THE EFFECT OF MASCULUS IMMERSION AGAINST THE DEATH OF MOSQUITO FLACERS

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Abstract
The transition from the dry season to the rainy season causes mosquito larvae in stagnant water. Researchers are looking for natural larvicidal solutions that are safe and effective with male papaya flowers (masculus). The aim of the study was to determine the effect of masculus immersion water on the death of mosquito larvae in water reservoirs. The location is in Curup Tengah District. Quasi experimental type, Chi-square analysis, calculating odds ratio, Chi square test. Almost all (94.4%) there were 34 dead larvae and a small portion (5.5%) there were 2 live larvae, from 36 Aedes aegypti larvae in 50 ml of masculine immersion water, 1 minute. The results of Chi-square analysis showed that P value = 0.04 < α 0.05, there was a significant effect between masculine immersion water and Aedes aegypti larvae mortality. Where the P value = 0.040, has the effect of masculus soaking water, at odds ratio = 4.00 times. Overall (100%) there were 36 dead larvae and a small portion (0%) there were 0 live larvae, out of 36 Aedes aegypti larvae in the bath 100 ml of masculine soaking water, time under 1 minute. The results of the Chi-square analysis showed that the P value = 0.04 <α0.05, there was a significant effect between the masculine immersion water and Aedes aegypti larvae mortality. Where the P value = 0.043, has the effect of masculine immersion water, at odds ratio = 4.10 times. Overall (100%) there were 36 dead larvae and a small portion (0%) there were 0 live larvae, out of 36 Aedes aegypti larvae in the bath 100 ml of masculine soaking water, time under 1 minute. The results of the Chi-square analysis showed that the P value = 0.04 <α0.05, there was a significant effect between the masculine immersion water and the mortality of Aedes aegypti larvae. Where the P value = 0.040, has the effect of masculine soaking water, at odds ratio = 4.00 times. In order for the community to be active in eradicating Aedes aegypti larvae, activities get used to making masculine soaking, pouring it into a water reservoir

Keywords: Masculus, mosquito larvae, TPA
1. Introduction

Cases of dengue hemorrhagic fever (DHF) in Indonesia in 2022 there are 52,313 with 488 deaths in 451 districts/cities in 34 provinces. The Rejang Lebong District Health Office has carried out fogging in 15 sub-districts because there have been 23 cases of dengue that have attacked residents. The transition from the dry season to the rainy season from January to August 2022 is the reason for the large number of mosquito larvae in stagnant water. If not eradicated, it will develop into an adult mosquito, an adult female mosquito that lays its eggs, in a damp place, mosquito eggs will hatch into larvae and will develop into adult mosquitoes, if they contain the aedes aegypti virus, they can cause dengue fever. Aedes aegypti larvae, if not monitored, will continue to develop into adult mosquitoes. If mosquitoes contain Aedes aegypti, they can cause dengue hemorrhagic fever (DHF) in humans who suck their blood by these mosquitoes.

Boiled Carica papaya leaf had an effect on the death of Aedes aegypti larvae. Carica papaya leaf that was administered to the larvae increased the risk of death among Aedes aegypti larvae four times as many (OR= 4.10; p= 0.043). The death of Aedes aegypti larvae after giving Abate was compared to giving lemongrass powder. Papaya (Carica papaya) is a plant with upright and wet stems. Papaya resembles a palm, the flowers are white and the ripe fruit is reddish yellow, tastes like melon. Papaya tree height can reach 8 to 10 meters with strong roots. This plant is also cultivated in extensive gardens because of its fresh and nutritious fruit. Papaya plants contain a lot of a substance called papain enzyme, the effect of papain protease can kill Aedes aegypti larvae.

