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Study of Mosquitoes in Pidie District, Aceh Province, Indonesia

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Abstract: *Filariasis is an infectious disease caused by filarial worm infection, which lives in the ducts, lymph nodes, and causes clinical symptoms, and will develop into chronic, at an advanced stage can cause permanent physical disability and have major socioeconomic impacts, especially the population with social low economies living in developing countries in the tropics and subtropics. This research uses exploration method and sampling is done by purposive. Based on the results of identification, mosquitoes contained larvae in the body is Culex quinquefasciatus*

Keywords: *mosquito, vector, filariasis, culex, species*

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I. Introduction

Mosquitoes are the vectors that cause disease in both humans and animals. Diseases transmitted by mosquitoes tend to increase, both from the number of cases of patients and cases of death, ranging from dengue fever, malaria, to filariasis (Hadi, 2006). Filariasis is an infectious disease caused by filarial worm infection, which lives in the ducts, lymph nodes, and causes clinical symptoms and will develop chronic (Levine, 1994). Although the disease does not result in death, but at an advanced stage it can cause permanent physical disability and have major socioeconomic impacts, especially low socioeconomic populations living in developing countries in tropical and subtropical regions. Until now in Indonesia have been found three species of filariasis-causing worms that infect humans, namely Wuchereria bancrofti, Brugia malayi, and Brugia timori (Syachrial et al., 2005). The purpose of this research is to determine and know the species of mosquito that became vector filariasis in Pidie District.

The important factors in the spread of filariasis (filariasis epidemiology) need to be observed in the cutting of the transmission chain. The best transmission termination was case management, and observed filariasis transmitting vector continuously as the basis for vector eradication, and eliminated mosquito breeding places (Ambarita, 2004). Therefore it is necessary to do research on the vector mosquito filariasis.

II. Research Methods

This research uses exploration method and sampling is done by purposive, that is determination of sample by looking for filariasis sufferer which is bitten by mosquito which is suspected as filariasis vector (Huda, 2002). Arrest of mosquitoes is done every two weeks within the span of three months. Catching mosquitoes carried out at night starting from 6:00 PM - 6:00 AM at sunset and ends just before sunrise. The parameters to be observed in this study were the species of mosquitoes that became the filariasis vectors and infection rates.

2.1 Catching of Mosquitoes

Catching of mosquitoes using aspirator, which is done all night starting from 6.00 PM until 06.00 AM. The arrests were made by four arrestees, in the three houses. Two people do catching inside the house (indoor collection) that catch mosquitoes when sucking blood (human feed), and mosquitoes are resting / perched on the wall, while two other catchers to catch outside the house (outdoor collection) is catching mosquitoes are sucking blood and mosquitoes that are resting on the wall and catching in a livestock enclosure (if any).Mosquito catches are done every hour, and the time allocation is 40 minutes for catching mosquitoes / bites of people (inside and outside the house), 10 minutes for catching mosquitoes perched on the house wall, and mosquitoes perched on livestock, and 10 min is allocated to replace the captured mosquito container and at the same time as a break for the mosquito catcher (Ambarita 2004).

All captured mosquitoes were kept for 12 days in paper cup, and fed a 10% sugar solution. Then the mosquitoes were identified, the identification was performed using a binocular microscope and matched with the identification and mosquito identification keys acting as filariasis vectors by surgery.

2.2 Filariasis Vector Testing

First the mosquito body is cleaned from the wings so that the scales on the wings do not interfere with the mosquito's body surgery. Furthermore, mosquitoes placed on the glass objects that have been spilled aquades. Under the microscope the body part of the mosquito is separated by a pin needle into sections and all parts submerged in aquades. Then the abdomen section of the mosquito is examined, after which there is observed or no larvae. Data were analyzed by taking into account infection rates.

Infection rates=$\frac{r}{ri}$x 100%

Where :
r = Number of mosquitoes containing filarial larvae
ri = Number of mosquitoes dissected

III. Results And Discussion

Based on the results of research that has been done, found filaria larvae in the mosquito body with an infection rate of 0.91%. Based on the results of identification, mosquitoes contained larvae in the body is Culex quinquefasciatus. C. quinquefasciatus is found in capture outside the home (perch). According to the Ministry of Health (2002), C. quinquefasciatus has also been found as a filariasis vector in several provinces in Indonesia, such as in Jakarta, West Java, Central Java, and Irian Jaya. An infection rate of 0.91% suggests that the larvae found in the mosquito body are small, so the chances of infecting humans are small. Of the 109 individuals Culex quinquefasciatus that in can only 1 tail that there are larvae in the body. The possibility of Culex quinquefasciatus species being very large, since from several species of mosquitoes found in addition to the number of individuals obtained, C. quinquefasciatus species are also obtained at night, ranging from 9:00 PM to 02:00 AM, so that the occurrence of the entry of larvae from humans to mosquitoes larger (Huda, 2002).

Based on the results of the research, it is suspected that larvae found in mosquitoes are larvae of Wuchereria bancrofti worms. At the time this larva was found red and flat. According to Huda (2002), Culex mosquitoes are vectors filariasis brancofti and is a vector of the Wuchereria bancrofti larvae. The mosquitoes of the genus Culex are the most common mosquitoes found outside and inside the house.

IV. Conclusion

From the catch results also found five types of mosquitoes ever reported as a natural vector filariasis. The five mosquitoes are Culex annulirostris, Aedes aegypti, Anopheles subpictus, An. barbirostris, and An. vagus, but these five types of mosquitoes are found with much less than the type of C. quinquefasciatus, so the possibility of getting larvae in the mosquito body is smaller.

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