ABDIMAS TALENTA
Jurnal Pengabdian Kepada Masyarakat

Vol. 8, No. 1, 2023 | 10 - 18

The Farmer's Personal Hygiene Improvement Through the Use of Hand Soap Gel Extract of Acem Acem Leaf

***Eka Lestari Mahyuni*[1*], *Urip Harahap*[2]**

[1][*Faculty of Public Health, Universitas Sumatera Utara, Medan, 20155, Indonesia*]
[2][*Faculty of Pharmacy, Universitas Sumatera Utara, Medan, 20155, Indonesia*]

Abstract. Pesticide exposure due to poor personal hygiene is very high because farmers generally contact soil, fertilizers, and pesticides which are synthetic chemicals that are harmful to health. The leaves of acem acem are a type of wild plant that is often used by farmers in Tanah Karo as a medium for cleaning hands after applying pesticides. Based on the results of laboratory tests, this leaf has properties as a pesticide cleaner so that it can be used to improve the personal hygiene of farmers. This activity is carried out by empowering the behaviour of washing hands using hand soap gel acem acem leaf extract. Farmers' awareness to improve personal hygiene begins with socialization and training provided as personal hygiene education to improve public health. Education accompanied by the movement of washing hands with hand soap gel acem acem leaf extract has given a positive contribution and appreciation and can increase the enthusiasm of farmers to improve public health.

Keyword: Pesticides, Personal Hygiene, Acem Acem, Hand Soap Gel

Abstrak. *Paparan pestisida akibat higiene perorangan yang buruk sangat tinggi karena petani umumnya kontak dengan tanah, pupuk, dan pestisida yang merupakan bahan kimia sintetik yang berbahaya bagi kesehatan. Daun acem acem merupakan salah satu jenis tumbuhan liar yang sering digunakan oleh para petani di Tanah Karo sebagai media pembersih tangan setelah menyemprotkan pestisida. Berdasarkan hasil uji laboratorium, daun ini memiliki khasiat sebagai pembersih pestisida sehingga dapat digunakan untuk meningkatkan personal hygiene petani. Kegiatan ini dilakukan dengan memberdayakan perilaku cuci tangan menggunakan hand soap gel acem ekstrak daun acem. Kesadaran petani untuk meningkatkan personal hygiene diawali dengan sosialisasi dan pelatihan yang diberikan sebagai pendidikan personal hygiene untuk meningkatkan kesehatan masyarakat. Edukasi yang disertai dengan gerakan cuci tangan pakai gel sabun cuci tangan ekstrak daun acem telah memberikan kontribusi dan apresiasi yang positif serta dapat meningkatkan semangat petani untuk meningkatkan kesehatan masyarakat.*

Kata Kunci: *Pestisida, Personal Hygiene, Acem Acem, Gel Sabun Tangan*

Received 14 December 2021 | Revised 05 January 2022 | Accepted 20 January 2023

*Corresponding author at: Faculty of Public Health, Universitas Sumatera Utara, Medan, 20155, Indonesia

E-mail address: eka.lestari@usu.ac.id

Journal Homepage: https://abdimas.usu.ac.id or https://talenta.usu.ac.id/abdimas

1 Introduction

Tanah Karo Regency is an agricultural district that is dominated by horticultural crops. Horticultural management is generally carried out using the intercropping method that is prone to pests and diseases so that it requires intensive attention with the quite high pesticides used [1]. The high of pesticides used by the agricultural community has the potential to trigger pesticide poisoning which is a serious world problem that needs attention, because of its impact on the health and death in farming communities. The use of pesticides that are not appropriate and not according to procedures will be dangerous and have an acute and chronic impact on pesticide users [2-3]. Based on literature studies, the high rate of pesticide poisoning is caused by direct exposure to pesticides that occur due to farmers not using personal protection during pesticide spraying. The highest exposure through the skin on several parts of the body is often experienced by farmers due to pump seepage that leaks, splashes, spills, or direct contact when mixing and spraying pesticides [4-7].

Personal hygiene is an action to maintain a person's cleanliness and health or personal hygiene for physical and psychological well-being. Wash the hands is the one way to improve personal hygiene. Hands are the most frequently contaminated with microorganisms. Hand washing significantly reduces the potential for spreading disease. The use of soap and water or hand sanitiser is generally more quickly accepted by the community [8-9].

