

SHORT COMMUNICATION

The effect of chemical exudates of three larvivorous fish species on oviposition preference of *Aedes aegypti* and *Aedes albopictus* (Diptera: Culicidae)

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Abstract. Mosquito species *Aedes aegypti* and *Aedes albopictus* are vectors of dengue worldwide. Mosquito vector control through maintaining larvivorous fish in water bodies is generally suggested, however, its underlying role towards oviposition preference of these dengue vectors is unknown in the Sri Lankan context. The current study investigated the effect of chemical exudates from larvivorous fish species *Poecilia reticulata*, *Rasbora daniconius* and *Applocheilus dayi* on the oviposition preference of *Aedes* mosquitoes. The number of eggs laid by each mosquito species was determined using ovitraps that contained water conditioned by the fish species both separately and in combination. The ovitraps were placed inside insect cages containing engorged gravid *Aedes* females. Both the mosquito species had the least preference of oviposition in water conditioned by *A. dayi* followed by *R. daniconius*. The highest preference of oviposition was shown for water conditioned by *P. reticulata*. The current study indicated that oviposition site selection in *Ae. aegypti* and *Ae. albopictus* was reduced by *A. dayi* and *R. daniconius*, however, it was not influenced by the fish combinations used. Further studies are warranted to understand the chemical cues associated with larvivorous fish towards the oviposition preference in *Aedes* mosquitoes.

Key words. *Aedes aegypti*, *Aedes albopictus*, larvivorous fish, oviposition, oviposition preference.

Introduction

Dengue viruses (DENV) are mosquito-borne flaviviruses that have caused major health issues in humans for over centuries (Gubler, 1998). In Sri Lanka, the debut of dengue disease dates to the 1960s (Vitharana & Jayakuru, 1997). The overwhelming urbanization and the escalating rates of human population growth have led to the current global dengue pandemic (Gubler, 1998). It is characterized by a dramatic increase in DENV infections [dengue fever (DF)/dengue hemorrhagic fever (DHF)] together with an expanding geographic distribution of both the DENV and its mosquito vectors. The mosquitoes *Aedes aegypti* (Linnaeus) and *Aedes albopictus* (Skuse) are the major

vectors of DF and DHF in Sri Lanka (Watts *et al.*, 1987; Vitharana & Jayakuru, 1997; Kusumawathie & Fernando, 2003; Sirisena & Noordeen, 2014).

Dengue control efforts in the country are targeted at laboratory surveillance for DENV infections in patients as well as controlling the mosquito vectors (Sirisena & Noordeen, 2016; Tissera *et al.*, 2016). Elimination of mosquito breeding sites, especially, the egg-laying sites or oviposition sites, is an important aspect of the dengue vector control programmes in Sri Lanka. Moreover, larval control using larvivorous fish in aquatic bodies is a biological mosquito control method that has been well-known for more than 100 years (Howard *et al.*, 2007; Ali & Elamin, 2011). However, oviposition site selection by mosquito females itself

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