The results showed that concentrations of 0ppm (control), 125ppm, 250ppm, 500ppm, and 1000ppm, papaya leaf extract (Carica Papaya L) respectively caused larvae deaths of 0%, 8%, 16%, 40%, and 56% for 24 hours of treatment, and 0%, 16%, 28%, 68%, and 96%, for 36 hours of treatment. The result of the probit test obtained values of LC50 and LC90 at 24 hours equal to 657.278 ppm and 1209.82 ppm. at 36 hours at 424.086 ppm and 837.754 ppm. Kruskall-Wallis test results show p <0.05 so that it can be concluded there is a significant difference in the number of dead larvae between groups compared. The conclusion in this research is papaya leaf extract as effective as larvicide to larvae of Anopheles aconitus.

Researchers are looking for natural larvicidal solutions that are safe and effective, because researchers see many papaya plants planted by residents in their yards. Papaya tree plant (Carica papaya, Linn.) Family (Cariccaceae). Papaw (English), Papaya (Indonesia), Gedang (Sunda); Betik, Kates, Telogantung (Java). They have the distinctive properties of root, leaf and stem flavones, which have a very sharp odor, a bitter taste, are soluble in water and organic solvents, and are also easily decomposed at high temperatures. Flavonoids are compounds that can inhibit insect eating. Flavonoids function as respiratory inhibitors thereby inhibiting the mosquito's respiratory system which can result in the Aedes aegypti mosquito dying.

Eradication using fogging, abate powder, which has an effect on the environment. Researchers are looking for natural larvicidal solutions that are safe and effective, old papaya leaves contain flavonoids that function as respiratory inhibitors thereby inhibiting the respiratory system of mosquitoes which can cause mosquito larvae to die. Researchers are looking for natural larvicidal solutions that are safe and effective. This study aims to determine the effect of water immersing male papaya flowers (masculus) on the death of mosquito larvae in water reservoirs (TPA). The research location is in Curup Tengah District.

Dengue fever is a health problem. Dengue transmission is determined by the presence of Aedes aegypti mosquito larvae. An effective way to tackle DHF is by breaking the life cycle of the DHF vector, namely by killing the presence of Aedes aegypti mosquito larvae, which so far use fogging, abate powder and so on which have side effects on the environment. The difference between this research and previous research is about male papaya flowers.
This study aims to determine the application of masculus soaking water to the death of Aedes aegypti mosquito larvae in water reservoirs. The research location was in Curup Tengah District, the number of houses surveyed was 36 larvae in water reservoirs. The survey conducted by researchers around the yards of residents' houses in Curup Tengah Subdistrict contained lots of papaya plants. Aedes aegypti larvae and can be used as an indicator to determine the free number of larvae in an area, it is necessary to socialize the use of soaking old papaya leaves, to minimize the presence of Aedes aegypti larvae. Based on the data above, the authors examined: "The effect of masculus immersion water on the death of mosquito larvae in water reservoirs."

2. Research Purposes

This study aims to determine: The effect of masculus soaking water on the death of mosquito larvae in water reservoirs.

3. Method

This type of research is quasi-experimental, namely research that is close to the actual experiment, to determine the effect of giving masculine immersion water, which is effective as a death repellent for mosquito larvae. The dependent variable, namely the number and percentage of dead larvae, and the number and percentage of live larvae. The independent variable, namely giving masculine immersion, was analyzed using 2 x 2 cross tabulation, calculating the odds ratio, and Chi square test. The research object sample was 36 Aedes aegypti larvae. Research implementation 4 (four) months. The analysis used was univariate to determine the effect of giving masculine immersion water on the mortality of Aedes aegypti larvae and the proportions of each variable studied. Bivariate analysis to determine the effect of independent and dependent variables.

4. RESEARCH TOOLS AND MATERIALS

The researcher used the following tools: knife, scissors, fine mesh pliers, flashlight, small glass bottles, plastic pipettes, white plates, measuring cups, scoops, matches, gas stoves, pots, stopwatches, clocks, stationery and observation paper. Researchers used several research materials as follows, including masculine, water and mosquito larvae.

