Expansion of Aedes albopictus skull in Costa Rica

CALDERÓN-ARGUEDAS O.1, AVENDAÑO A.1, LÓPEZ-SÁNCHEZ W.1 y TROYO A.1

Centro de Investigación en Enfermedades Tropicales (CIET). Section of Medical Entomology. Department of Parasitology, School of Microbiology, University of Costa Rica.

ABSTRACT

A report of the *Aedes albopictus* expansion in Costa Rica is described as well as its epidemiological analysis.

Key words: Aedes albopictus, Aedes aegypti, dengue virus, Culicidae, Central America, Costa Rica.

RESUMEN

Un informe de la expansión del *Aedes albopictus* in Costa Rica se presenta y también se hace un análisis de la importancia epidemiológica. Se confirma la expansión del mosquito en el territorio Centro Americano **Palabras clave**: *Aedes albopictus*, *Aedes aegypti*, virus dengue virus, Culicidae, América Central, Costa Rica.

REPORT

The "tiger mosquito", *Aedes albopictus* is one of the primary vectors of dengue virus (Rai,1991). It is also an efficient vector for other arboviruses like Chickungunya, Japanese Encephalitis, San Angelo and La Crosse (Rai, 1991) and has been associated with the transmission of the nematode *Dirofilaria immitis* (Chapellapha y Chellapha 1968). Although there are recent reports of West Nile virus detection in *A. albopictus* (Holick *et al.*, 2002), its role in the transmission of this virus requires further study.

Dengue is the main vector-borne disease in Costa Rica in terms of morbidity and mortality (Troyo

et al., 2006). From the re-introduction of Aedes aegypti in 1993 and until 2008, there were 189,316 cases of dengue fever (DF) reported (Ministerio de Salud, 2010). Within the country, this infectious disease affects mainly the North Pacific, Central Pacific and Caribbean regions where the only vector confirmed has been A. aegypti Linnaeus (Ministerio de Salud, 2010).

In October 1998, a newspaper report in Costa Rica reported possible presence of *A. albopictus* in the district La Virgen, Province of Heredia located in the North of the Country, but it was only until March of 2009 that the Ministry of Health alerted the national press as to the presence of *A. albopictus*

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Corresponding: Olger Calderón-Arguedas

E-mail: olger.calderon@ucr.ac.cr

in localities of the Northern Caribbean Region. This study, based in larval surveys, demonstrated the presence of of *A. albopictus* in coconut shells in Siquirres county, Province of Limon Marin et al, 2009).

Here we describe the finding of adult specimens of *A. albopictus* collected in the district Pital of San Carlos county, Province of Alajuela, in the North of the country. Two adult female mosquitoes were collected using human bait and transported to the Laboratory of Medical Entomology, University of Costa Rica for identification. The observation of the specimens was made with a stereoscopic microscope, and identification was performed according the criteria specified in the keys of Rueda (2004), Darsey (Darsey, 1988) and (SUCAM, 1989). The most important diagnostic characteristics are pre-

sented in Figure 1.

This report of A. albopictus in Costa Rica confirms the expansion of this mosquito in the Central American territory, where recently Guatemala, El Salvador, Honduras and Nicaragua have reported the presence of this vector Cuellar et al., 2007; DelC-Lugo et al., 2005). The United States of America was the first country of the Americas to report A. albopictus, and in this case its introduction was linked to the import of rubber tires from Southeast Asia (Rai, 1991). The same situation was proposed in Brazil and Colombia (Rai, 1991; Cuellar et al., 2007). In the case of Costa Rica, the reports of A. albopictus in the Caribbean and now in the North of the country suggest that the distribution of this mosquito could be related to the simple territorial expansion through continental territory of

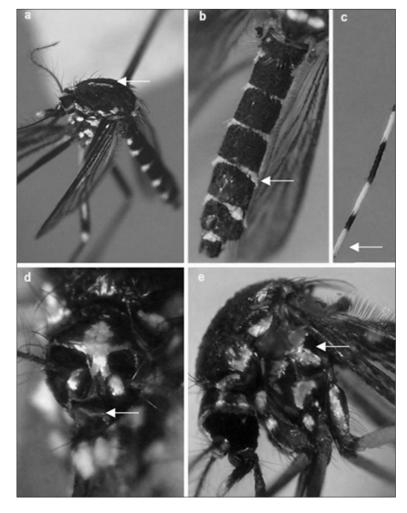


Figure 1. Main diagnostic characteristics. a: narrow white medial longitudinal stripe on the scutum. b: White and complete transverse bands on the anterior part of abdominal terga II-VIII. c: white ringed segments of tarsus III where the last tarsal segment has a complete white ringed area. d: absence of white scale patches on clypeus. e: contiguous white scale patches forming a V-shaped white patch on the mesepimeron.

Central America; process favored by this mosquito's capability to use natural and artificial container habitats for oviposition and larval development. In this sense, the City of Leon in the neighbor country of Nicaragua, is one of the major Nicaraguan urban centers that has reported presence of this mosquito (Cuellar *et al.*, 2007).

A. albopictus has been considered the main vector in several dengue outbreaks in the continent (Rai, 1991). In an outbreak described in Tamaulipas, México (Ibáñez et al., 2008), transovarial transmission of dengue serotipes 2 and 3 was demonstrated. These characteristics increase the complexity of the dengue epidemiology, especially in areas such as Costa Rica where A. albopictus may coexist with the main vector, A. aegypti.

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