MOSQUITO VECTORS OF *DIROFILARIA REPENS* IN THRISSUR, KERALA*

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Abstract

One thousand nineteen mosquitoes collected from houses keeping dogs were dissected to find out the larval stages of helminths if any. The collection included 454 Culex sp, 506 Armigeres sp, 10 Mansonia sp, 48 Aedes sp. and one Anopheles sp. Among these, one each of Armigeres and Culex sp. was found to contain helminth larvae. They were identified as the second and third stage larvae of Dirofilaria repens based on morphology. It is concluded that both Armigeres and Culex sp. can act as vectors of D. repens.

Key words : *Mosquito dissection, nematode larvae, Dirofilaria repens*

The first species of helminth that was found to require mosquito as an intermediate host was *Dirofiolaria immitis*. This was established by Grassi and Noe in 1900 (Morgan and Hawkins, 1949). The predominant species of *Dirofilaria* are *D. immitis* and *D. repens*. The former is the heart worm while the latter is found in the subcutaneous tissues of dogs. The prevalence of *D. repens* in Kerala has been found to be 24 percent and seven percent according to Saseendranath *et al.* 1986 and Radhika *et al.* 2001 respectively. Incidently, *D. repens* also occurs as an aberrant parasite in the eye and subcutaneous tissues of human beings (Lucy Sabu *et al.*, 2005).

Worms were recovered from 12 patients from different parts of Kerala and identified as *D. repens* based on morphology. These worms constituted 11 females and one male. In all the cases only a single worm could be recovered from a patient.

In a study conducted in dogs based on histochemical staining at Thrissur, Kerala, it was observed that all microfilariaemic animals were infected with *D. repens* (Radhika, 1997). An attempt was made in the present study to identify the vectors of *D. repens* by dissecting mosquitoes collected from human dwellings that housed at least one dog with them.

Materials and Methods

Mosquitoes were collected individually in test tubes from houses that kept dogs, at dusk (WHO, 1995). They were brought to the laboratory and the tubes were placed in the freezer of the refrigerator for about five minutes to immobilize the insect. Later the wings and legs were snipped or pulled off and the head, thorax and abdomen were separated into three units for dissection on a glass slide. Each piece was thoroughly teased with fine needles in a drop of saline and observed under low power of the microscope for motile larvae. All 1019 mosquitoes (number of specimens examined under each genus in parenthesis) belonging to the genera of *Culex* (454), *Anopheles* (1), *Armigeres* (506), *Mansonia* (10) and *Aedes* (48) were dissected.

Results and Discussion

Among the 1019 mosquitoes dissected, two specimens, one each of *Armigeres* and *Culex* sp. were found to contain helminth larvae. *Armigeres* are the predominant species (34.5%) in human dwellings and are

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identified as one of the important nuisance mosquitoes. The only species of *Armigeres* collected from Kerala is *A. subalbatus* (Mariappan *et al.* 1997; Lucy Sabu, 2005). Out of 506 *Armigeres* sp. dissected, in the present study, just one specimen of *Armigeres* sp. was found to harbour 56 sausage shaped larvae of uniform size in the malpighian tubules. They measured 246 x 29.5 µm. Of the 454 *Culex* sp. dissected, one of them had five helminth larvae in the thorax region, the average length being 1075 µm and maximum width 44µm. The smaller larvae found in the malpighian tubules and the longer ones in the thoracic region were identified as the second and third stage larvae of *D. repens* respectively based on morphology (Yamaguti, 1961; Sonin, 1985; Anderson, 2000).

Mosquitoes of the genera of *Aedes, Anopheles, Culex, Armigeres* and *Mansonia* have been incriminated as vectors of *D. repens* (Sonin 1985), while Anyanwu *et al.* (2000) established that *Aedes aegypti* was the only species susceptible to *D. repens,* out of the six common species of mosquitoes occurring in Zaire, Nigeria. The first moulting of *D. repens* larvae occurred in the malpighian tubules and infective stage reached within 10 to13 days in the body of the mosquito (Berbard and Bauche, 1913 cited by Sonin, 1985). The findings in the present study confirm the vector potentiality of both *Armigeres* sp. and *Culex* sp. in the transmission of *D. repens*. Both these species of mosquitoes are widely prevalent in Kerala and are found to bite both animals and man and can act as the transmitting agents of *D. repens*.

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