Generally, the farmer’s personal hygiene is in poor categorisation. Some literature states that farmers rarely wash their hands or maintain their personal hygiene. It is generally neglected because of the unavailability of water in the fields and the limited time to clean the fields, maintain crops, protect crops or other field activities. Pesticide exposure due to poor personal hygiene is very high because farmers generally contact soil, fertilizers, and pesticides which are synthetic chemicals that are harmful to health [10-14].

The farmers are always encouraged to take a shower and wash their hands or other body parts that are exposed to pesticides. However, the unavailability of water and soap in the fields makes farmers rarely wash their hands and carry out hand washing or bathing activities after they finish farming. This phenomenon puts farmers at risk of poisoning because of the long duration of exposure to pesticides attached and it is assumed that it enters the body through the pores of the skin in particular. Based on the results of interviews with farmers, some Karo farmers use a type of wild plant (weeds) known as " acem acem" leaf [15].

Acem acem leaf is a type of wild plant belonging to the species oxalis with the genus oxalis dehradunensis Raizada which is widely found in Karo Regency. Farmers often use this plant as a cleaning medium to clean their hands that are exposed to dirt and pesticides. This plant belongs

to the type of mountain clover which contains saponins, flavonoids, polyphenols, tannins, and oxalic acid [16].

Figure 1. Wash the hand use of acem acem (*oxalis dehradunensis raizada*) leaf.

This hand soap gel can support efforts to prevent pesticide poisoning, especially to facilitate the application of personal hygiene for farmers while using pesticides. Therefore, the application of hand soap gel made from acem acem leaf extract could empower the farmers to reach their healthy lives, especially in maintaining personal hygiene by always getting used to cleaning exposure to pesticides.

2 Material and Method

The material used in this activity is hand soap gel acem acem leaf extract which has been formulated based on the results of the PPM team's research. Handsoap gel acem acem leaf extract has been proven to be able to bind pesticides and is effective as a pesticide cleaner. The application of a product must be packaged in a good and attractive condition so that it can stimulate the attention of the farming community to take advantage of the product being promoted or applied.

The application of hand soap gel as a pesticide cleaner to farming communities was carried out in several stages of activity:

a. Coordinate with local government leaders starting from the regent, sub-district and village government regarding the application of hand soap gel acem acem leaf extract.

b. Determine the location of PPM activities

c. Provide education on making hand soap gel acem acem leaf extract

d. Spread the benefits of hand soap gel to improve the personal hygiene behaviour of farming communities as an effort to prevent the risk of pesticide poisoning by demonstrating handwashing activity.

e. The demonstration was held in one of the farmers' fields by inviting several representatives from the local government and related stakeholders.

3 Result and Discussion

Socialization of handsoap gel of acem acem leaf extract as a pesticide cleaner

Handsoap gel acem acem leaf extract is one of the gel-shaped soap products made with raw material for acem acem leaves which are commonly found in Tanah Karo. Acem acem leaves are one of the wild plants that are widely found in farmers' fields in the Karo Regency area. Based on the results of research conducted by the PPM team, this leaf belongs to the genus Oxalis plant group with the species Oxalis dehradunensis Raizada. This wild plant has a leaf shape like a 2 or even 3 leaf clover in the form of a butterfly and grows vines around its host. This leaf is also often symbolized as a love leaf or a lucky leaf. Usually, these leaves are often removed by farmers as well as weeding or weeding the grass because it is considered to interfere with plant growth.

Figure 2. H*and soap* gel acem acem extraxt leaf as pesticide cleaner

The socialization of hand soap gel product of acem acem leaf extract is a science and technology dissemination activity and a form of down streaming agricultural products for the benefit of the community. The socialization of hand soap gel began with an audience and coordination with the Regent of Tanah Karo Regency, the District Head of Kabanjahe and the Head of Sumber Mufakat Village, Kabanjahe District by introducing the efficacy and benefits of hand soap gel with acem acem leaf extract. The support from the local government is shown by the enthusiasm of the

government and is expected to be sustainable by preparing several important things in the dissemination of this product. Some basic points that need to be considered are how to produce it on a large scale followed by parties who can be involved in the process of making hand soap gel and how economic allocation and marketing will be encouraged.

