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COMMUNITY SERVICE ARTICLES

Understanding Rabies Disease with The Making *of Eco-Enzyme* Soap for Hand Washing

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Abstract: Rabies is a zoonotic disease caused by the rabies virus with a mortality rate of nearly 100% if not treated properly. The lack of public understanding about the dangers of rabies and the lack of awareness about the importance of hand hygiene as a preventive measure against infectious diseases such as rabies are health issues that need to be addressed through this education program. This activity was carried out as part of community service on August 21-22, 2025, at SMPN 3 Kutalimbaru Satu Atap, Namo Rube Julu Village, Deli Serdang Regency, North Sumatra Province, involving male and female students. The implementation method consisted of interactive counseling on rabies using educational posters, followed by an open discussion session and an evaluative quiz, and concluded with a workshop on making eco-enzyme soap using environmentally friendly materials. The results of the activity showed an increase in students' understanding of the transmission mechanism of rabies, the characteristics of symptoms in animals and humans, initial steps to take when exposed to the virus, and practical skills in producing eco-enzyme soap as a sustainable cleaning product alternative and as a preventive measure against rabies. Participants showed high enthusiasm and responded positively to the material presented, as well as successfully raising awareness about the importance of maintaining hand hygiene. Thus, the rabies education program combined with eco-enzyme soap making training proved effective in improving students' knowledge and practical skills, so that it is hoped that this will become a healthy habit that is consistently applied in daily activities.

Keyword: Rabies, Eco-enzyme Soap

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INTRODUCTION

Rabies is an acute infectious disease caused by the rabies virus and can attack the central nervous system. This disease falls into the *zoonotic category* because it can be transmitted from animals to humans through the bite of an infected animal. Based on research conducted by Fooks et al (2017), the death rate due to rabies in humans can reach almost 100% if proper medical treatment is not received.[1]

Symptoms of rabies disease in humans develop gradually, starting from the incubation phase which lasts without clinical symptoms, then entering the prodromal stage with symptoms such as loss of appetite, recurrent fever, weak body, and anxiety. In the acute neurological stage, rabies can appear in two forms, namely *furious rabies* which is characterized by psychological changes, fear of water (*hydrophobia*), and fear of wind (*aerophobia*), and *dumb rabies* which is characterized by paralysis and loss of control of bodily functions.[2]

Data from the Ministry of Health of the Republic of Indonesia shows that in 2023 95% of 11 cases of rabies disease were caused by dog bites. *The World Health Organization (WHO)* in 2021 reported that the lack of public awareness of the risks of dog bites is one of the factors that facilitate the spread of rabies.[3]

Currently, rabies cannot be cured if the symptoms have appeared. However, this disease can be prevented by cleaning wounds, administering anti-rabies vaccine (VAR), and anti-rabies serum (SAR). In addition, the implementation of clean and healthy living behaviors, especially the habit of washing hands with soap, is an important step in preventing infectious diseases.[2]

Soap is an important product in daily life to maintain cleanliness and health. With regular use, soap is able to remove dirt and disease-causing microorganisms, thus preventing the spread of infection. Hand soap has a major role in maintaining hand hygiene as the first step in preventing disease. Now, the use of *eco-enzymes* in household products is increasingly in demand because it can increase production effectiveness while reducing negative impacts on the environment.[4]

Eco-enzyme is a liquid from fermented organic waste that can be used as an environmentally friendly soap making material. This product contains enzymes that play a role in accelerating biochemical reactions and has various uses, including as a cleaner that can reduce dependence on harmful chemicals. The use *of eco-enzymes* in soap production not only provides benefits for hygiene, but also supports environmental conservation efforts.[5]

Based on a survey conducted in Namo Rube Julu Village, Kutalimbaru District, Deli Serdang Regency, North Sumatra Province, it was found that the community keeps many animals including dogs, but there is still limited information about rabies. Therefore, educational activities and practices of *making eco-enzyme* soap are important to improve the knowledge and skills of the community, especially students, in preventing infectious diseases and supporting clean and healthy living behaviors.

