

## Letter to the Editor

# Blood feeding behaviour of mosquitoes in Japanese encephalitis endemic and non-endemic areas

Dear Editor,

Host selection by adult mosquitoes, particularly those mosquito species showing a higher degree of anthropophagy play an important role in the transmission of pathogens to human<sup>1-2</sup>. In contrast, the prevalence of more zoophagic vector mosquitoes in an area leads to lower pathogen transmission to humans, as cattle and other domestic animals may act as a barrier for virus transmission<sup>3</sup>. Some mosquito species exhibit marked temporal changes in their host selection pattern<sup>4</sup>. Although, the host availability and socio-demography was similar in Cuddalore and Thanjavur districts, Tamil Nadu, India, JE cases regularly occurred in Cuddalore district, while the neighbouring Thanjavur district was free from such cases. Therefore, the present study was conducted to compare the blood feeding behaviour of mosquitoes in the JE endemic areas of Cuddalore and the non-endemic areas of Thanjavur from January to November 2012. In both areas, *Culex tritaeniorhynchus* is the primary vector and *Cx. gelidus* is considered to play role of a secondary vector<sup>5</sup>.

Mosquitoes were collected using aspirators and drop-net method for 1 h during dawn in and around the villages every month and identified following standard keys<sup>6-9</sup>. In Cuddalore district, a total of 742 (314 male and 428 female) mosquitoes were sampled outdoors by drop-net collection method, of which 62 fully fed mosquitoes (*Cx. tritaeniorhynchus* (19), *Cx. vishnui* (14), *Cx. gelidus* (10), *Cx. infula* (2), *Mansonia annulifera* (3), *Armigeres subalbatus* (8) and *Anopheles subpictus* (6) were assayed on agarose gel diffusion technique<sup>10</sup>. Similarly, in Thanjavur district, of 604 (248 male and 356 female) mosquitoes collected, 146 engorged females were processed for blood meal [(*Cx. tritaeniorhynchus* (134), *Aedes vexans vexans* (9), *Cx. gelidus* (1), *Cx. infula* (1) and *An. subpictus* (1)].

In Cuddalore district, bovine feeding was observed in 2 (100%) *Cx. infula*, 3 (100%) *Ma. annulifera*, 18 (95%) *Cx. tritaeniorhynchus*, 9 (90%) *Cx. gelidus*, 6 (75%) *Ar. subalbatus*, 10 (71%) *Cx. vishnui* and 3 (50%) *An. subpictus*, whereas 1 (7%) of *Cx. vishnui* fed on human and dog. In Thanjavur district, one each (100%) *Cx. gelidus*, *Cx. infula* and *An. subpictus*, 109 (81%) *Cx.*

*tritaeniorhynchus* and 5 (56%) *Ae. vexans vexans* had fed on cow, while 1 (0.75%) *Cx. tritaeniorhynchus* had fed on goat.

The comparative analysis of feeding preference of the mosquito vectors of JE virus in Cuddalore (endemic) and Thanjavur districts (non-endemic) showed that 94 vs 81% of *Cx. tritaeniorhynchus* had fed on cow in the two districts, followed by 0 vs 0.75% on goat; no feeding was noticed on human, dog, pig and fowl. From these two districts, 9 (14.52%) and 28 (19.18%) of the samples were found negative for the tested anti-sera (cow, human, pig, dog, goat and fowl). Analysing the host selection pattern, it showed that 90 vs 100% of *Cx. gelidus* had predominantly fed on cow. In both the areas, all *Cx. infula* (100%) collected were predominantly fed on cow, while all *An. subpictus* in Thanjavur and 50% in Cuddalore were fed on cow (Fig. 1).

Our results showed that the blood-meal of the JE vectors collected outdoors from both the JE endemic and non-endemic areas predominantly belonged to bovine. *Culex vishnui* played a significant role preferring human blood (7.14%) in endemic area and not in the non-endemic area. The preference of *Cx. tritaeniorhynchus* to feed on other hosts than those tested were high in non-endemic area, when compared to that in endemic area. In both the endemic and non-endemic areas, cattle feeding

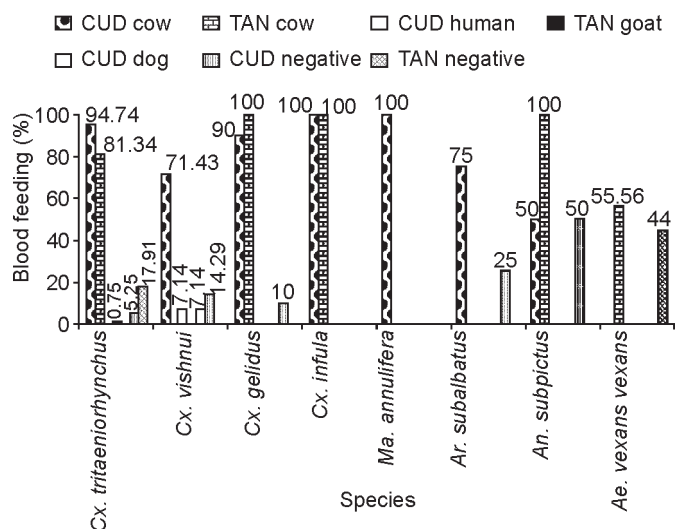


Fig. 1: Blood feeding behaviour of mosquitoes in Cuddalore and Thanjavur districts.

was statistically significant for *Cx. tritaeniorhynchus* and *Cx. gelidus* ( $p < 0.01$ ).

#### ACKNOWLEDGEMENTS

The authors are grateful to the Director General, Indian Council of Medical Research, New Delhi for his excellent technical support and encouragements in conducting the study. The authors express sincere thanks to K. Manimaran, S. Anandan and J. Balasubramanian, A. Govindasamy and S. Vijaya Kumar, Field Station, Vridhachalam and the staff of CRME, HQ, Madurai for their excellent technical assistance and to Shri J. Nagaraj for his statistical works.

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