





ANTIBACTERIAL ACTIVITIES ON EXCLUSIVE MANGROVES; *Nypa fruticans*,  
*Lumnitzera racemosa*, *Xylocarpus granatum*, *Intsia bijuga*, *Excoecaria agallocha* and  
*Aegiceras corniculatum*.

By

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PROJEK PENYELIDIKAN I DAN II  
RESEARCH REPORT VERIFICATION**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **ANTIBACTERIAL ACTIVITIES OF EXCLUSIVE MANGROVES; *Nypa fruticans*, *Aegiceras corniculatum*, *Intsia Bijuga*, *Xylocarpus granatum*, *Excoecaria agallocha* and *Lumnitzera racemosa*** oleh **SYAHMI BIN MOKHTAR**, no. matrik: **UK 10673** 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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## LIST OF ABBREVIATION/SYMBOLS

Kg	Kilogram
g	gram
mg	miligram
µg	microgram
cm	centimeter
mm	milimeter
l	liter
ml	mililiter
%	percentage
°C	degree Celsius
CFUml <sup>-1</sup>	colony forming per mililiter
NA	nutrient broth
A	Absorbance
Nm	nanometer
ANOVA	Analysis of Variance
DMSO	dimethyl sulfoxide

## ABSTRACT

These findings were crucial to explore new sources of antibacterial and explore new dimension of mangrove in pharmaceutical field. This study carried out to determine the antibacterial activity of exclusive mangroves, the minimal inhibitory concentration for antibacterial activities and the plant with highest antibacterial activity. The old leaves from *Nypa fruticans* and *Lumnitzera racemosa* was collected from Universiti Malaysia Terengganu, meanwhile *Xylocarpus granatum*, *Aegiceras corniculatum*, *Excoecaria agallocha* and *Intsia bijuga* were obtained from Setiu Wetland, Terengganu. The crude was extracted using methanol as the solvent. The antibacterial susceptibility tested was done by disc diffusion tested against three Gram positive bacteria: *Staphylococcus aureus* and *Micrococcus* sp., *Bacillus subtilis* and four Gram negative bacteria: *Pseudomonas aeruginosa*, *Escherichia coli*, *Vibrio fischeri* and *Klebsiella pneumoniae*. *N. fruticans*, *A. corniculatum*, *I. bijuga* and *E. agallocha* were shown an antibacterial activity against three Gram-positive bacteria. No antibacterial activity shown on Gram-negative bacteria. The minimum inhibition concentrations are ranged from 50µg/ml-300µg/ml. The plants with highest antibacterial activities were *N. fructians* and *E. agallocha*. The results of this study call for further research study on the pharmacological potentials of the plants.

## ABSTRAK

### **Aktiviti Antibakteria Bakau Eksklusif; *Aegiceras corniculatum*, *Lumnitzera racemosa*, *Xylocarpus granatum*, *Intsia bijuga*, *Excoecaria agallocha* and *Nypa fruticans*.**

Kajian ini amat penting untuk meneroka sumber antibakteria yang baru di samping membuka dimensi baru terhadap peranan bakau dalam bidang farmaseutikal. Penyelidikan ini bertujuan untuk menyaring aktiviti antibakteria oleh bakau eksklusif, kepekatan perencatan minima dan pokok dengan aktiviti antibakteria tertinggi. Penyaringan aktiviti antibakteria oleh ekstrak pokok bakau eksklusif telah dikaji. Dedaun tua *Nypa fruticans* dan *Lumnitzera racemosa* telah didapati dari Universiti Malaysia Terengganu, manakala *Xylocarpus granatum*, *Aegiceras corniculatum*, *Excoecaria agallocha* dan *Intsia bijuga* diperolehi dari Setiu Wetland, Terengganu. Pengekstrakan sampel menggunakan methanol sebagai pelarut. Ujian penyaringan antibakteria dijalankan menggunakan ujian cakera penyebaran ke atas tiga bakteria Gram-positif: *Staphylococcus aureus*, *Micrococcus sp* dan *Bacillus subtilis* dan empat Gram-negatif: *Pseudomonas aeruginosa*, *Escherichia coli*, *Vibrio fischeri* and *Klebsiella pneumonia*. *N. fruticans*, *A. corniculatum*, *I. bijuga* dan *E. agallocha* menunjukkan aktiviti antibakteria ke atas ketiga-tiga bakteria Gram-positif. Tiada aktiviti antibakteria dikesan ke atas bakteria Gram-negatif. Kepekatan perencatan minimum (MIC) dalam lingkungan 50 $\mu$ g/ml-300 $\mu$ g/ml. Aktiviti antibakteria tertinggi ditunjukkan oleh *N. fructians* dan *E. agallocha*. Penemuan ini memerlukan kajian selanjutnya terhadap potensi farmakologi pokok terbabit.