403/D

Salinity tolerance of *Aedes sp* Mosquitoes and its impact on Dengue cases in Batticaloa district

W.A.D.Shashikala Keshani* and M.Vinobaba

Department of Zoology, Eastern University, Sri Lanka

Mosquitoes are the disease vectors that cause deadly diseases especially in tropical region of the world. Batticaloa district is one of the highest dengue cases reported district among the ten highest dengue cases (12.47%) reported districts in Sri Lanka, during past five years. Salinity tolerance ability increases the breeding sites of mosquitoes apart from the standard potential freshwater bodies. Therefore, current study was focused to measure the maximum amount of salinity that mosquitoes can tolerate and then identify potential breeding sites rather than fresh water. A total of 330 water samples from 33 naturally breeding locations in four dengue hotspots (Batticaloa, Eravur, Oddamawadi and Valachchenei) in 14 Medical officers of Health (MOH) areas in the district of Batticaloa were collected from August 2021 – November 2021. A ladle dipper was used to obtain samples of larval mosquitoes. Larval species were identified microscopically using standard taxonomic keys. Physicochemical parameters such as temperature, Dissolved Oxygen (DO), pH and salinity of the natural breeding streams water were measured *in-situ* using digital meters. *Aedes aegypti* and Aedes *albopictus* collected from field study were separated into four colonies according to the hotspot and reared. After emerging of first progeny 1st instar larvae and 3rd instar larvae of both species were exposed to different salinity levels of 0, 2, 4, 6, 8, 10, 12, 14, 16,18, 20, 21 and 22 ppt under the laboratory conditions. Probit analysis was performed to determine salinity tolerate of *Aedes* mosquitoes. Overall, a total of 420 *Ae.aegypti* and 386 *Ae.albopictus* were collected from different breeding habitats including boats. The abundance of *Aedes sp* mosquito larvae showed a significant positive correlation ($p < 0.05$) with physico-chemical parameters in breeding habitats, such as temperature (32 °C), DO (20 mgl^{-1},) and salinity (12 ppm). *Ae. aegypti* larvae reported in boat with having small amount of water in the bottom with 10 ppt (max) salinity level. *Ae. albopictus* larvae were reported from the small water pools in the edge of the Batticaloa lagoon with 7 ppt (max) salinity level. According to the results obtained from the salinity tolerance laboratory study both *Aedes* species showed 18 ppt salinity tolerance. The current study concluded that dengue vector mosquitoes can breed in high salinity water mostly found in the Batticaloa District. This may be the reason for reporting high dengue cases in the district and knowledge generated on the ecology of dengue vector mosquitoes will help to eliminate dengue from the country.

*shashikalakeshani64@gmail.com