

DETECTION AND IDENTIFICATION OF ANTIBACTERIAL
COMPOUNDS IN FUNGI ISOLATED FROM
ATTYCEINIA ALBA

NOR HUSBIAH BINTI MOHAMAD ALI

FAKULTI SAINS DAN TEKNOLOGI
UNIVERSITI MALAYSIA TERENGGANU

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Universiti Malaysia Terengganu



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PERPUSTAKAAN SULTANAH NUR ZAHIRAH
UNIVERSITI MALAYSIA TERENGGANU (UMT)
21030 KUALA TERENGGANU

1100057837		

Lihat sebelah

HAK MILIK PERPUSTAKAAN SULTANAH NUR ZAHIRAH UMT
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**DETECTION AND IDENTIFICATION OF ANTIBACTERIAL COMPOUNDS IN
FUNGI ISOLATED FROM *AVICENNIA ALBA***

By
Nor Habibah Binti Mohamad Ali

A thesis submitted in partial fulfillment of
the requirements for the award of the degree of
Bachelor of Science (Biological Sciences)

**DEPARTMENT OF BIOLOGICAL SCIENCES
FACULTY OF SCIENCE AND TECHNOLOGY
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FAKULTI SAINS DAN TEKNOLOGI
UNIVERSITI MALAYSIA TERENGGANU**

PENGAKUAN DAN PENGESAHAN LAPORAN PITA I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **DETECTION AND IDENTIFICATION OF ANTIBACTERIAL COMPOUNDS IN FUNGI ISOLATED FROM AVICENNIA ALBA** oleh **NOR HABIBAH BINTI MOHAMAD ALI** no. matrik: **UK11166** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah **SARJANA MUDA SAINS (SAINS BIOLOGI)**, Fakulti Sains dan Teknologi, Universiti Malaysia Terengganu.

Disahkan oleh: /Verified by:

.....
Penyelia Utama/*Main Supervisor*

Nama: **Dr. MARIAM BINTI TAIB**

Cop Rasmi:

DR. MARIAM TAIB
Pensyarah
Jabatan Sains Biologi
Fakulti Sains dan Teknologi
Universiti Malaysia Terengganu
21030 Kuala Terengganu.

Tarikh: 11/5/08

.....
Ketua Jabatan Sains Biologi/*Head, Department of Biological Sciences*

Nama: **PROF MADYA DR. AZIZ BIN AHMAD**


Cop Rasmi:

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

Tarikh: 15 JUN 2008

DECLARATION

I hereby declare that this thesis entitled Detection and Identification of Antibacterial Compounds in Fungi Isolated from *Avicennia alba* is the result of my own research except as cited in the references.

Signature : 
Name : Nor Habibah Binti Mohamad Ali
Matrix No : UK 11166
Date : 11 April 2008

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ABSTRACT

Marine fungi have been proven to become one of the important sources of novel secondary metabolites, and are expected to compete with terrestrial fungi in this respect in the near future. However, only a few investigations of the secondary metabolites of marine fungi have been reported. Therefore, this study was focused on the detection and identification of potential bioactive compounds of marine fungi isolated from *Avicennia alba*. Four fungi have been successfully identified as marine fungi: *Clavariopsis bulbosa*, *Humicola alopallonella*, *Coniothyrium obiones* and *Didymella avicenniae*. All fungi were further screened for antibacterial properties against five bacterial test strains: *Escherichia coli*, *Salmonella* sp., *Klebsiella* sp., *Pseudomonas* sp. and *Streptococcus. agalactiae*. *D. avicenniae* showed the best antibacterial activity and the least is *C. bulbosa*. Efficacy study was carried out to determine the minimum inhibitory concentration of the fungal extracts compared to the standard concentration of ampicillin, which is approximately 10µg/ml for each fungal extract. The results obtained are negative for all fungi. Thin Layer Chromatography (TLC) method was carried out as preliminary step to identify any compounds produced by the fungi isolated from *A. alba*. However, the running solvent mixture was not good enough to separate the compounds completely, and standard bioactive compounds were not available as references. However, this study has clearly demonstrated that the marine fungi isolated from *A. alba* have the potential as sources of bioactive compounds, and hence further study is needed to identify the compounds.

PENGESANAN DAN PENGENAL PASTIAN SEBATIAN ANTIBAKTERIA DALAM KULAT YANG DI PENCIL DARIPADA *AVICENNIA ALBA*

ABSTRAK

Kulat marin telah dibuktikan sebagai salah satu sumber yang penting bagi menghasilkan metabolit sekunder dan dijangka akan bersaing dengan fungi daratan di masa akan datang. Bagaimanapun, hanya sedikit penyelidikan telah dibuat tentang metabolit sekunder yang dihasilkan oleh kulat marin. Oleh itu, tujuan penyelidikan ini adalah tertumpu bagi mengesan dan mengenal pasti potensi kulat marin yang telah diisolat daripada pokok *A. alba* untuk menghasilkan sebarang metabolit seperti bahan bioaktif. Pengesanan dan identifikasi telah dibuat ke atas beberapa kulat marin stok kultur dan 4 kulat telah dikenalpasti sebagai kulat marin: *Clavariopsis bulbosa*, *Humicola alopallonella*, *Coniothyrium obiones* and *Didymella avicenniae*. Semua kulat ini telah diuji terhadap bakteria ujian iaitu *Escherichia coli*, *Salmonella* sp., *Klebsiella* sp., *Pseudomonas* sp. and *Streptococcus agalactiae*, dan menunjukkan keputusan yang memberangsangkan, di mana beberapa kulat menunjukkan perencatan terhadap pertumbuhan bakteria yang diuji. *D. avicenniae* menunjukkan aktiviti antibakteria, sementara *C. bulbosa* menunjukkan aktiviti yang paling kurang berbanding kulat-kulat lain dalam ujian antibakteria. Kajian keberkesanan dijalankan untuk menentukan tahap kepekatan minimum perencatan ekstrak kulat berbanding dengan kepekatan ampicillin, iaitu 10µg/ml. Keputusan didapati adalah negatif bagi semua fungi. Seterusnya, Kromatografi Lapisan Nipis dijalankan bagi mengasingkan bahan aktif yang terdapat dalam fungi. Walau bagaimanapun, campuran pelarut organik yang digunakan didapati tidak cukup baik untuk mengasingkan bahan bioaktif daripada sampel dengan sempurna, dan piawai bioaktif tidak diperolehi sebagai rujukan. Walau bagaimanapun, kajian ini menunjukkan bahawa kulat marin yang dipencil daripada *A. alba* mempunyai potensi sebagai bahan bioaktif dan dengan itu kajian selanjutnya perlu dijalankan untuk mengenal pasti bahan bioaktif tersebut.