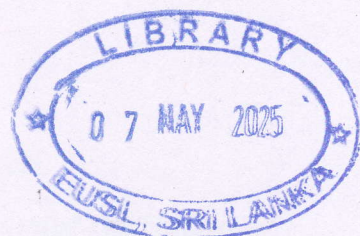


**LARVAL INDICES AND INSECTICIDE
SUSCEPTIBILITY PATTERNS OF *Aedes aegypti* IN THE
DISTRICT OF BATTICALOA, SRI LANKA**



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ABSTRACT

The increasing resistance of *Aedes aegypti* mosquitoes to commonly used insecticides exacerbate the challenges faced by vector control programs, highlighting the urgent need for enhanced monitoring efforts. Particularly, concerning is the lack of recent literature addressing insecticide resistance within Batticaloa district, emphasizing the critical necessity for comprehensive research in this area. Therefore, this study aimed to investigate the prevalence of insecticide resistance and susceptibility among *Aedes aegypti* populations in Batticaloa district, Sri Lanka. From August 2023 to February 2024, larval surveys were conducted across three distinct Medical Officer of Health (MOH) areas: Batticaloa, Eravur, and Koralai Patru Central (KPC). Bioassays employing three different insecticides - deltamethrin, malathion and permethrin - were conducted on adult *Ae. aegypti* mosquitoes using standardized protocols outlined by the World Health Organization (WHO). Concurrently, larval indices including the House index (HI), Breteau index (BI) and Container index (CI) were calculated to assess the larval infestation levels across the MOH areas. The comprehensive examination of 4,458 potential breeding sites with water retention revealed 138 *Ae. aegypti* positive containers within Batticaloa district. A total of 1,082 *Ae. aegypti* mosquito larvae were identified during the study period. The values of HI were ranged from 16.67 to 28, BI were from 23 to 38 and CI were ranged from, 2.40 to 3.97. Susceptibility was observed when percent mortality ranged from 98 to 100%, while incipient insecticide resistance was indicated by mortality rates between 80 and 97%. In conclusion, this study underscores the pressing need for sustained monitoring and intervention strategies to combat *Ae. aegypti*-mediated dengue transmission in Batticaloa district. The observed variations in larval indices and insecticide susceptibility highlight the dynamic nature of vector control challenges. Addressing these issues requires collaborative efforts involving policymakers, healthcare authorities and local communities to implement targeted interventions aimed at mitigating insecticide resistance and reducing mosquito-borne disease burden.

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