, and also essential oils. These antibacterial compounds are the result of secondary metabolites in celery which are a group of polar compounds with unsubstituted hydroxyl groups. The solvents used to extract polar compounds are polar solvents such as ethanol, methanol, ethylacetate, or a mixture of these solvents^(4,5).

Staphylococcus aureus is a Gram-positive cocci bacteria which can be pathogen for humans when it is in very large quantities. *S. aureus* is a parasitic bacterium on the skin and nose which can cause lungs, bones, heart diseases and inflammation of blood vessels. A previous study from the Indian Journal of Public Health which explained the prevalence of bacteria found on the hands, showed that *S. aureus* is a bacterium that is often found on the palms of the hands⁽⁶⁾

The results of research conducted that celery leaf extract (*A. graveolens* L) in concentration 4% could inhibit the growth of *Escherichia coli* and *S. aureus* by 20.83 and 22.2 mm, respectively. However, no research has been conducted on the manufacture of hand sanitizers with celery (*A. graveolens* L) leaf extract as the basic ingredients⁽⁷⁾.

Antibacterial sensitivity test can use the diffusion method or disc diffusion (Kirby & Bauer test). This method can be used to determine antibacterial sensitivity. The plate containing the antibacterial stored on the agar media that has been planted with microorganisms will diffuse into the agar medium. The clear zone in the blood agar indicates the presence of inhibition of the growth of microorganisms by antibacterial on the surface of the agar media^(8,9). Research conducted by (2) on "Utilization of lotus seed extract as an antibacterial active ingredient for manufacturing hand sanitizer" has the best concentration to inhibit bacterial growth at 1.5% for *S. aureus* and *E. coli* which produces an inhibition zone of 12 mm and 10 mm, respectively. So that, this method can be used as a reference for testing and making hand sanitizer effectivity.

The active role of higher education institutions is needed as a strategic institution that is capable of carrying out system support functions, especially in efforts to spread knowledge, environmental impacts and also in the development of studies on appropriate technology related to processing hand sanitizer in the community through community empowerment activities. The target of this community empowerment was carried out in neighbourhood (RW) 05 Babakan Loa street, North Cimahi. This area has a dense population and a lot of pollution, so that the utilization

of hand sanitizer is needed to prevent the spread of COVID-19 through hands.

This community empowerment activity has aims to: 1) Increase the knowledge of partner communities about processing celery for hand sanitizer. 2) Provide skills on celery processing technology for hand sanitizer. 3) Improve the knowledge and skills of partner communities regarding the use of celery processing as a hand sanitizer. 4) Cooperation between partners can be more optimal.

Methods

This community empowerment activity was done by counseling, training and monitoring and evaluation methods. The preparation of this activity includes preparing pre-test and post-test questions to measure the partner community's initial and final knowledge of processing celery as hand sanitizer. The counseling and practical activities were carried out by starting demonstrations from the employee of community empowerment, then followed by discussions. Participants had their experience in making celery leaf-based hand sanitizer, independently and in team work guided by handbook. Finally, measuring the increase in the knowledge of participants was measured by a set of post-test questions.

Results and Discussion

Community empowerment activities consist of conducting counseling, training, monitoring and evaluating of processing celery as hand sanitizer. Before giving training, all the participant / partners were allowed a pre-test to measure their initial knowledge before giving a counseling and training.



Figure 1. Counseling was done by the team of community empowerment about of introduction of celery utilization as hand sanitizer



Figure 2. Demonstration of processing celery as hand sanitizer was done by the team of community empowerment

After receiving learning materials and demonstration from team (figure 1 and 2), each participants who are represented by the Chair of RW 05 Babakan Loa Street, North Cimahi, received handbooks (figure 3) which containing guidelines for processing celery as hand sanitizer. In addition, participant also received materials and equipment needed for processing celery as hand sanitizer so that can do experience independently or in team work (figure 4).

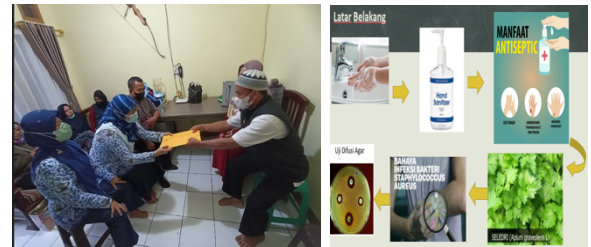


Figure 3. Handover the handbook of “Processing celery as hand sanitizer” created by the employee of community empowerment



Figure 4. Making hand sanitizer independently and team works by partners under the guidance of handbook created by employee of community empowerment

As a form of monitoring and evaluation, the community empowerment team has given questionnaires twice to all partners involved in this activity with a total of 18 participants. The first questionnaire was in the form of pretest questions given before the counseling and training was carried out, and the average score was 59.7. Furthermore, the second questionnaire was given as post-test questions given after the partners completed this activity training with an average score of 77.2. Based on the average value, there was an increase in knowledge about the processing celery as hand sanitizer. The measurement of initial and final knowledge is carried out as a step for monitoring and evaluating partner knowledge which is presented in the following graph (Figure 5).

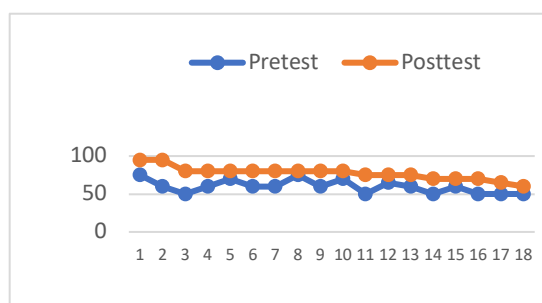


Figure 5. Participants' knowledge about "processing celery as hand sanitizer" improved after given conseling and training

Lecturers and students as the member of community empowerment work together to carry out training in a practical way for community in RW 05 Babakan Loa street, North Cimahi. The community empowerment program about the Processing Celery (*A. graveolens*) as a Hand Sanitizer in RW 05 Babakan Loa, North Cimahi has a positive impact in the form of establishing cooperation between partners and community empowerment implementers and among partners themselves. This can be seen from the activities of the Partners in RW 05 who are increasingly solid and enthusiastic in participating in every activity in this program. Cooperation and intimacy between all members is manifested by increasingly interactive discussions and holding quizzes with prizes or by giving rewards that make Partners more active and enthusiastic and wish to meet the other community empowerment program for the next moment with other useful topics.

Conclusion

1) Partner community's knowledge about processing celery for hand sanitizer has increased.

- 2) Provide skills on celery processing technology for hand sanitizer.
- 3) Improve the knowledge and skills of partner communities regarding the use of celery processing as a hand sanitizer.
- 4) Cooperation between partners can be more optimal.

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