

Screening for Larvicidal Activity of Aqueous and Ethanolic Extracts of Fourteen Selected Plants and Formulation of a Larvicide against *Aedes aegypti* (Linn.) and *Aedes albopictus* (Skuse) Larvae

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Abstract : This study aims to: a) obtain ethanolic (95% EtOH) and aqueous extracts of *Selaginella elmeri*, *Christella dentata*, *Elatostema sinnatum*, *Curculigo capitulata*, *Euphorbia hirta*, *Murraya koenigii*, *Alpinia speciosa*, *Cymbopogon citratus*, *Eucalyptus globulus*, *Jatropha curcas*, *Psidium guajava*, *Gliricidia sepium*, *Ixora coccinea* and *Capsicum frutescens* and screen them for larvicidal activities against *Aedes aegypti* (Linn.) and *Aedes albopictus* (Skuse) larvae; b) to fractionate the most active extract and determine the most active fraction; c) to determine the larvicidal properties of the most active extract and fraction against by computing their percentage mortality, LC50, and LC90 after 24 and 48 hours of exposure; and d) to determine the nature of the components of the active extracts and fractions using phytochemical screening. Ethanolic (95% EtOH) and aqueous extracts of the selected plants will be screened for potential larvicidal activity against *Ae. aegypti* and *Ae. albopictus* using standard procedures and 1% malathion and a *Piper nigrum* based ovicide-larvicide by the Department of Science and Technology as positive controls. The results were analyzed using One-Way ANOVA with Tukey's and Dunnett's test. The most active extract will be subjected to partial fractionation using normal-phase column chromatography, and the fractions subsequently screened to determine the most active fraction. The most active extract and fraction were subjected to dose-response assay and probit analysis to determine the LC50 and LC90 after 24 and 48 hours of exposure. The active extracts and fractions will be screened for phytochemical content. The ethanolic extracts of *C. citratus*, *E. hirta*, *I. coccinea*, *G. sepium*, *M. koenigii*, *E. globulus*, *J. curcas* and *C. frutescens* exhibited significant larvicidal activity, with *C. frutescens* being the most active. After fractionation, the ethyl acetate fraction was found to be the most active. Phytochemical screening of the extracts revealed the presence of alkaloids, tannins, indoles and steroids. A formulation using talcum powder–300 mg fraction per 1 g talcum powder–was made and again tested for larvicidal activity. At 2 g/L, the formulation proved effective in killing all of the test larvae after 24 hours.

Keywords : larvicidal activity screening, partial purification, dose-response assay, *capsicum frutescens*

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