

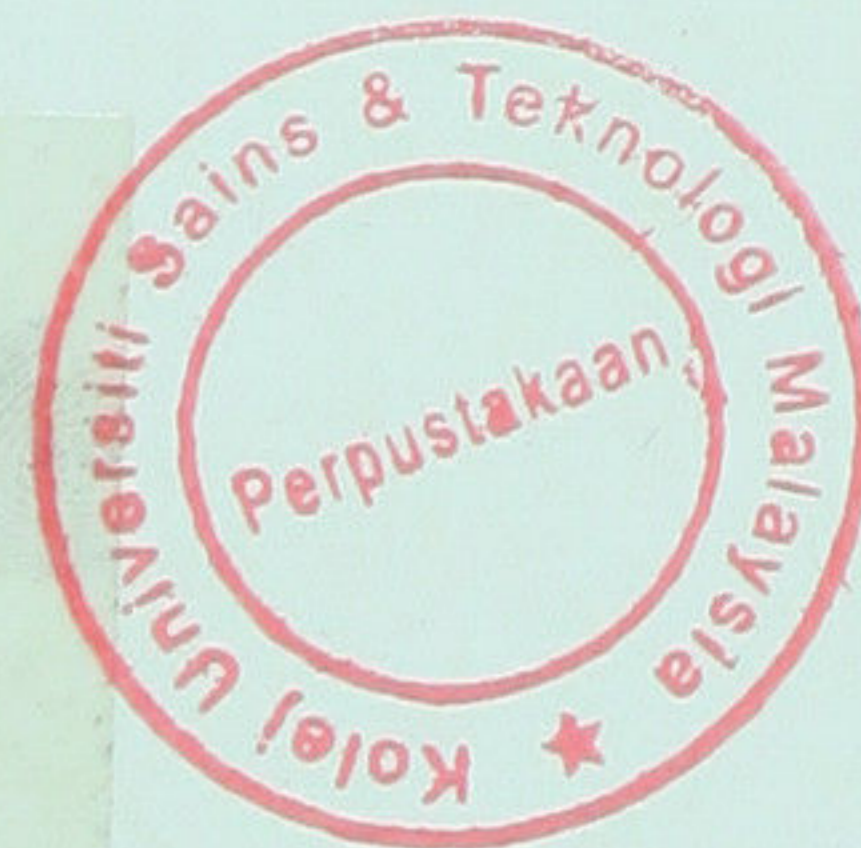
CRUDE EXTRACT FROM SEaweEDS (*Halimeda opuntia*,
Gracilaria sp. AND *Gracilaria changii*)
AND ITS ANTIMICROBIAL PROPERTIES

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MALAYSIA
(KUSTEM)
2003

c/n 1634

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Crude extract from seaweeds (Halimeda opuntia, Gracilaria changii and Gracilaria sp.) and its antimicrobial properties / Welter Chundang anak Rijie.

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PERPUSTAKAAN KOLEJ UNIVERSITI SAINS & TEKNOLOGI MALAYSIA (KUSTEM)			
Pengarang WELTER CHUNDANG		No. Panggilan LP 80	
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**CRUDE EXTRACT FROM SEaweEDS (*Halimeda opuntia*, *Gracilaria changii*
AND *Gracilaria* sp.) AND ITS ANTIMICROBIAL PROPERTIES**

BY:

WELLTER CHUNDANG ANAK RIJIE

This project report is submitted in partial fulfillment of the requirement for the
Bachelor of Applied Science (Biodiversity Conservation and Management)

Department of Biological Sciences

Faculty of Science and Technology

Kolej Universiti Sains dan Teknologi Malaysia

KUSTEM

2003

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This project report should be cited as:

Wellter, CR. 2003. Crude extract from seaweeds (*Halimeda opuntia*, *Gracilaria* sp. And *Gracilaria changii*) and its antimicrobial properties. Report of Final Year Academic Project, Bachelor of Applied Science (Hons) Conservation and Management of Biodiversity), Faculty of Science and Technology, Kolej Universiti Sains dan Teknologi Malaysia. 54p.

