

UNIVERSITI TEKNOLOGI MARA

**LARVICIDAL ACTIVITIES OF *Mentha piperita*
(PEPPERMINT) ESSENTIAL OIL AGAINST
*Aedes albopictus***

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Project submitted in fulfilment of the requirements for
the degree of
**Bachelor of Medical Laboratory Technology
(Hons.)**

Faculty of Health Sciences

DECLARATION BY STUDENT

I hereby declare that this thesis entitled “Larvicidal activities of *Mentha piperita* (peppermint) essential oil against *Aedes albopictus*” is my original work and has not submitted previously or currently for any other degree at UiTM or any other institutions.

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ABSTRACT

LARVICIDAL ACTIVITIES OF *Mentha piperita* (PEPPERMINT) ESSENTIAL OIL AGAINST *Aedes albopictus*

Dengue is a mosquito-borne viral-borne disease that is transmitted by female *Aedes* mosquitoes. The excessive use of synthetic insecticides has caused the evolution, development and spread of insecticide resistance in dengue vectors including *Aedes albopictus*. This can be tackled using alternative methods of mosquito control based on botanical products such as *Mentha piperita* (peppermint). The rationale of this study was to determine the efficacy of *Mentha piperita* as an organic larvicide by evaluating the mortality rate and lethal concentration (LC₅₀ and LC₉₀) of its essential oil against *Aedes albopictus*. Mosquitoes were reared in an insectary and larvae at 3rd instar were used. Essential oil was obtained using hydro-distillation method with a Clevenger apparatus and acetone as a solvent. The mortality rate was determined following 24 and 48 hours' exposure to 5 different test concentrations (100, 150, 200, 250 and 300 ppm) alongside 10% (v/v) of acetone (quality control), temephos (positive control) and distilled water (negative control). Data was analyzed using Probit analysis and analysis of variance (ANOVA). The highest mortality rates achieved was 93% when exposed to 250 ppm concentration of essential oil. LC₅₀ and LC₉₀ values were observed at 177.243 ppm and 290.363 ppm respectively. The results showed significant differences from the values obtained ($p = 0.000$). Findings from this study concludes the potential of *Mentha piperita* essential oil as an efficient larvicide agent. Further isolation and purification of phytochemical compounds is warranted to determine the bioactive compounds responsible for its bioactivity.

Keywords: *Mentha piperita*, peppermint, larvicidal assay, *Aedes albopictus*, essential oil