

MOSQUITOCIDAL POTENTIAL OF ETHANOLIC *ALLIUM SATIVUM* (GARLIC) EXTRACTS AGAINST *Aedes* AND *Culex* MOSQUITO LARVAE IN SRI LANKA

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In Sri Lanka, mosquito-borne diseases are causing significant mortality, morbidity and economic impediments. Botanical extracts are sustainable and eco-friendly alternatives to synthetic insecticides in controlling mosquito vectors. This study assesses the larvicidal potential of ethanolic garlic extract against mosquito genera *Aedes* and *Culex* from Sri Lanka. The efficacy of garlic was determined by exposing ten late 3rd to early 4th instar *Aedes* and *Culex* larvae to six predetermined concentrations of ethanolic garlic extract (250 ppm-5 ppm) for 72 hours. The experiment was replicated four times with controls, and daily mortalities were recorded. Lethal concentrations needed to kill 50% (LC₅₀) and 90% (LC₉₀) of larvae exposed to 24 h, 48 h and 72 h were obtained by regression analysis. A qualitative phytochemical analysis was conducted to screen the presence of phytochemicals in the ethanolic garlic extract. A positive correlation between the garlic concentration and percentage of mortalities was observed at each exposure period for both *Aedes* (24 h: r=0.956; 48 h: r=0.819; 72 h: r= 0.706) and *Culex* (24 h: r=0.711; 48 h; r=0.592; 72 h: r= 0.557). The LC₅₀ values obtained for 24 h, 48 h and 72 h for *Aedes* larvae were 45.5 ppm, 28.0 ppm and 14.4 ppm, respectively, and the corresponding LC₉₀ values were 140.0 ppm, 91.0 ppm and 42.9 ppm. Corresponding LC₅₀ values for 24 h, 48 h and 72 h exposure of *Culex* larvae to the treatments were 26.3 ppm, 9.4 ppm and 4.4 ppm, while the respective LC₉₀ values were 169.8 ppm, 30.7 ppm and 17.6 ppm. Phytochemical analysis revealed the presence of flavonoids, saponins and reducing sugar in the garlic ethanolic extract even after 12 months of extraction. Less than 50 ppm LC₅₀ values evident the high toxicity of the garlic extract against mosquito larvae. The results of this study, therefore, suggest the use of garlic extracts in developing a larvicide against vector mosquitoes.

Keywords: *Aedes*, *Culex*, Garlic extract, Larvicidal, Lethal concentrations, Phytochemical analysis