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METHOD

This community service activity was carried out at SMPN 3 Kutalimbaru Satu Atap, Namo Rube Julu Village, Kutalimbaru District, Deli Serdang Regency, North Sumatra Province on August 21-22, 2025. The participants of the activity were students from SMPN 3 Kutalimbaru Satu Atap.

The method used in this activity consists of two implementations, namely providing education about rabies and the practice of making *eco-enzyme* soap for hand washing. Education about rabies disease includes five main points, namely: (1) the introduction of rabies, (2) the way of transmission of rabies, (3) the symptoms of rabies disease in animals and humans, (4) early treatment of those exposed to the virus, and (5) how to prevent rabies.

The delivery of material was carried out through presentations using simple and attractive poster media for 15 minutes, followed by a question-and-answer session and interactive quizzes to evaluate participants' understanding. After the educational session, the activity continued with a workshop on making *eco-enzyme soap* which involved the active participation of all participants.

Ingredients used in *the manufacture of eco-enzyme* soap include *concentrated methyl ester sulfonate*, fermented *eco-enzyme* solutions , natural fragrances, table salt, and water. The manufacture *of eco-enzyme* soap is carried out by mixing concentrated *methyl ester sulfonate* as the basic foaming material with *an eco-enzyme* solution that has been fermented in a ratio of 1:3. Next, add enough table salt to increase the viscosity of the soap, then stir until well combined. After that, add enough water to get the desired consistency and natural fragrance to taste. The mixing process is carried out by stirring slowly until all ingredients are homogeneously mixed. The manufacturing process is carried out in a demonstration first, then practiced together by participants with student guidance. The finished soap is then poured into a clean container, packaged and distributed to students to take home and placed in the school's handwashing facility.

Figure 1. Educational attachment

Figure 2. Eco-enzyme soap making attachment

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Figure 3. Eco-enzyme soap making attachment

Figure 4. Eco-enzyme soap making attachment

RESULTS AND DISCUSSION

The community service activity with the theme of education to understand rabies disease by making *eco-enzyme soap* for hand washing at SMPN 3 Kutalimbaru Satu Atap ran smoothly and achieved the expected results. The students' enthusiasm for the material presented can be seen from their active participation in the question-and-answer sessions and interactive quizzes.

The results of the evaluation showed an increase in students' knowledge about rabies, including understanding about animals that can be exposed to the rabies virus and how to recognize its symptoms. Students became more aware of the importance of keeping a distance from animals that show suspicious characteristics as a measure to prevent the transmission of rabies. This knowledge is expected to make them more careful and able to take better care of themselves.

In the eco-enzyme *soap making practice session*, most of the students showed high enthusiasm and actively participated in the entire manufacturing process. Some students even expressed a desire to practice *making eco-enzyme* soap at home, which shows that this activity not only stops as theoretical learning but can also be applied in everyday life.

CONCLUSION

This activity succeeded in achieving the main goal, which is to increase the knowledge and awareness of students about the dangers of rabies disease and provide practical skills in making environmentally friendly soap. Students also gain an understanding of the importance of maintaining hand hygiene as one of the preventive measures for infectious diseases in the form of rabies.

Although the activity was successful, there were several obstacles faced such as road access to inadequate locations. However, this did not prevent the achievement of the activities objectives thanks to the support of various parties including field supervisors, village heads, and school principals.

Overall, the rabies education program accompanied by the practice of making *eco-enzyme soap* has proven to be effective in increasing the knowledge, skills, and awareness of students about the importance of preventing infectious diseases in the form

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of rabies through clean and healthy living behaviors.

It is hoped that the knowledge and skills gained can be applied consistently in daily life, so that it can contribute to reducing the incidence of infectious diseases in the community.

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