

# Potency of Active Compound of Red Galangal (*Alpinia Purpurata* K. Schum) in Killing *Anopheles* Sp. Larvae

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**Abstract**— Malaria is an infectious disease caused by the *Plasmodium* parasite, which is transmitted to humans through the bite of the *Anopheles* sp. From 2009-2015 malaria included Extraordinary Events (KLB) always occurring on the island of Borneo Red galangal rhizomes contain active compounds that can make larvae of *Anopheles* sp. this research method is an experiment (experiment). To determine the lowest concentration of red galangal, a concentration of 8 mg / mL, 4 mg / mL, 2 mg / mL, 1 mg / mL, and 0.5 mg / mL was carried out. The results of the research data were analyzed by one way Analysis of Variants (ANOVA). Larvicidal activity of red galangal extract is a concentration of 0.5 mg / mL with larvae mortality of 8 larvae, concentration of 1 mg / mL with 9 larvae deaths, concentration of 2 mg / mL larvae mortality of 14 animals, concentration of 4 mg / mL with larval deaths were 22 larvae, and at a concentration of 8 mg / mL larval deaths were 25 larvae. The Red galangal extract (*Alpinia purpurata* K. Schum) has an active larvacide compound that has the potential as an antimalarial due to *Anopheles* sp.

**Keywords**— Antimalarial, Red galangal (*Alpinia Purpurata* K. Schum), Larvae of *Anopheles* sp.

## I. INTRODUCTION

Malaria is an infectious disease caused by malaria parasites, which is transmitted to humans through the bite of the *Anopheles* sp. (Irianto, 2015) Penajam Paser Utara District, East Kalimantan, Especially in the Sotek Health Center area, Penajam District, is still endemic to malaria, the total malaria cases that occur in Penajam Paser Utara District from January to October 2016 which reached 500 cases (prov East Kalimantan, 2016) [1], [4].

The method commonly used to control mosquito larvae is through the use of chemicals such as abate (As, Isaac, & Ane, n.d). This can cause many problems such as insecticide resistance. To overcome this problem, there is a lot of use of natural plant-based products as larvacides (Wahyuni, 2015). [2], [9]

Indonesia is a country rich in biodiversity known as the largest producer of spices in the world, one of which is red galangal (Kusriani & Zahra, 2015). Red galangal rhizomes contain saponins, tannins, flavonoids (Herliana, 2013). Which (Cania & Setyaningrum, 2013) these compounds can become larvicidal. [7], [9], [11]

## II. METHOD

This type of research is an experiment. The place of the research was carried out at the East Kalimantan Health Ministry Medical Sciences Laboratory. The date is February 6-12 2017. The analysis carried out was one-way Analysis of Variance (ANOVA). The Extraction Process was carried out

at the Medical School of Mulawarman University. The process of effectiveness of red galangal active compounds in killing *Anopheles* sp. Larvae carried out at the East Kalimantan Health Polytechnic Laboratory of Health Polytechnics.

## III. RESULTS AND DISCUSSION

The results of the effectiveness of the red swirl using 15 grams of extract of the red root which is dissolved in 15 ml of DMSO 10% long made dilution using water to a concentration of 8 mg / mL, 4 mg / mL, 2 mg / mL, 1 mg / mL, 0.5 mg / mL.

TABLE I. Data on Deaths of *Anopheles* sp. After 24 hours

Consentrasion	Repetition			Means of larva death
	I	II	III	
Control (-) Aquades	0	-	-	0
Control(+)Levofloxacin	25	-	-	25
0,5 mg/mL	7	8	8	8
1 mg/mL	8	10	9	9
2 mg/mL	12	15	13	14
4 mg/mL	22	22	22	22
8 mg/mL	25	25	25	25

Source: primary data

In table I the average mortality of *Anopheles* sp. Larvae is known. which has been extracted from red mango extract with concentrations of 0.5 mg / mL with larval deaths of 8 larvae, concentration of 1 mg / mL with 9 larvae deaths, concentration of 2 mg / mL larvae mortality of 14 tails, concentration of 4 mg / mL with larval mortality of 22 larvae, and in the concentration of 8 mg / mL larvae mortality was 25 larvae. The highest mortality of larvae will occur after a concentration of 8 mg / mL with a total of 25 larvae. According to

(Darussalam, Nuryastuti, Mursiti, & Mustofa, 2015) the increase in concentration concentration is also followed by increasing the number of microbial deaths. [8], [10].

Larvae mortality in this study was supported by research (Herliana, 2013) that the leaf swirls contain red saponin, tannin, flavonoids. Flavonoids work with respiratory toxins. Flavonoid has the effect of energy by entering into the body of the larvae through the respiratory system which will then cause nerve damage and damage to the respiratory system and cause the larvae to be unable to breathe and eventually die. According to research (Cania & Setyaningrum, 2013) that tannins can interfere with mosquito larvae in digesting food because tannins will bind proteins in the digestive system that are needed by mosquito larvae for growth so that the process of absorption of protein in the digestive system becomes disturbed. Saponins can also irritate the digestive tract mucosa of mosquito larvae. [5], [11]

According to (Darussalam, Nuryastuti, Mursiti, & Mustofa, 2015) antibiotics lovofoxacin is the third generation which is a new quinone group with the addition of atoms, fluorine to the quinolone ring. The flourouinolonsaatini antibiotic is still recommended because fluoroquinolone has a strong antimicrobial power. This is comparable with the experiment of this study, which is in the positive control of all larvae tested dead. [10]

#### IV. OTHER RECOMMENDATIONS

For other researchers then need for further research on the effectiveness of compound compounds in killing other mosquito larvae. As well as pure compounds contained in the redbuttonbailarvasida.

#### V. CONCLUSION

The extract of red galangal (*Alpinia purpurata* K.Schum) has a larvicidal active compounds that can kill larvae of *Anopheles* sp.

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