Figure 3. Socialization of hand soap gel to Tanah Karo District government

Socialization at the community level is carried out in a structured manner. Departing from the socialization of research results which were disseminated through PPM activities, the socialization was carried out at the Sumber Mufakat Village Office, Kabanjahe District by inviting all hamlet heads and village officials, Karang Taruna and community leaders. This socialization activity, it was mediated by posters of the results of the acem acem leaf research. The communicative display by using poster and showing the hand soap gel product, makes users get clear information about the benefits of hand soap gel, it becomes easier for people to understand what the goals of the socialization target are, especially the hamlet head who understands the pattern of society in his area during farming. It can be concluded that the use of hand soap gel from acem acem leaves needs to be planned and discussed further with regional leaders. This is due to the constraints of the hand soap gel production mechanism. Farmers can only act as a provider of acem acem leaves but are powerless in producing acem acem leaves in the form of hand soap gel.

Figure 4. Outreach to Village Level Communities

The socialization as a stage of dissemination of the hand soap gel of acem acem leaf extract was carried out more comprehensively through demonstration activities of handwashing using hand soap gel. There are still many people in agricultural areas who do not pay attention to personal hygiene, especially in terms of washing hands after using pesticides. Based on the literature, personal hygiene or cleaning oneself from exposure to pesticides is a basic preventive step that must be taken by farmers because this exposure can affect farmers' cholinesterase activity. Generally, the farmers understand how to use the pesticides but precautions to be taken during spray of pesticides and due to this various health hazards can happen to farmers health which may be a chronic or acute health hazard [17-22].

Farmers admit that they have a weakness for not being able to avoid the use of pesticides and didn’t care about their personal hygiene. Based on the results of interviews with farmers, farmers understand the risk of poisoning or toxicity but are just usually ignored because the demands of farmers' necessities of life make never avoid splashes or direct contact with pesticides which have become their daily activities. On the other hand, farmers also rarely clean themselves at least by washing their hands after spraying pesticides because of the unavailability of water and soap in the fields. Farmers generally clean themselves when they return home after completing all their activities in the fields. This increases the risk of poisoning due to chronic pesticide use [23-24].

The habit of washing hands that is not right has become a routine that is not good in this village, the community thinks washing hands with water is enough to clean hands from pesticides. This is not healthy enough considering that some chemicals cannot be removed by simply washing with water. Hand soap gel acem acem leaf extract has been scientifically proven and laboratory tests can bind and clean pesticides. The strength of acem acem leaf extract with levels of 5% and 7% can clean pesticides [25]

Figure 5. CTPAc (Cuci Tangan Pakai Acem Acem)

A demonstration of handwashing using hand soap gel of acem acem leaf extract as a pesticide cleaner was carried out in the field of one of the farmers selected according to the inclusion criteria, which is the midpoint of the field area on the east side of Sumber Mufakat Village. This field also has acem acem leaves that thrive so that it can be a medium of additional information in the socialization in the form of demonstrations. Before the demonstration, the farmers were given education including how to make acem acem leaves into hand soap gel. This activity was attended by the local government of Kabanjahe, agricultural extension workers from the sub-district and the Department of Agriculture as well as village heads and sub-district heads in the Kabanjahe area, including the farming community and 'aron'. The education was given directly and closed by doing a handwashing demonstration together to see the direct efficacy of the acem acem extract hand soap gel. The results of handwashing show that hands are very clean and have been proven to be free from chemical impurities, either fertilizers or pesticides, which usually expose the skin during farming activities. However, improving personal hygiene through the use of hand soap gel requires strong cooperation and participation between the community and stakeholders. Indicators such as the preparation of regulations, government involvement in program preparation, assistance in implementing development, evaluation regarding audits, and utilization of development results must be considered considering the extent to which the government's ability to open access to cooperation with investors or through regional funding in managing potential in the village is still low needs to be improved. For this reason, it is necessary to further study the potential of the village so that the down streaming and dissemination of innovation can be realized [11-12][17][21].

4 Conclusion

The socialization and demonstration activities as part of the downstream innovation or dissemination of science and technology in the form of hand soap gel product of acem acem leaf

extract were well received and received a positive response and high enthusiasm from the community and local government. The use of hand soap gel acem acem leaf extract can improve the personal hygiene of farmers and reduce the risk of pesticides because of the ability of hand soap gel as a pesticide cleaner. The community and local government can plan to produce hand soap gel extract of acem acem leaves in a more comprehensive manner related to collaboration between the government and universities related to innovation from the research results obtained.

