

SALINITY TOLERANCE OF *Culex sp* LARVAE COLLECTED FROM DENGUE HOTSPOTS IN BATTICALOA DISTRICT SRI LANKA

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Abstract - 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 area but the lowest reported Japanese encephalitis (JE) and no filariasis reported which spread by *Culex sp* vectors. The lack of recent study on *Culex sp* vector diseases and still no Japanese encephalitis recently reported cases this study enrich and updated the data on this mosquito vectors for future studies by fulfilling the gap. According to the supportive Medical of Health (MOH) guide, Batticaloa district is one of the five highest Japanese encephalitis cases (6.84%) reported districts in Sri Lanka (2009), during past fifteen years. This study was focused to measure the maximum amount of salinity that mosquitoes can tolerate and then identify potential breeding sites rather than fresh water because salinity tolerance ability increase the breeding sites of mosquitoes apart from the standard potential freshwater bodies. A total of 330 water samples from 33 naturally breeding locations in four dengue hotspots (Batticaloa, Eravur, Oddamawadi and Valachchenei) in 14 Medical officer 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. *Culex sp* 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 genus were exposed to different salinity levels of 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 and 22 ppt under the laboratory conditions. Probit analysis was performed to determine salinity tolerate of *Culex sp* mosquitoes. Overall, a total of 450 were collected from different breeding habitats including boats. The abundance of *Culex sp* mosquito larvae showed a significant positive correlation ($P < 0.05$) with physico-chemical parameters in breeding habitats, such as temperature, DO and salinity. *Culex sp* larvae reported in multiday boat with having small amount of water and kitchen waste in the bottom with 4 ppt (max) salinity level. *Culex sp* larvae were reported from the waste drainage canals in the residence area Eravur with 4 ppt (max) salinity level. According to the results obtained from the salinity tolerance laboratory study *Culex sp* showed 20 ppt salinity tolerance. The current study concluded that *Culex sp* vector mosquitoes can breed in high salinity water mostly found in the Eravur, Batticaloa, Valachchenei and Oddamawadi towns in Batticaloa district. This may be the reason for future outbreak of JE, Filariasis cases in the district and knowledge generated on the ecology of *Culex sp* vector mosquitoes will help to control re-emerging of these diseases in the country.