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This report I dedicated it to my beloved,

"To Dad, Mom, Aranny, Patricia, Stephanie and Cassidy. You all have been given a great and endless support and love to me. I love you all with all my heart and thanks for every thing. I really appreciate it. I love you all".

Welter Chundang Anak R ijie

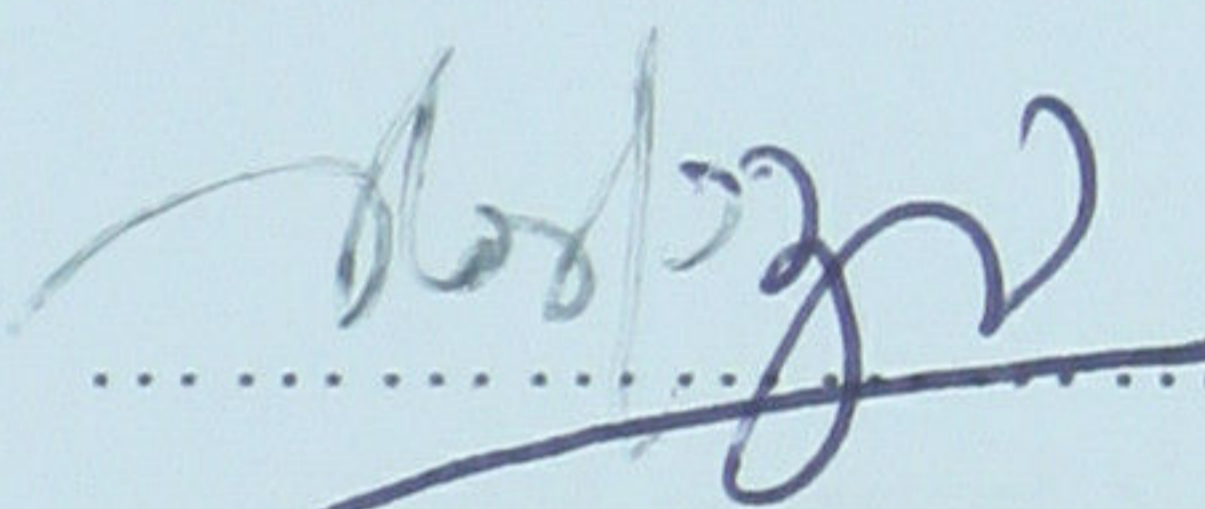
PUSAT PEMBELAJARAN DIGITAL SULTAN NUR ZAHIRAH

PENGAKUAN DAN PENGESAHAN LAPORAN

PENYELIDIKAN ILMIAH TAHUN AKHIR

Adalah ini diakui dan disahkan bahawa laporan penyelidikan ilmiah tahun akhir bertajuk **Drude Extract From Seaweeds (*Halimeda opuntia*, *Gracilaria changii* and *Gracilaria* sp.) and Its Antimicrobial Properties**, oleh **Wellter Chundang Anak Rijie**, nombor matrik **UK 4700** 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 Pemuliharaan dan Pengurusan Biodiversiti**, Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

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ACKNOWLEDGEMENTS

Before go any further, I would like to pray and thankful to God, because without joyful and bless I will not be here to complete my project. Thanks God.

First of all, big thanks I would like to express to my supervisor, Miss Noraznawati Bt. Ismail. For all her endless advise, patience, guidance, assistance and constructive comments throughout the course of this project. Without her support and help it is hard for me to complete this project.

I also would like to express my thanks and love to my all family. Thanks for all yours support, patient and endless love that you all gave to me. I really appreciate it and I love you all forever.

A special thanks to, Dr. Siti Aishah for her advice and help in my project. My big thanks also to Jat, Hasniah, Anis and Rustan, for all yours advice and help for me to complete my project. My special thanks to laboratory assistants, especially to Mr. Mohamad Embong. This thanks also I would like to dedicate to my course mates and friends. Thanks for all yours endless support and help.

