

TOXICITY EFFECT OF *Andropogon indiarum* EXTRACTS
AGAINST *Aedes aegypti* LARVAE
(DIPTERA: GYMNODIAE)

ZAITUL-IBRAHIM BT. ABU HASAN.

FAKULTI SAINS DAN TEKNOLOGI
UNIVERSITI MALAYSIA TERENGGANU
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Toxicity effect of *Azadirachta indica* extracts against *Aedes aegypti* larvae (Diptera:culicidae) / Zatul-'Iffah Abu Hasan.

PERPUSTAKAAN
UNIVERSITI MALAYSIA TERENGGANU (UMT)
21030 KUALA TERENGGANU

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HAK MILIK
PERPUSTAKAAN UMT

TOXICITY EFFECT OF *Azadirachta indica* EXTRACTS
AGAINST *Aedes aegypti* LARVAE
(DIPTERA: CULICIDAE)

By

Zatul-'Iffah Binti Abu Hasan

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Faculty of Science and Technology
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**JABATAN SAINS BIOLOGI
FAKULTI SAINS DAN TEKNOLOGI
UNIVERSITI MALAYSIA TERENGGANU**

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PROJEK PENYELIDIKAN I DAN II
RESEARCH REPORT VERIFICATION**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **TOXICITY EFFECT OF *Azadirachta indica* EXTRACTS AGAINST *Aedes aegypti* LARVAE (DIPTERA: CULICIDAE)** oleh **ZATUL-'IFFAH BINTI ABU HASAN**, no. matrik: **UK10664** 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.

Disahkan oleh: / Verified by:

Penyelia Utama / Main Supervisor

Nama: **PUAN WAHIZATUL AFZAN BINTI HUSMI**

Cop Rasmi:

**Jabatan Sains Biologi
Fakulti Sains dan Teknologi
Universiti Malaysia Terengganu
21030 Kuala Terengganu**

Tarikh: **13/5/07**

Penyelia Kedua (jika ada) / Co-Supervisor (if applicable)

Nama: **PUAN NORHAYATI BINTI YUSUF**

Cop Rasmi **NORHAYATI BINTI YUSUF**

**Pensyarah
Jabatan Sains Biologi
Fakulti Sains dan Teknologi
Universiti Malaysia Terengganu
21030 Kuala Terengganu.**

Tarikh: **13/5/07**

Ketua Jabatan Sains Biologi / Head, Department of Biological Sciences

Nama: **DR. AZIZ BIN AHMAD**

Cop Rasmi:

**DR. AZIZ BIN AHMAD
Ketua
Jabatan Sains Biologi
Fakulti Sains dan Teknologi
Universiti Malaysia Terengganu
21030 Kuala Terengganu**

Tarikh: **13/5/2007**

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LIST OF ABBREVIATIONS

ANOVA	-	Analysis of Variance
β	-	Beta
cm	-	centimeter
°C	-	degree celcius
DEN	-	dengue
DMSO	-	Dimetil sulfoxide
g	-	gram
IGR	-	Insect Growth Regulator
IMR	-	Institute of Medical Research
kg	-	kilogram
l	-	litre
LC ₅₀	-	lethal concentration that cause 50% mortality of test organism
M	-	concentration of solution
mg	-	miligram
ml	-	mililiter
No.	-	number
P _C	-	corrected percentage mortality
P _U	-	percentage of dead test organisms
P _T	-	percentage of dead control organism
RH	-	relative humidity
UMT	-	Universiti Malaysia Terengganu
V	-	volume of solution
WHO	-	World Health Organization
%	-	percentage

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ABSTRACT

In recent years, the usage of environmental friendly and biodegradable natural insecticides of plant origin have received and renewed attention as an effective agent for disease vector control. For date, there is no vaccine for dengue which is spread by the bite of infected *Aedes* mosquitoes. This study was carried out to examine the comparison of effect between three parts of *Azadirachta indica* plants that were extracted and tested against *Aedes aegypti* larvae. Fruit, leaf and bark of *A. indica* was extracted using 98.9% of methanol and tested against third instar *Ae. aegypti* larvae under laboratory condition. Exposure was done for 24 hours in the concentration of 0.1250, 0.2500, 0.5000, 1.0000 and 2.0000 mg/ml. LC₅₀ values obtained for crude extract of *A. indica* fruit, leaf and bark were 0.2730, 0.3041 and 0.4581 mg/ml. There was significant difference ($P < 0.05$) for fruit, leaf and bark. This shows that each part provides different level of toxicity effect for vector control which is friendly to the environment with fruit extract posses higher toxicity effect. This study revealed that the extracts from *A. indica* are promising as botanical inseticides against *Ae. aegypti*.

**KESAN KETOKSIKAN EKSTRAK *Azadirachta indica* TERHADAP LARVA
Aedes aegypti (DIPTERA:CULICIDAE)**

ABSTRAK

Sejak kebelakangan ini, penggunaan racun serangga semulajadi daripada ekstrak tumbuhan bersifat mesra alam dan mudah terurai telah diterima dan diguna pakai sebagai agen kawalan serangga pembawa penyakit. Sehingga kini masih tiada lagi vaksin bagi denggi di mana ia disebarkan oleh gigitan nyamuk *Aedes* yang telah dijangkiti. Kajian ini dijalankan bagi membandingkan kesan ketoksikan di antara tiga bahagian pokok *Azadirachta indica* yang telah diekstrak dan diuji ke atas larva *Aedes aegypti*. Buah, daun dan batang *A. indica* telah diekstrak menggunakan 98.9% methanol dan diuji ke atas instar ketiga larva *Ae. aegypti* di dalam kawalan makmal. Pendedahan ekstrak ke atas larva telah dilakukan selama 24 jam pada kepekatan 0.1250, 0.2500, 0.5000, 1.0000 dan 2.0000 mg/ml. Didapati nilai LC_{50} bagi ekstrak kasar buah, daun dan batang *A. indica* adalah 0.2730, 0.3041 dan 0.4581 mg/ml. Terdapat perbezaan yang bererti ($P < 0.05$) bagi buah, daun dan batang. Ini menunjukkan bahawa setiap bahagian tumbuhan ini memberikan tahap ketoksikan yang berbeza bagi pengawalan vektor yang mesra alam di mana ekstrak buah memberikan kesan ketoksikan yang tertinggi. Kajian ini membuktikan bahawa ekstrak daripada *A. indica* adalah berkesan sebagai insektisid berasaskan tumbuhan bagi menentang *Ae. aegypti*.