Procedure

Fix paragraphs and methods and paragraphs, don't number them downwards, but just arrange them straight and fix the writing procedures in the sub-chapter on methods. The process for making old papaya leaf marinade is as follows: 1). Prepare 2 glasses of starfruit or as much as 400 ml of water. 2) Take 5 Masculus, wash thoroughly then knead. 3) Masculus squeeze, put into the soaking tube each containing 50 ml and 100 ml, water is then processed so that it becomes Masculus soaking water. 4). Next, the water soaked in old papaya leaves, labeled, then put the masculus soak, with a size of 50 ml and 100 ml, in two small glass bottles into the water with mosquito larvae.

The method of collecting mosquito larvae is as follows: 1). Mosquito larvae are taken from 36 water reservoirs in the homes of residents of the Batu Galing Village community. 2). Using a flashlight as a light, to see and make sure the water reservoir has larvae. 3). If the mosquito larvae are found using a fine mesh net, then the larvae are taken with a plastic pipette. 4). Then the live mosquito larvae are put into two white plates filled with water each.

The implementation of the research procedure is as follows: 1). Prepare all the equipment and materials needed. 2). Take each small glass bottle containing the masculus soaking water, which contains 50 ml, and 100 ml of cooled water. 3). Prepare a stopwatch or clock, stationery and observation paper. 4). Then take live larvae using a
plastic pipette from a white plate filled with water, select each mosquito larva. 5). Put each live larva in a bottle containing 50 ml and 100 ml of masculus soaking water respectively. 6). Take a stopwatch / hour and observe the dead larvae in the bottle in each masculus soaking water. 7). 8). Tabulation of the data obtained is then analyzed according to the statistical method used. Experiments were carried out twice by placing each live larva into a bottle containing 50 ml and 100 ml of masculus soaking water, respectively. The data obtained from the observation results were first analyzed using a cross-sectional study design, analyzed using a 2 x 2 cross-tabulation, knowing the effect of giving masculine immersion water on the death of mosquito larvae and calculating the odds ratio, and Chi square test with a significance level of 0.05. Reject Ho if p < (0.05). [12]

Research result

Univariate Analysis Results

The activities in this study included calculating the number of mosquito larvae deaths with the effect of masculine immersion water, after treatment. The process of observing 36 Aedes aegypti larvae immersed in the masculus immersion water, for a maximum of 5 minutes, for each dead and live larvae, which were in a bottle containing 50 ml of the masculus soaking water each, the results are as shown in the table following:

<table>
<thead>
<tr>
<th>Provision of 50 ml of masculus soaking water.</th>
<th>Mosquito larva death</th>
<th>dead n</th>
<th>Life n</th>
<th>Total n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
<td>34</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>0</td>
<td>36</td>
<td>36</td>
</tr>
</tbody>
</table>

Based on Table 1 above, it shows that almost all (94.4%) found 34 dead larvae and the remaining 2 live larvae from a total of 36 mosquito larvae in 50 ml masculine immersion water within 1 minute.

<table>
<thead>
<tr>
<th>Provision of 100 ml of masculus soaking water.</th>
<th>Mosquito larva death</th>
<th>dead n</th>
<th>Life n</th>
<th>Total n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
<td>36</td>
<td>0</td>
<td>36</td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>0</td>
<td>36</td>
<td>36</td>
</tr>
</tbody>
</table>

Based on Table 2 above, it shows that all (100%) found 36 dead larvae and 0 live larvae remaining from a total of 36 mosquito larvae in Masculus immersion water, 100 ml in under 1 minute.

Results of Bivariate Analysis

The activities in this study included calculating the number of mosquito larvae deaths with the influence of masculinus immersion water, after treatment. The process of observing 36 mosquito larvae immersed in the masculus
immersion water, for a maximum of 5 minutes, on each of the dead and live larvae, which are in a bottle containing 50 ml of masculus immersion water each, the results are as shown in the following table:

Table 1 Effect of Masculus Soaking Water on Mosquito Larva Mortality.

