

Breeding Places and Susceptibility Status of *Anopheles stephensi* Larvae for Temephos in Jaffna, Sri Lanka

S Priyadarshani[#], RDJ Harishchandra¹, MAST Fernando¹, DGIC Somaweera¹, and P Ranweera^{1,2}

¹Anti Malaria Campaign, Ministry of Health, Colombo, Sri Lanka

²Anti Leprosy Campaign, Ministry of Health, Colombo, Sri Lanka

[#]uoc.priyadarshani@yahoo.com

Abstract

Anopheles stephensi mosquito is an invasive potential malaria vector in Sri Lanka. Adult *Anopheles stephensi* shows resistance to many insecticides. Hence, identification of breeding habitats and susceptibility to larvicides are crucial to plan effective vector control programmes. A study was conducted to identify breeding places and to assess susceptibility to temephos larvicide for *Anopheles stephensi* in Jaffna, Sri Lanka. A study was conducted in Jaffna Medical Officer of Health area including four Grama Niladhari divisions (J-83, J-84, J-85 & J-86) with high prevalence of *Anopheles stephensi*. Larval surveys were conducted covering potential breeding places of *Anopheles stephensi* from September 2021 to September 2022. The results were analysed using Kruskal-Wallis and Mann-Whitney U test. The susceptibility to temephos, was evaluated for *Anopheles stephensi* larvae using five selected concentrations (0.03125 mg/L, 0.0625 mg/L, 0.125 mg/L, 0.25 mg/L, 0.375 mg/L). Probit analysis was performed to calculate LC99. Three types of places were positive for *Anopheles stephensi*; wells (94.9%), cement tanks (3.8%) and water storage barrels (1.3%) out of 8661 examined. Positivity rate of *Anopheles stephensi* for wells, cement tanks and water storage barrels were 4.2%, 0.6% and 0.2% respectively. Positivity of *Anopheles stephensi* in wells were significantly higher than the other breeding habitats ($H(3) = 14.74, p = 0.002$). LC99 value of temephos for *Anopheles stephensi* for the tested population was 0.249 mg/L. The predominant breeding place of *Anopheles stephensi* is Wells. The *Anopheles stephensi* larvae in Jaffna are susceptible to temephos larvicide. These findings can be used to design appropriate vector control programme to control *Anopheles stephensi* in Jaffna, Sri Lanka.

Keywords: *Anopheles stephensi*, Temephos, Breeding places