5 Acknowledgement

We extend our deepest gratitude to the Kabanjahe sub-district head and his staff, especially to the Tanah Karo farming community who have supported and participated in supporting the improvement of farmers' personal hygiene while using pesticides. The use of hand soap gel is expected to reduce the risk of pesticide poisoning and improve the occupational health of farmers so that they become safer and healthier while applying pesticides. We also thank you for the great support and participation from community leaders, Mr. Pt. Timur Tarigan, a community that cares about the poison of GEMPAR Mr. Hiskia Surbakti and all farmers Mrs. Linda Taraigan, Mrs. Awal Marita TArigan and Nurida Tarigan (Evil Rat). Continuous promotion and socialization of the use of hand soap gel acem acem leaf extract will be a content of local wisdom that can improve the welfare of farmers.

REFERENCES

[1] Mahyuni, E. L. Faktor Risiko Dalam Penggunaan Pestisida Terhadap Keluhan Kesehatan Pada Petani Di Kecamatan Berastagi Kabupaten Karo 2014. *Kesehatan Masyarakat*, *9*(1), 79–89. 2015

[2] Karyadi, K. Dampak Penggunaan Pupuk dan Pestisida yang Berlebihan terhadap Kandungan Residu Tanah Pertanian Bawang Merah di Kecamatan Gemun Kabupaten Kendal. *Agromedia*, *26*(1), 10–19. 2008

[3] World Health Organization. *World Health Statistics 2017: Monitoring Health for the SDGs, Sustainable Development Goals*. Geneva, Swiss: Anonim. 2017

[4] Mahyuni, E. L., Haharap, U., Harahap, R. H., & Nurmaini. Pesticide toxicity prevention in farmer's community movement. *Open Access Macedonian Journal of Medical Sciences*, *9*(E), 1–7. https://doi.org/10.3889/oamjms.2021.5565. 2021

[5] Mahyuni, E. L., Hamdani Harahap, R., Harahap, U., & Nurmaini. Determinants of unsafe behavior in pesticide usage among horticulture farmer. *Open Access Macedonian Journal of Medical Sciences*, *8*(E), 341–346. https://doi.org/10.3889/oamjms.2020.4210. 2020

[6] FAO, & WHO.. *Managing pesticides in agriculture and public health. An overview of FAO and WHO guidelines and other resources*. Retrieved from http://www.fao.org/3/ca5201en/ca5201en.pdf . 2021

[7] Prijanto, T. B., Nurjazuli, N., & Sulistiyani, S. Analisis Faktor Risiko Keracunan Pestisida Organofosfat Pada Keluarga Petani Hortikultura di Kecamatan Ngablak Kabupaten Magelang. *Jurnal Kesehatan Lingkungan Indonesia*, *8*(2), 73–78. https://doi.org/10.14710/jkli.8.2.76-81. 2009

[8] Lal, M. Review Article Hand Hygiene – Effective Way To Prevent Infections. *International Journal of Current Research*, *7*(3), 13448–13449. 2015

[9] Lestari, D., Koneri, R., & Maabuat, P. V. Keanekaragaman dan Pemanfaatan Tanaman Obat pada Pekarangan di Dumoga Utara, Kabupaten Bolaang Mongondow, Sulawesi Utara. *JURNAL BIOS LOGOS*, *11*(2), 82–93. https://doi.org/10.35799/jbl.11.2.2021.32017. 2021

[10] Budiawan, A. R. Faktor Risiko yang Berhubungan dengan Cholinesterase pada Petani Bawang Merah di Ngurensiti Pati. *Unnes Journal of Public Health.*, *3*(1), 1–11. https://doi.org/10.15294/ujph.v3i1.3533. 2014

[11] Dalimartha, S. *Atlas Tumbuhan Obat Indonesia Jilid 2*. Jakarta: Trubus Agriwidya. 2000

[12] Damalas, C. A., & Koutroubas, S. D.. Farmers' Exposure to Pesticides: Toxicity Types and Ways of Prevention. *Toxics*, *4*(1), 1–10. https://doi.org/10.3390/toxics4010001. 2016

