

Larval development of *Aedes aegypti* and *Aedes albopictus* in peri-urban brackish water and its implications for transmission of arboviral diseases

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Abstract

Aedes aegypti (Linnaeus) and *Aedes albopictus* Skuse mosquitoes transmit serious human arboviral diseases including yellow fever, dengue and chikungunya in many tropical and sub-tropical countries. Females of the two species have adapted to undergo preimaginal development in natural or artificial collections of freshwater near human habitations and feed on human blood. While there is an effective vaccine against yellow fever, the control of dengue and chikungunya is mainly dependent on reducing freshwater preimaginal development habitats of the two vectors. We show here that *Ae. aegypti* and *Ae. albopictus* lay eggs and their larvae survive to emerge as adults in brackish water (water with <0.5 ppt or parts per thousand, 0.5-30 ppt and >30 ppt salt are termed fresh, brackish and saline respectively). Brackish water with salinity of 2 to 15 ppt in discarded plastic and glass containers, abandoned fishing boats and unused wells in coastal peri-urban environment were found to contain *Ae. aegypti* and *Ae. albopictus* larvae. Relatively high incidence of dengue in Jaffna city, Sri Lanka was observed in the vicinity of brackish water habitats containing *Ae. aegypti* larvae. These observations raise the possibility that brackish water-adapted *Ae. aegypti* and *Ae. albopictus* may play a hitherto unrecognized role in transmitting dengue, chikungunya and yellow fever in coastal urban areas. National and international health authorities therefore need to take the findings into consideration and extend their vector control efforts, which are presently focused on urban freshwater habitats, to include brackish water larval development habitats.

Indexed keywords

EMTREE medical terms: *Aedes aegypti*; *Aedes albopictus*; Alphavirus infection; article; chikungunya; coastal waters; controlled study; dengue; freshwater environment; freshwater species; habitat; incidence; larval development; nonhuman; salinity; urban area; vector control; virus transmission; yellow fever; *Aedes*; animal; disease carrier; disease transmission; ecosystem; female; growth, development and aging; human; larva; parasitology; Sri Lanka; virus infection

EMTREE drug terms: water

MeSH: *Aedes*; Animals; Arbovirus Infections; Disease Vectors; Ecosystem; Female; Humans; Incidence; Larva; Sri Lanka; Water

Medline is the source for the MeSH terms of this document.