

UNIVERSITY OF MALAYA  
FACULTY OF SCIENCE  
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KUALA LUMPUR

ANALISIS KUALITI DAN KANTITI

FABRIK GABUNG DAN TEKNOLOGI  
UNIVERSITI MALAYSIA TERENGGANU  
2007



ANTIBACTERIAL ACTIVITIES OF EXCLUSIVE MANGROVE; *Bruguiera gymnorrhica*, *B. sexangula*, *Ceriops decantra* AND *Rhizophora apiculata* (RHIZOPHORACEAE) AND *Acrosticum aureum* (PTERIDACEAE)

By  
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Research Report submitted in partial fulfillment of  
the requirement for the degree of  
Bachelor of Science (Biological Sciences)

Department of Biological Sciences  
Faculty of Science and Technology  
UNIVERSITI MALAYSIA TERENGGANU

2007

1100051145

This project should be cited as:

Mohd Sharif, M. S. 2007. Antibacterial activities of exclusive mangrove (Pteridaceae and Rhizophoraceae), Undergraduate thesis, Bachelor of Science (Biological Science), Faculty of Science and Technology, Universiti Malaysia Terengganu. Terengganu. 48pp

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PROJEK PENYELIDIKAN I DAN II  
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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: ANTIBACTERIAL ACTIVITY OF EXCLUSIVE MANGROVE; *Bruguiera Gymnorrhica*, *B. Sexangula*, *Ceriops Decantra* And *Rhizophora apiculata* (RHIZOPHORACEAE) And *Acrostichum Aureum* (PTERIDACEAE) oleh MUHAMMAD SHARIR BIN MOHD SHARIF, no. matrik: UK10613 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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## ACKNOWLEDGMENT

First and foremost, the greatest thanks to Almighty Allah S.W.T for His compassion and clemency, I have completed my project report although many obstacles that I had to go through.

I wish to express my gratitude and appreciation to Dr. Aziz Ahmad who is my supervisor and for his guidance, supervision, assistance and advice on this project. I have learned many new things through his guidance and dedication in this project.

My gratitude is also to Tuan Haji Razali Salam for his guidance in collecting my plants samples at Setiu wetland and around Universiti Malaysia Terengganu (UMT). I would like to express my sincere thanks to Pn. Che Ku Naiza, Biological Science Officer for her cooperation, Pn. Zarina and all the lab assistance that helping me in this project.

I would like to thank my lovely parents Pn. Rahmah Jaafpar and En. Mohd Sharif Mahmood who had given me much support and encouragement in completing this project. Thanks to all my friends especially Syahmi Mokhtar and Azuan Salikan who helped me finish this project and lastly, not forgotten to convey my gratitude to my beloved Miss Nurul Ain Mohd Amin for helping and supporting me so much along doing this project.

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## LIST OF ABBREVIATIONS

$\mu\text{g}$	-	microgram
g	-	gram
Mg	-	milligram
mm	-	millimeter
nm	-	nanometer
ml	-	milliliter
$\mu\text{l}$	-	microliter
v/v	-	volume per volume
%	-	percentage
$^{\circ}\text{C}$	-	degree Celsius
O.D	-	Optical Density
CFU/ml	-	colony forming per milliliter
MH	-	Mueller-Hinton

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## ABSTRACT

The important of this study is to discover a novel antibiotic for pharmaceuticals from few species of exclusive mangroves. The aims of this study are to determine the mangrove plants that having antibacterial activity, determine the minimal inhibitory concentration (MIC) of extract and to determine the plants which highest antibacterial activities. The methanolic extract of old leaves from one species of Pteridaceae; *Acrosticum aureum* and four species of Rhizophoraceae; *Bruguiera gymnorhiza*, *B. sexangula*, *Ceriops decantra* and *Rhizophora apiculata* collected from Setiu Wetland and around Universiti Malaysia Terengganu were tested for antibacterial activities against seven pathogenic bacteria which are three Gram positive; *Staphylococcus aureus*, *Micrococcus sp* and *Bacillus subtilis* and four Gram negative; *Pseudomonas aeruginosa*, *Escherichia coli*, *Klebsiella pneumonia* and *Vibrio fischeri*. The disc diffusion test was used in this project. The methanolic extract of all the species in Rhizophoraceae family showed the antibacterial activity against all the Gram positive bacteria and no antibacterial activity in the Gram negative bacteria. *C. decantra* showed the lowest MIC value on *B. subtilis* at 100µg/ml and was the only plant with the most broad spectrum activity and showed the highest antibacterial activities against all the bacteria tested. It can be concluded that the plants with the lowest MIC value could be a good source of bioactive components with antibacterial potency.

**Aktiviti Antibakteria ke atas Pokok Bakau "Exclusive"; *Bruguiera Gymnorrhica*, *B. Sexangula*, *Ceriops Decantra* dan *Rhizophora Apiculata* (Rhizophoraceae) dan *Acrosticum Aureum* (Pteridaceae).**

**ABSTRAK**

Kepentingan kajian ini ialah untuk mencari antibiotik baru dalam perubatan daripada pokok bakau. Tujuan kajian ini adalah untuk mengenalpasti pokok bakau yang mempunyai aktiviti antibakteria, menentukan kepekatan perencatan minimum (MIC) dan untuk menentukan pokok yang mempunyai aktiviti antibakteria yang tertinggi. Ekstrak methanol daun tua daripada satu spesies dalam Pteridaceae; *Acrosticum aureum* dan empat spesies dalam Rhizophoraceae; *Bruguiera gymnorrhica*, *B. sexangula*, *Ceriops decantra* dan *Rhizophora apiculata* telah didapati di "Setiu Wetland" dan di sekeliling Universiti Malaysia Terangganu, telah diuji untuk aktiviti antibakteria menentang tujuh jenis bacteria yang menyebabkan penyakit iaitu tiga daripada bacteria Gram positive; *Staphylococcus aureus*, *Micrococcus sp* dan *Bacillus subtilis* dan empat bacteria Gram negative; *Pseudomonas aeruginosa*, *Escherichia coli*, *Klebsiella pneumonia* dan *Vibrio fischeri*. Ujian Penyerapan Cakera telah digunakan dalam projek ini. Ekstrak methanol daripada kesemua empat spesies dalam famili Rhizophoraceae telah menunjukkan aktiviti antibakteria dalam kesemua bacteria Gram positive dan tiada aktiviti antibakteria pada Gram negative. *C. decantra* menunjukkan nilai MIC yang terendah iaitu 100µg/ml dan merupakan spesies yang menunjukkan aktiviti paling banyak dan menunjukkan aktiviti antibakteria yang tertinggi terhadap semua bacteria. Kesimpulannya, tumbuhan yang menunjukkan nilai MIC yang terendah, mempunyai kandungan bioaktif yang baik dan mempunyai potensi sebagai antibakteria.