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High Salinity Tolerance of *Aedes* to Breed in Brackish Waters Around the Negombo Estuary

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Abstract

In the midst of dengue control programs, a high occurrence of dengue and dengue hemorrhagic fever cases around the Negombo estuary is reported at the Centre for Clinical Management of Dengue & Dengue Haemorrhagic Fever, Negombo, during April/May and Sept/Oct 2014. Although preimaginal development of *Aedes*-dengue vector mosquito is known to exist in fresh water environment for many years, few recent findings have revealed the possibility of *Aedes* breeding and immature stage development in brackish water conditions. In Negombo estuary-being a partially enclosed coastal body of brackish water, we investigated the possible *Aedes* mosquito breeding in brackish water in and around the lagoon. Natural breeding sources were examined, and an ovitrap based study was also carried out to investigate the possible breeding, immature stage development, hatching and adult emergence in brackish water environment. The study revealed the oviposition preference (0-22 ppt), egg hatching (0-6 ppt in field conditions and 0-6 ppt in laboratory conditions for *Ae.aegypti*; 0-14 ppt in field conditions and 0-18 ppt in laboratory conditions for *Ae. albopictus*) and preimaginal development (0-6 ppt in field conditions and 0-6 ppt in laboratory conditions for *Ae.aegypti*; 0-14 ppt in field conditions and 0-14 ppt in laboratory conditions for *Ae.albopictus*) of *Aedes* mosquitoes. Further, the study reported the natural prevalence of preimaginal stages of *Ae.albopictus* in brackish water collections (2-14 ppt) around the estuary. The study confirmed the brackish water breeding of *Aedes* mosquitoes around the Negombo estuary. Higher salinity tolerance, compared to brackish water collections of the Northern coast, Sri Lanka was revealed. Negombo, being a fishing village and having a high population density, the study identifies the potential risk of dengue transmission in the area by providing breeding grounds for vector mosquitoes and possibly explains the high occurrence of dengue incidence around the lagoon. Further, the study suggests incorporating larvivorus fish and removing trapped receptacles in the marshy environments to intensify the control programs.

***Keywords*:** Salinity tolerance, *Aedes*, Negombo lagoon