

Detection of Dengue Virus in Wild Caught *Aedes albopictus* (Skuse) around Kozhikode Airport, Malappuram District, Kerala, India

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Introduction

In India, outbreaks of dengue fever (DF)/dengue haemorrhagic fever (DHF) have been reported in various parts of the country during the past four decades^[1]. *Aedes aegypti* is the only vector that has so far been implicated in dengue transmission^[1,2], even though *Aedes albopictus* is known to be present in some of the peri-urban and rural areas^[2]. Recently, a survey was carried out in the Kozhikode (earlier known as Calicut) airport area of Malappuram district, Kerala. During 2002 and 2003 (up to July), 75 and 150 clinical dengue fever cases, respectively, were reported from the district^[3]. Earlier, reports of *Aedes* survey in Kerala had shown the presence of *Aedes albopictus* in rubber plantation areas^[4] and in plastic cups^[5].

This communication presents the results of the detection of dengue virus from the wild and dry preserved, adult females of *Aedes albopictus* and their breeding indices

in and around the airport area. The survey was carried out in May 2004.

Materials and methods

The Kozhikode airport is situated at 11° .15' N latitude and 75° .49' E longitude, in a hilly area of Malappuram district, Kerala. It became functional as an international airport in 1988. A larval survey was carried out in various types of water-holding containers to detect the breeding of *Aedes (Stegomyia)* mosquitoes, both inside the airport premises and its periphery up to about 600 metres. The larvae were identified as per the method described earlier^[6,7]. Adults of *Aedes (Stegomyia)* mosquitoes were collected while landing on human baits by aspirator tube in a forested residential area about 600 metres away from the airport.

The wild *Aedes albopictus* females caught from outside the Kozhikode airport, the adults reared from larval collections

from inside the Kozhikode airport and the city, and the adults of *Aedes aegypti* reared from larval collection from the Thiruvananthapuram international airport were separated sex-wise, pooled by species (about 15 adults per pool) and transported to the Centre for Research in Medical Entomology (CRME), Madurai, Tamil Nadu, in a dry state, for detection of dengue virus. The methodology followed was similar to that used for the detection of JE virus and based on the protocol developed and standardized by CRME^[8]. However, the antibody (D3-5C9-1) was diluted at 1:5000 as being followed by CRME.

Results and discussion

Aedes survey

The survey for larval infestation in 52 houses/premises around the airport area revealed 16 premises as positive for *Aedes albopictus* breeding (house index 30.7%). A total of 272 wet containers searched for *Aedes* breeding revealed 41 containers as

positive for *Aedes albopictus* and two for *Aedes vittatus* (container index 15.1% and 0.7% respectively). The most preferred containers for *Aedes albopictus* breeding were discarded tyres, coconut shells and plastic containers. The average landing rate of *Aedes albopictus* on humans was 20 females/human bait/hour.

Dengue virus detection in *Aedes albopictus*

Of the three pools of *Aedes albopictus* tested for dengue virus infection following antigen-capture enzyme immunoassay (EIA), one pool was found positive for dengue virus (OD-0.32), thereby indicating dengue viral activity in this mosquito species. The mosquitoes in the positive mosquito pool were collected as landing collection around the Kozhikode airport on 28 May 2004, and transported as dry specimens to the CRME laboratory and processed on 8 June 2004 (Table). Earlier dengue virus was also isolated from *Aedes albopictus* collected in a village in Vellore district of Tamil Nadu^[9].

Table. *Aedes* mosquito pools tested for dengue virus infection by ELISA

Mosquito species	Locality	Collected on (Processed on)	No. of pools tested/No. of adults/No. of pools positive	
			Wild caught adults (landing)	Reared adults (immature)
<i>Aedes albopictus</i>	Kozhikode airport	27/05/04 (08/06/04)	–	1/15/0
	Residential area around the airport	28/05/04 (08/06/04)	1/10/1*	–
	City area (2 kms from airport)	28/05/04 (08/06/04)	–	1/20/0

* Positive pool

The present study confirms that antigen-capture enzyme immunoassay is a useful surveillance tool for monitoring dengue virus infection in mosquitoes.

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