[13] Isnawan, R. M. Faktor-faktor yang Berhubungan dengan Kejadian Keracunan Pestisida pada Petani Bawang Merah di Desa Kedunguter Kecamatan Brebes Kabupaten Brebes. *Jurnal Kesehatan Masyarakat*, *2*(1), 1–10. 2013

[14] Mahyuni, E. L., & Sinaga, M. M. Keracunan Pestisida Berdasarkan Gejala Fisik dan Aktivitas Enzym Cholinesterase pada Petani di Desa Sumber Mufakat Kabanjahe. *Prosiding Kongres Nasional Ikatan Ahli Kesehatan Masyarakat Ke-13 (KONAS IAKMI XIII) " Masyarakat Hidup Sehat Dan Bahagia Dalam Mencapai Sasaran Pembangunan Berkelanjutan (SDGs 2030)" Edisi Kedua*, *2*(November 2016), 643–646. 2016

[15] Rukmana, R., & Saputra, U. *Gulma dan Teknik Pengendalian*. Yogyakarta: Kanisius. 2003

[16] Mahyuni, E. L., & Harahap, U.. *Uji Hand Soap Gel Ekstrak Etanol Daun Acem Acem sebagai Pembersih Pestisida*. Medan. 2020

[17] Mahyuni, E. L., & Sinaga, M. M. *Health Impact of Pesticide Using Method At Sprayed Worker Farmer in Sumber Mufakat Village, Karo*. *1*(PHICo 2016), 285–289. https://doi.org/10.2991/phico-16.2017.28. 2017

[18] Mahyuni, E. L., Yustina, I., & Sudaryati, E. Safety Talk and Check to Prevent Pesticide Toxicity among Farmer. *International Journal of Public Health Science (IJPHS)*, *6*(4), 293–298. https://doi.org/10.11591/ijphs.v6i4.9113. 2017

[19] Junaidi, J., Edy Agustinus, & Giska Hediyanti. Tingkat Partisipasi Stakeholders dalam Peningkatan Indeks Desa Membangun. *JURNAL BORNEO AKCAYA*, *5*(2). https://doi.org/10.51266/borneoakcaya.v5i2.185. 2021

[20] Lestari, R. K., Amalia, E., & Yuwono. Efektivitas jeruk nipis (citrus aurantifolia swingle) sebagai zat antiseptik pada cuci tangan. *Jurnal Kedokteran Dan Kesehatan*, *5*(2), 55–65.2018

[21] Darçın, E. S., Darçın, M., Alkan, M., & Doğrul, G.. Occupational Risk Factors for Acute Pesticide Poisoning among Farmers in Asia. In *Poisoning - From Specific Toxic Agents to Novel Rapid and Simplified Techniques for Analysis* (pp. 1–13). https://doi.org/10.5772/intechopen.72006. 2017

[22] Meriliandi, K. W. F., Sijabat, O. L., Tanuwijaya, S. A., Modjanggo, F. ., Bagas, I., Saragih, N. ., … Widiastiani, N. Kajian Potensi Desa sebagai Peningkatan Ekonomi Masyarakat Desa Monggol Kecamatan Saptosari Kabupaten Gunung Kidul. *Jurnal Atma …*, *1*(1), 81–88. 2021

[23] Ohayo-Mitoko, G. J. A., Kromhout, H., Karumba, P. N., & Boleij, J. S. M. Identification of determinants of pesticide exposure among Kenyan agricultural workers using empirical modelling. *Annals of Occupational Hygiene*, *43*(8), 519–525. https://doi.org/10.1016/S0003-4878(99)00045-9. 1999

[24] Ranjan, R., Neupane, K., Wantamutte, A. S., Banjade, B., Kushwaha, N., Neupane, R., & Mph, P. G. Practice of Pesticides Use Among The Farmers of Kangrali Village In Belgaum -A Cross-sectional Study. *International Journal of Interdisciplinary and Multidisciplinary Studies*, *1*(5), 202–207. 2014

[25] Mostafalou, S., & Abdollahi, M. Pesticides: an update of human exposure and toxicity. *Archives of Toxicology*, *91*(2), 549–599. https://doi.org/10.1007/s00204-016-1849-x. 2017