Really big thanks to all people involved in my final year project that been listed or miss listed here. I really appreciate all yours support and help. Thank you very much and may God bless you. I love you all.

ABSTRACT

Marine algae are recognized as potential sources of bioactive natural products. A preliminary screening on the antimicrobial activity of these product from algae (division; Rhodophyta and Chlorophyta), collected from three different sites, that is Pulau Redang, Terengganu; Pulau Ketam, Selangor and Sungai Pulai, Johor was carried out. Methanol extracts of *Halimeda opuntia*, *Gracilaria* sp. and *Gracilaria changii*; and chloroform extracts of *H. opuntia* and *Gracilaria* sp. were screened against selected microbes. Methanol extracts of *H. opuntia* and *G. changii* showed an activity against gram-positive bacteria (wild *Bacillus subtilis*, mutant *B. subtilis* and *Klebsila pneumonia*), which gave an inhibition size between 7 to 8 mm. Chloroform extract of *Gracilaria* sp. showed an activity against gram-positive bacteria (wild *B. subtilis*, mutant *B. subtilis*, *K. pneumonia* and *Aeromonas* sp. that is harmful to some fishes), which give an inhibition size between 7 to 8 mm. The Minimum Inhibition Concentration (MIC) value for this study is 100 mgml⁻¹. Meanwhile, methanol extract of *Gracilaria* sp. and chloroform extract of *H. opuntia* displayed no inhibition zones to any of the selected microbes. Out of five extracts screened, three were indicated with activity against some tested microbes. It is concluded that seaweeds that are used in this study contained bioactive compound, which showed positive activity against some tested microbes.

ABSTRAK

Alga marin telah dikenal pasti mempunyai potensi sebagai sumber produk bioaktif semulajadi. Penyaringan aktiviti antimikroorganisma melibatkan alga marin dari divisi Rhodophyta dan Chlorophyta yang dikutip dari tiga lokasi yang berlainan iaitu dari Pulau Redang, Terengganu; Pulau Ketam, Selangor dan Sungai Pulai, Johor. Ekstrak *Halimeda opuntia*, *Gracilaria changii* dan *Gracilaria* sp. menggunakan pelarut metanol dan *H. opuntia* dan *Gracilaria* sp. menggunakan pelarut kloroform disaringkan kepada mikroorganisma yang terpilih. Ekstrak *H. opuntia* dan *G. changii* yang menggunakan pelarut metanol didapati memberikan aktiviti antimikrob terhadap bakteria gram positif (*Bacillus subtilis* liar, *B. subtilis* mutan dan *K. pneumonia*), yang memberikan saiz perencatan diantara 7 ke 8 mm. Ekstrak *Gracilaria* sp. yang menggunakan pelarut kloroform didapati memberikan kesan antimikrob terhadap bakteria gram positif (*B. subtilis* liar, *B. subtilis* mutan, *K. pneumonia* dan *Aeromonas* sp. yang boleh membahayakan beberapa spesis ikan), yang memberikan saiz perencatan diantara 7 ke 8 mm. Nilai MIC bagi semua ekstrak yang menunjukkan aktiviti pada kepekatan 100 mgml⁻¹. Manakala ekstrak *H. opuntia* yang menggunakan pelarut chloroform dan *Gracilaria* sp. yang menggunakan pelarut metanol tidak memberikan kesan antimikrob terhadap mana-mana mikroorganisma yang diuji. Daripada lima ekstrak yang disaring, tiga daripadanya didapati mempunyai aktiviti terhadap beberapa jenis mikroorganisma yang diuji. Dengan ini dapat disimpulkan bahawa rumpai laut yang digunakan dalam kajian ini mengandungi sebatian bioaktif, kerana terdapat aktiviti terhadap beberapa jenis bakteria yang diuji.