ANTIBACTERIAL ACTIVITIES OF TBW EXCLUSIVE MANGROVE SPECIES; *Avicennia alba*, *A. lanata*, *Sonneratia ovata*, *S. caseolaris*, *Acanthus ilicifolius* and *Heritiera littoralis*

MUHAMAD AZUAN BIN SALIKAN

FAKULTI SAINS DAN TEKNOLOGI
UNIVERSITI MALAYSIA TERENGGANU
2007

ANTIBACTERIAL ACTIVITIES OF FEW EXCLUSIVE MANGROVE SPECIES; *Avicennia alba, A. lanata, Sonneratia ovata, S. caseolaris, Acanthus ilisifolius* and *Heritera littoralis*

By

Muhamad Azuan Salikan

Research Report submitted in partial fulfillment of
the requirements for the degree of
Bachelor of Sciences (Biological Sciences)

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

This project should be cited as:

Salikan, M.A. 2007. Antibacterial activities of few exclusive mangrove species; *Avicennia alba, A. lanata, Sonneratia ovata, S. caseolaris, Acanthus ilisifolius* and *Heritera littoralis.* Undergraduate thesis, Bachelor of Science (Biological Science), Faculty of Science and Technology, Universiti Malaysia Terengganu. 46 pp.

JABATAN SAINS BIOLOGI
FAKULTI SAINS DAN TEKNOLOGI
UNIVERSITI MALAYSIA TERENGGANU

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

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **ANTIBACTERIAL ACTIVITIES OF FEW EXCLUSIVE MANGROVE SPECIES; *Avicennia alba, A. lanata, Sonneratia ovata, S. caseolaris, Acanthus ilisifolius* and *Heritera littoralis*.** oleh **MUHAMAD AZUAN BIN SALIKAN,** no. matrik: **UK10418** 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. AZIZ BIN AHMAD

Cop Rasmi: **DR. AZIZ AHMAD**
Pensyarah
Jabatan Sains Biologi
Fakulti Sains dan Teknologi
Universiti Malaysia Terengganu
21030 Kuala Terengganu.

Tarikh: .....

.....

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: 17/5/2024

ACKNOWLEDGEMENT

From the bottom of my heart, I am grateful to Almighty Allah S.W.T for giving me strength and for His compassion and clemency, I have finally completed my project.

I wish to convey my highest gratitude and appreciation to my supervisor, Dr. Aziz bin Ahmad for his time, guidance, assistance and passionate advice on this project. May Allah S.W.T bless you for your sincerity and kindness.

Thanks to my lovely parents for given me so much support and encouragement in completing this project. I would like to thank Tuan Haji Razali Salam, Cik Norazlina Aziz and all laboratory assistance for their help and cooperation during my progress in this project.

I would like take this opportunity to convey my special appreciation to Muhammad Sharir Mohd Sharif and Syahmi Mokhtar for sharing a tough moments together with full of patience. Last but not least to my supportive housemates for accompany me to go through all the way forward.

Once again, thank you so much to all who give their hands either directly or indirectly in order to help me finish this project. Thank you so much.

TABLE OF CONTENT

LIST OF TABLES

LIST OF PLATES

LIST OF APPENDICES

LIST OF ABBREVIATIONS/SYMBOLS

Kg	Kilogram
g	gram
mg	miligram
µg	microgram
cm	centimeter
mm	milimeter
l	liter
ml	mililiter
%	percentage
°C	degree Celsius
$CFUml^{-1}$	colony forming per mililiter
NA	nutrient broth
ANOVA	Analysis of Variance
DMSO	dimethyl sulfoxide

ABSTRACT

Antibacterial activities of methanol crude extract of six exclusive mangroves species were investigated to determine the antibacterial activity of few exclusive mangroves, the minimal inhibitory concentrations for antibacterial activities and the plant with highest antibacterial activity. These studies were crucial to find new sources of antibacterial and explore new dimension of mangrove in pharmaceutical field. The extracts of *Avicennia alba, A. lanata, Sonneratia ovata, S. caseolaris, Acanthus ilisifolius* and *Heritera littoralis* were tested against seven pathogenic bacterial which are three Gram positive bacteria; *Staphylococcus aureus, Bacillus subtilis, Micrococcus sp.,* and four Gram negative bacteria; *Escherichia coli, Pseudomonas aeruginosa, Klebsiella pneumoniae* and *Vibrio fischeri* by using disk diffusion method. *Sonneratia caseolaris, S. ovata* and *Heritera littoralis* were shows antibacterial activities against *Staphylococcus aureus, Micrococcus sp.* and *Bacillus subtilis.* No activities were shown against Gram negative bacteria. Among the mangrove plants, *S. caseolaris* was inhibit the greatest antibacterial activity. The minimal inhibition concentration (MIC) of *S. caseolaris* was 25, 100 and 150µg/ml against *S. aureus, B. subtilis* and *Micrococcus sp.,* respectively. This study revealed the *S. caseolaris* is a potential candidate for production of antibiotic against gram positive bacteria. Further study is required to isolate and characterized the respective compounds.