

TOXICITY EFFECT OF *Cymbopogon nardus*  
CRUDE EXTRACT ON *Aedes aegypti*  
(DIPTERA: CULICIDAE)

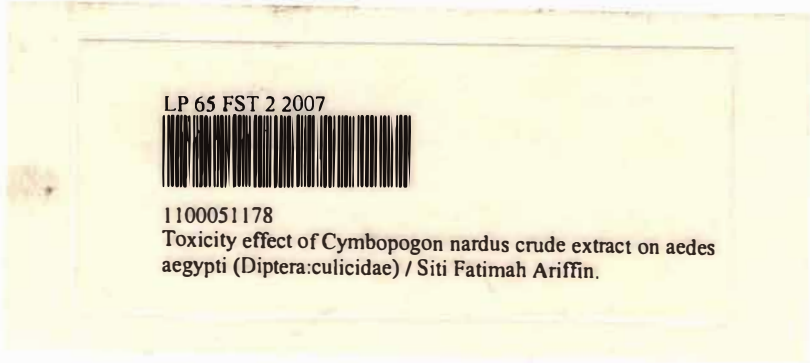
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2007

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TOXICITY EFFECT OF *Cymbopogon nardus* CRUDE EXTRACT ON *Aedes aegyti*  
LARVAE (DIPTERA: CULICIDAE)

By

Siti Fatimah binti Ariffin

Research Report submitted in partial fulfillment of  
the requirements for the degrees of  
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Department of Biological Sciences  
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JABATAN SAINS BIOLOGI  
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UNIVERSITI MALAYSIA TERENGGANU

PENGAKUAN DAN PENGESAHAN LAPORAN  
PROJEK PENYELIDIKAN I DAN II  
RESEARCH REPORT VERIFICATION

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **TOXICITY EFFECT OF *Cymbopogon nardus* CRUDE EXTRACT ON *Aedes aegypti* LARVAE (DIPTERA: CULICIDAE)** oleh **SITI FATIMAH ARIFFIN**, no. matrik: **UK9691** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperoleh ijazah Sarjana Muda Sains (Sains Biologi), Fakulti Sains dan Teknologi, Universiti Malaysia Terengganu.

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|                  |  |
|------------------|--|
| °C               | Degree of Celsius                      |
| DHF              | Dengue hemorrhagic fever               |
| DSS              | Dengue shock syndrome                  |
| DMSO             | Dimethyl sulfoxide                     |
| EC <sub>50</sub> | Effective concentration of 50%         |
| g                | gram                                   |
| HPLC             | High-performance liquid chromatography |
| IMR              | Institute of Medical Research          |
| LC <sub>50</sub> | Lethal concentration of 50%            |
| ml               | Milliliter                             |
| mg/ml            | Milligram per milliliter               |
| NMR              | Nuclear magnetic resonance             |
| %                | Percentage                             |
| WHO              | World Health Organization              |

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## ABSTRACT

Botanical insecticides can be an alternative source for mosquito control because they constitute a potential source of bioactive compound and typically are free from harmful effects. This study was carrying out to search the alternative insecticides from the natural product such as herbal plant, which is non toxic to environment and biodegradable. The purposes of this study are to determine the toxicity effect of *Cymbopogon nardus* crude on third instar *Aedes aegypti* and to compare the toxicity of leaves and root extract. Leaves and root of *C. nardus* was extracted using 98.9% methanol and tested against third instar *Ae. aegypti* larvae (Diptera: Culicidae) under laboratory condition. Exposure was done for 24 hours in the concentration 4.0, 2.0, 1.0, 0.5 and 0.25mg/ml. The mean of LC<sub>50</sub> of leaves was 2.3075 mg/ml and roots part was 2.1835 mg/ml. Two samples mean of LC<sub>50</sub> showed no significant difference in both part of this plant ( $p > 0.05$ ). Developments of larval were completely inhibited by the treatment of crude extract. This study indicates that both parts of *C. nardus* have potential as larvacidal agents against *Ae. aegypti*.

**KESAN KETOKSIKAN EKSTRAK *Cymbopogon nardus* KE ATAS INSTAR  
KETIGA LARVA *Aedes aegypti* (DIPTERA: CULICIDEA)**

**ABSTRAK**

Insektisid botani berasaskan tumbuhan menjadi sumber alternatif bagi pengawalan nyamuk kerana ia mempunyai sebatian bioaktif yang berpotensi dan bebas daripada kesan merbahaya. Kajian ini dilakukan untuk mencari sumber alternatif bagi racun serangga daripada bahan semulajadi seperti tumbuhan herba yang mudah terurai dan selamat untuk persekitaran. Daun dan akar *Cymbopogon nardus* (serai wangi) diekstrak menggunakan 98.9% metanol dan diuji ke atas larva *Aedes aegypti* (Diptera: Culicidae) dalam keadaan makmal. Pendedahan selama 24 jam dilakukan ke atas larva dengan kepekatan 4.0, 2.0, 1.0, 0.5 dan 0.25 mg/ml ekstrak kasar *C. nardus*. Kajian ini adalah untuk menentukan nilai ketoksikan yang efektif terhadap instar ketiga *Ae. aegypti* dan membandingkan ketoksikan ekstrak daripada bahagian akar dan daun *C. nardus*. Ekstrak kasar tumbuhan ini memberi kesan terhadap aktiviti perkembangan larva, dan seterusnya menyebabkan kematian ke atas larva. Dalam kajian ini, min  $LC_{50}$  bagi bahagian daun ialah 2.3075 mg/ml dan bahagian akar ialah 2.1835 mg/ml. Min dua sampel bagi  $LC_{50}$  menunjukkan tiada perbezaan yang ketara bagi kedua-dua bahagian tumbuhan ( $p > 0.05$ ). Kajian ini menunjukkan kedua-dua bahagian *C. nardus* mempunyai potensi sebagai agen larvisidal terhadap *Ae. aegypti*.