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Aedes MOSQUITOES IN ARBOVIRAL EPIDEMIC PRONE AREA OF CHIDAMBARAM TOWN, CUDDALORE DISTRICT, TAMIL NADU, INDIA

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Abstract

Mosquito borne disease, especially Dengue fever (DF), Dengue hemorrhagic fever (DHF) and Dengue shock syndrome (DSS) caused major public health problems in the Cuddalore district of Tamil Nadu, India. *Aedes aegypti* is the principle epidemic vector of dengue virus. Dengue is transmitted by the mosquitoes namely, *Ae. aegypti*, *Ae. albopictus*, *Ae.polynesiensis* of *Ae.seutellaries*, *Ae (Finlaya) niveus*. The present study investigates the diversity, seasonal prevalence, distribution and larval habitat of *Aedes* mosquito species in epidemic prone area of Chidambaram town, Cuddalore district, Tamilnadu, India.

Key words: *Aedes*, Arbovirus, Dengue and Dengue hemorrhagic fever.

1. Introduction

Dengue virus was first isolated in India 1945. *Ae.aegypti* plays a dominant role in the transmission of dengue fever and Chikungunya viruses (Saxena *et al.,* 2006). Dengue is a major international public health problem in recent years. Forty million peoples in India suffer from mosquito borne diseases. Dengue is a mosquito borne infection found in tropical and sub-tropical region and is increasingly affecting urban areas. Dengue fever is also called break-bone fever. In India the first epidemic of clinical dengue like illness was recorded in Madras (now Chennai) in 1780. There is renewed interest in the biology and control of this *Ae. aegypti* mosquito due to the reemergence of chikungunya and dengue, for which it is a vector in many parts of the developing and developed world (Gartz, 2004). People are hospitalized annually with dengue hemorrhagic fever worldwide upto 2.5% of those diagnosed with dengue hemorrhagic fever will die, as a result of the infection. It is most common in children less than 15 years old, but can occur in adults. All these arboviral diseases are new to the town as well as the district. The present study revealed that diversity, prevalence, distribution and larval habitat of *Aedes* mosquito in Chidambarm town.

2. Materials and Methods

The study area, Chidambaram town is situated in North East of the Tamilnadu and located in the plains. The longitude and latitude of this place is 79°5'E, 11°. 24' N respectively. A field study was carried out during the period from June 2012 to May 2013.The adult mosquitoes were collected from different breeding habitats like coconut shell, cow dung pit, drains, tree holes etc., using sweep net. Immature forms of mosquitoes were collected by dipping method. The collected larvae and pupae were reared in separate enamel trays in the laboratory and fed with larval food [yeast and dog biscuits in the ratio of 1:3]. The emerged adults were collected and preserved in plastic vials containing powdered

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naphthalene balls and all the preserved mosquitoes were identified by using standard keys and catalogues (Barraud 1934: Christopher 1933: Knight and Stone 1977).

3. Results and Discussion

A total number of 276 mosquitoes that belongs to 4 sub genera were collected in the study area during June 2012 in May 2013.The present study gives a clear picture of *Aedes* mosquito diversity, seasonal prevalence, distribution and larval habitat in the study area. Six species of *Aedes* were identified (Table - 1) maximum diversity was noticed during the monsoon followed by post-monsoon and pre-monsoon seasons. *Ae. albopictus* are the dominant species has mostly breeding in discarded tyres and plastic containers in moonsoon season followed by *Ae. aegypti*. *Aedes aegypti* is the principle vector of urban areas (Rudnick *et al.*, 1965). Generally, as wild species they breed in rock holes and tree holes in forest areas, but due to deforestation this mosquito now adapted to breed in discarded tires, cow dung pit and Drains in many parts of India (Baskara Rao, 2010). The adult *Aedes albopictus*, also known as 'Asian tiger mosquito' is a vector of Chikungunya (WHO, 2006) and dengue fever (Tyagi and Dash, 2006). *Ae. vittatus* generally breeds in natural waters like rain water collected in rock pools. *Aedes* species collected in the present study comprises both vectors and non-vectors. Of the seven *Aedes* species identified. *Ae.aegypti* was identified as primary vectors and *Ae.albopictus* as secondary vector of DF and CG in different parts of world, including India (WHO, 1999; Jupp and Mclnthosh, 1988). *Ae.niveus* has been incriminated, as secondary vector of DF in some parts of the world. Among the collected vector species the adult *Ae. aegypti* is zoophilic and is considered as a vector of dengue and chikungunya in Kerala and in Tamil Nadu. (Thenmozhi *et al.*, 2006). A thorough study in different breeding places the vector mosquitoes were identified, the suitable actions should be taken to control the vector species.

Table - 1: **List of *Aedes* mosquito species identified from Chidambaram town**

Aedes (Aedimorphus) jamesi (Edwards)1914.
Aedes (Aedimorphus) caecus (Theobald) 1901.
Aedes (Finlaya) *niveus* (Ludlow) 1903.
Aedes (Stegomyia) *aegypti* (Linnaeus) 1762.
Aedes (Stegomyia) *albopictus* (skuse) 1894.
Aedes (Fredwardsius) *vittatus* (Bigot) 1861.
Aedes (unidentified).

Table - 2: Seasonal distribution of *Aedes* Mosquito species in Chidambaram town from June 2012 to May 2013

Name of species	Pre-monsoon	Monsoon	Post-monsoon
Aedes (Aedimorphus) *jamesi*	+	++	-
Aedes (Aedimorphus) *caecus*	-	+	-
Aedes (Finlaya) *niveus*	+	-	+
Aedes (Stegomyia) *aegypti*	+	+++	++
Aedes (Stegomyia) *albopictus*	+++	+++++	+++
Aedes (Fredwardsius) *vittatus*	-	++	+
Aedes (unidentified)	+	+	-

During the study period from June 2012 to May 2013 *Aedes* mosquitoes species are abundant in monsoon period when compared to pre-monsoon and post-monsoon (Table - 2).

Table - 3: Breeding habitat of *Aedes* Mosquitoes

Breeding habitat	*Ae. aegypti*	*Ae. albopictus*	*Ae. Jamesi*	*Ae. caecus*	*Ae. vittatus*	*Ae. niveus*
1. Coconut shell	++	++	+	+	++	+
2. Cow dung pit	-	+	+	-	-	-
3. Drains	-	++	-	++	-	-
4.Metallic containers	-	+	+	-	-	-
5. Rocky pool	-	+	-	-	++	+
6. Plastic containers	++	++++	+	+++	-	+
7. Mud pot	-	+	-	+	-	-
8.Tree hole	+++	++	-	-	-	+
9.Discarded tyres	++	+++	+	+++	-	-
10.Tank	+	+	-	+	-	-

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