UNIVERSITI TEKNOLOGI MARA

LARVICIDAL ACTIVITIES OF ESSENTIAL OIL FROM *Ocimum basilicum* (BASIL) AGAINST *Aedes albopictus*

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

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DECLARATION

I hereby declare the project title "Larvicidal activities of essential oil from *Ocimum basilicum* (basil) 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

Aedes albopictus is a well-known vector responsible for the transmission of several arboviruses. The increase incidences of insecticide resistance justify the search of an alternative method to control mosquito-borne vectors that utilizes plant-based product. This study was conducted to evaluate the larvicidal activities of essential oil from *Ocimum basilicum* (basil) against *Aedes albopictus* by determining their mortality rates and lethal concentration (LC_{50} and LC_{90}) following exposure for 24 hour and 48 hours. The essential oil content was extracted from fresh leaves of *Ocimum basilicum* by hydrodistillation method. Its larvicidal potential was then evaluated at 200, 400, 600, 800 and 1000 ppm using *Aedes albopictus* larvae at third and fourth instar. Ten % (v/v) acetone, Abbate 1.1G and distilled water were used as quality control, positive control and negative control, respectively. Probit analysis and analysis of variance (ANOVA) tests were performed using Minitab 18.0. Mortality rates of *Aedes albopictus* larvae steadily increased in tandem with the concentration of essential oil, whereby 100% mortality was recorded at the highest concentration, 1000 ppm. Exposure of *Aedes albopictus* larvae to the essential oil of *Ocimum basilicum* at 24 hours and 48 hours revealed LC_{50} values of 678.640 ppm and 564.982 ppm and LC_{90} values of 914.005 ppm and 767.387 ppm, respectively. Furthermore, larvicidal assay revealed statistically significant results ($p<0.05$). Overall, the findings of this study support the larvicidal potential of *Ocimum basilicum* essential oil towards *Aedes albopictus*. It can be therefore be further explored as a natural larvicidal agent that can be potentially used to control mosquitoes.

Keywords: *Ocimum basilicum*, basil, essential oil, larvicidal activity, *Aedes albopictus*