

# Effectiveness of Bandotan Leaf Extract (*Ageratum conyzoides L.*) on Death of Houseflies (*Musca domestica*)

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**Abstract-Objectives:** One of the disease vectors that harms humans is the house fly. Therefore, it is necessary to control measures against the fly population. Flies control measures can be done both by physical and chemical means. For example, by using insecticides, plants that can be used as insecticides are bandotan leaves (*Ageratum conyzoides L.*) which are toxic to insects. The purpose of this study was to determine the endurance of house flies (*Musca domestica*) against water extraction of Bandotan leaves (*Ageratum conyzoides L.*). The method used in this research is the experimental method. The study was conducted on 10 house flies at each concentration of bandotan leaf water extract and 10 home flies used as a control. Death of house flies is caused by water extracts of bandotan leaves containing toxic compounds against insects. The results of the study note that at a concentration of 70% can kill all house flies (*Musca domestica*).

**Keywords:** effectiveness, houseflies, bandotan leaf extract

## I. INTRODUCTION

The environment is defined as all external conditions, conditions and influences that surround and influence the growth and development of an organism or a community of organisms. A healthy environment is an environment that is free from disease, which is an environment that supports a healthy community (Kurniawati, 2010).

An environment that does not meet health requirements will be able to trigger animals that spread the germs. The effect of vectors on health can vary. Can directly cause entomophobia, disturbance of calm

and can be a cause of disease. Indirectly can be a reservoir of disease agents and become parasites in the human body (Soemirat, 2002). One of the disease vectors that harms humans is the house fly. House flies are insects of the Diptera order which have a pair of blue membrane-shaped wings. All parts of the body of a house fly can act as a contagious disease tool (body, hair on hands and feet, feaces and vomit) (Dinata, 2002).

Diseases transmitted by flies include dysentery, cholera, abdominal typhus, diarrhea and others related to poor environmental sanitation. Seeing the losses caused by flies, it is necessary to take control measures against the fly population. Flies control measures can be done both by physical and chemical means. For example using insecticides (DG PPM and PLP, 1992).

The use of chemical insecticides does provide effective and optimal results, but there are many negative impacts on both living organisms and the surrounding environment. According to WHO approximately 20,000 people die annually due to pesticide poisoning, but it also has fatal effects, such as cancer, disability and infertility. Other negative impacts include the death of natural enemies from disturbing organisms, the death of beneficial organisms, disturbing the quality and environmental balance due to residues and

the emergence of resistance in target animals (Novizan, 2002).

The many negative impacts of the use of chemical insecticides have led to new research in vector control that is safer, simpler and more environmentally friendly. Control using biological (plant-based) insecticides is one of them. Biological insecticide is defined as an insecticide whose basic ingredients come from plants that contain chemicals (bioactive) which are toxic to insects but are easily biodegradable in nature so they do not pollute the environment and are relatively safe for humans (Kardinan, 1999).

Plants that can be developed as plant-based insecticides are bandotan leaves (*Ageratum conyzoides* L.) which contain active ingredients namely saponins, tannins, flavonoids, polyphenols and contain essential oils. Based on the description above, a study was carried out on the Mortality of Housefly (*Musca domestica*) on the Water Extraction of Bandotan Leaf (*Ageratum conyzoides* L.).

## II. MATERIAL AND METHOD

### A. Tools

Spray tools, Blanders, Chemical cups, Watch glass, Funnels, Measuring flasks, Water bottles, Thermometers, Flies.

### B. Material

Aquadest, Daun bandotan, house fly (*Musca domestica*).

### C. Procedure

#### Sample preparation

Retrieval of flies is carried out at the Market using a simple large plastic trap containing bait in the form of raw fish and then the flies that enter the trap are moved into the fly.

Bandotan leaves that have been washed, in the oven and then mashed using a blender.

#### Making leaf water extract

As much as 200g of simplicia is added 200mL of water and heated on a water bath for 15 minutes, then filtered and diluted 100%, 90% to 10%.

#### How to test

A total of 10 flies were put into the flies and then sprayed using leaf water extract with a certain concentration, allowed to stand for 1 hour and see how many flies died.

Blanks are treated the same as using Aquadest.

## III. RESULTS AND DISCUSSION

This research begins with the assumption that the chemical compounds in bandotan leaves are compounds that can be anti-insect, toxic and can also be used as an insecticide. This is the basis for conducting research on endurance of house flies (*Musca domestica*) on water extraction of bandotan leaves.

The sample used in this study was the bandotan leaf (*Ageratum conyzoides*), the flavonoid content in the bandotan leaf was tested qualitatively and showed positive results on the flavonoids. In this study bandotan leaf extract was used with 10 different concentrations namely 100% concentration, up to 10% concentration and 0% concentration was made as a control. The effect of giving various concentrations of bandotan leaf extract to houseflies showed that the percentage of fly mortality increased with increasing test concentrations. This is because the bandotan leaves are toxic to insects (Kardinan, 1999).

Because bandotan contains compounds including saponins, flavonoids, polyphenols, and essential oils so that the greater the concentration of the bandotan leaf extract, the greater the content of the compounds.

The death of the fly is due to the spraying process which aims to make direct contact between the bandotan leaf extract and the house fly. Flavonoid compounds found in the leaves of bandotan enter the mouth of the fly through the respiratory system in the form of spiracles that are on the surface of the body and cause wilt in the nerves, and damage to spiracles that cause flies can not breathe and eventually die (Kurniawati, 2010).

The spraying done on control flies does not cause death in house flies, this is because the control material that contains aquadest does not contain toxic compounds against insects.

There are several environmental factors that affect the life of flies in their natural habitat, including temperature, humidity, light and food sources and shelter. But at the time of the study there were limitations, namely researchers did not measure all of these environmental factors, fly sampling was carried out by using a large plastic that is filled with bait in the form of raw fish and not using a special insect trap tool.

#### IV. CONCLUSION

From the data analysis carried out in this study it can be concluded as follows: "Bandotan Leaf Water Extract (*Ageratum conyzoides* L.) can kill all house flies (*Musca domestica*) at a concentration of 70%."

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