<table>
<thead>
<tr>
<th>Provision of 50 ml of masculus soaking water</th>
<th>Mosquito larva death</th>
<th>OR</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>34 94.4 2 5.5 36 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>0 0 36 100 36 100</td>
<td>4.00</td>
<td>0.040</td>
</tr>
</tbody>
</table>

Based on Table 1 above, it shows that almost all (94.4%) found 34 dead larvae and the remaining 2 live larvae out of a total of 36 mosquito larvae in the masculus immersion water, 50 ml within 1 minute.

Table 2 Effect of Masculus Soaking Water, on the Mortality of Mosquito Larvae

<table>
<thead>
<tr>
<th>Provision of 100 ml of masculus soaking water</th>
<th>Mosquito larva death</th>
<th>OR</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>36 100 0 0 36 100</td>
<td>4.00</td>
<td>0.040</td>
</tr>
<tr>
<td>No</td>
<td>0 0 36 100 36 100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results of the bivariate analysis based on table 2 above, show that the mortality of mosquito larvae with a p value = 0.040, has an effect on giving masculus immersion water, which is statistically significant with masculine immersion, at odds ratio = 4.00 times.

Research Discussion

Discussion of research

Based on the results of observations made on the results of the masculus immersion water trial, with the same formulation, causing a different number of larvae deaths with the same time span, the results obtained are as follows:

4.4.1 Effect of Mortality of mosquito larvae with masculus immersion water. Almost all 34 out of 36 mosquito larvae died in 50 ml immersion water and all 36 of 36 mosquito larvae died in 100 ml immersion water in masculus immersion water, within 1 minute. Agree from that: There is an effect of papaya leaf extract (Carica Papaya, Linn) on the mortality of Aedes aegypti Instra III mosquito larvae. Agree with the results of his research: Papaya leaf extract (Carica papaya L) has potential as a larvicide, where the higher the concentration of the extract given, the higher the mortality of Aedes aegpti instars III mosquito larvae.
In line with the results of the study, [14] the results show that the seed and peel extracts have a larvicidal activity against *Aedes aegypti*. The seed extracts have a higher larvicidal activity than peel extracts. This might be due to the effect of phytochemicals constituent in extract such as flavonoids, alkaloids and tannins. From this study indicated that the aqueous extracts of seed and peel of *Carica papaya* showed potential larvicidal activity for *Aedes aegypti*. Further studies might be needed for the use of this extract for eco-friendly vector control programs especially for *Aedes aegypti*.

Agree with Ariesta Ayu Adhityas, (2009) the results of her research: Natural ingredients from papaya leaf solution (*Carica papaya*) have an effect on killing *Aedes aegypti* Instar II mosquito larvae. Agree with the results of research, there is a significant effect between papaya leaf immersion and the presence of *Aedes aegypti* larvae in water storage environments, with OR = 4.375.

In line with the results of the study, the results showed that papaya leaf extract, the first 15 minutes pulled all the mosquitoes in a cage and there was no death. At a concentration of 50% LC50 is reached after 45 minutes on average *Aedes aegypti* dead reached 11 tails. LC50 at 60% concentration is reached after 30 minutes on average *Aedes aegypti* dead reached 16 tails. LC50 at 70% concentration is reached after 30 minutes on average observation *Aedes aegypti* dead reached 17 tails. This mosquito smells of papaya extract containing the bitter substance karpain, an insecticidal plant alkaloid that mosquitoes do not like. Alkaloid karpain which has the characteristics of a safe neurotoxin when inhaled by humans. As an insect neurotoxin exposure to toxins is generally experiencing spasms and paralysis before death. Conclusions research papaya extract is able to control the mosquito *Aedes aegypti* with standard LC50. Concentration of 60% papaya extract is more effective than a concentration of 50% and 70%. It is recommended for people to take advantage of papaya leaf extract as an alternative vegetable insecticide.

Agree with the results of the study the conclusion of the study: Papaya leaf extract is effective as a larvicide against the *Anopheles Aconitus Donits* mosquito, in efforts to prevent malaria in rice fields in Lalonggombu Village, Andolo District, Konawe Selatan Regency.

