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What are the risks of emergence of chikungunya outbreak in Central African Republic?



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Background: Chikungunya virus, which previously caused only sporadic outbreaks in sub-Saharan Africa, has recently emerged in several urban epidemic foci in Central Africa. This emergence of chikungunya in urban area coincides with introduction of *Aedes albopictus* in this area. *Ae. albopictus* originated in Asia was first reported in central Africa in 2000, in Cameroon, with the indigenous mosquito species *Ae. aegypti*. Today, this invasive species is present in almost all countries of the region, including the Central African Republic (CAR), where it was first recorded in 2009.

Methods & Materials: To determine the consequences of this invasion of *Ae. albopictus* for epidemiological transmission of chikungunya, we conducted a comparative study in the early and the late wet season in the capital, Bangui, and in the other main cities of the country to document infestation by the two species and their ecological preferences. In addition, we explored the geographical origin of populations of *Ae. albopictus* with two mitochondrial DNA genes, *COI* and *ND5*. We also assessed the current circulation of chikungunya virus in CAR by detection anti-CHIK IgM antibodies in different population living in CAR.

Results: Analysis revealed that *Ae. aegypti* predominates early and *Ae. albopictus* late in the wet season. *Ae. albopictus* was the most prevalent species in almost all the sites investigated, except Bouar, where only *Ae. aegypti* was found, suggesting that *Ae. albopictus* tends to supplant *Ae. aegypti* in sympatric areas. Mitochondrial DNA analysis revealed broad low genetic diversity, confirming recent introduction of *Ae. albopictus*. Phylogeographical analysis

with MtDNA *COI* gene suggested that *Ae. albopictus* in CAR came from multiple invasions and from multiple population sources. Serological analysis revealed a silent circulation of chikungunya virus, with anti-CHIK IgM antibodies detected in 25.2% from 468 tested samples. Furthermore anti-CHIK IgG antibodies were detected at later stage in 17.2% of the 58 IgM tested samples.

Conclusion: The predominance of *Ae. albopictus* over the indigenous species associated with the presence of chikungunya viruses could lead to increased risks for emergence chikungunya outbreaks in urban area in CAR. These data may have important implications for chikungunya control strategies in central Africa.

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First evidence of circulation of chikungunya virus in Mozambique



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Background: Chikungunya virus (CHIKV) is a emerging arbovirus that caused a large outbreak in the south western Indian Ocean Islands and Mozambique Channel in 2005-2007 and since then is spreading, causing several outbreaks in areas not previously affected. Although several of the affected countries are in the close proximity of Mozambique, no previous study has yet been conducted to investigate the circulation of this virus in Mozambique.