Agree with the results of the study. The conclusions of the research results: Papaya leaf extract lotion (*Carica Papaya L*) effectively repels the *Aedes Aegypti* mosquito at a concentration of 30% because its repelling power is more than 90%. Agree with the results of the research conclusions: Papaya leaf extract (*Carica Papaya L*) has an effect as a Larvicidal Mosquito *Culex* sp.

Agree with research, papaya leaf extract (*Carica papaya L*) is more effectively used as a larvicide, based on the LC 50 of papaya leaf extract (*Carica papaya L*) at exposure times of 12 hours, 24 hours, 36 hours and 48 hours, lower when compared to boiled and soaked papaya leaves (*Carica papaya L*).

In line with the results of research. Phytochemical screening of the selected parts' crude aqueous and ethanol extracts indicated the presence of alkaloids, carbohydrates, saponins, phenols, tannins, flavones, coumarins, anthocyanins and flavanoids which are known to possess medicinal and insect larvicidal properties. Larvicidal effect of 2nd 4th instar larvae of mosquito species *Aedes aegypti* has been investigated for 24hrs with 1mg/ml concentration of extracts of selected parts of *Carica papaya*. The results clearly indicated that there was a significant variation between the aqueous and ethanol extracts of the selected parts of the plant. The seed extracts are observed as effective larvicide than other selected parts of *Carica papaya*.

Agree with, the conclusion of the research results: The higher the concentration of papaya leaf juice (*Carica Papaya Linn*), the better it is used as a repellent. Agree with the results of the study, the following conclusions: Papaya Leaf Extract (*Carica Papaya Linn*) has an effect on the Mortality of *Aedes aegypti* Mosquito Larvae.
The results of the first experiment were because of the masculine immersion, it was found that almost all (94.4%) found 34 dead larvae and the remaining 2 live larvae out of a total of 36 mosquito larvae in boiling 50 ml of masculine immersion water within 1 minute.

Based on the Chi-square analysis, the value of $P = 0.04 < \alpha 0.05$ was obtained. Then Ho is rejected and Ha is accepted, which means that statistically there is a significant effect of the masculus immersion water on the death of mosquito larvae in the water reservoir with a $p$ value = 0.043, has a statistically significant effect of the masculus immersion water on the death of mosquito larvae at odds ratio = 4.10 time.

The results of the second experiment were due to masculus immersion. It was known that all (100%) found 36 dead larvae and 0 live larvae remaining from a total of 36 mosquito larvae in masculus immersion water, 100 ml in under 1 minute. The results of bivariate analysis based on, showed that the mortality of mosquito larvae with a $p$ value = 0.040, had an effect of giving masculus immersion water, which was statistically significant with masculine immersion, at odds ratio = 4.00 times.

5. Conclusion

1. The results of the univariate analysis showed that almost all (94.4%) found 34 dead larvae and the remaining 2 live larvae out of a total of 36 mosquito larvae in 50 ml masculus immersion water within 1 minute.
2. The results of the bivariate analysis show that with a $p$ value = 0.043, it has an effect on Masculus immersion water, which is statistically significant with Masculus immersion water, at odds ratio = 4.10 times.
3. The results of univariate analysis showed that all (100%) found 36 dead larvae and 0 live larvae remaining from a total of 36 mosquito larvae in Masculus immersion water, 100 ml in under 1 minute.
4. The results of the bivariate analysis based on table 2 above, show that the mortality of mosquito larvae with a $p$ value = 0.040, has an effect of giving masculus immersion water, which is statistically significant with masculine immersion, at odds ratio = 4.00 times.

6. Suggestion
Community members are expected to play an active role in eradicating mosquito larvae, by getting used to making masculus soaking water and pouring it into water reservoirs as needed.

Reference


Susilo Alvionita Patrysia, et al (2013) Effects of Papaya Leaf Extract (Carica Papaya L.) as Larvicidal Culex sp Mosquitoes. Parasitology Section, Faculty of Medicine, Maranatha University, Bandung.


