SCREENING OF BIOACTIVE COMPOUNDS FROM BACTERIA ASSOCIATED WITH MARINE AND AQUATIC ORGANISM

ANN FARRINA ZULKEFLI

FAKULTI SAINS DAN TEKNOLOGI
UNIVERSITI MALAYSIA TERENGGANU

2008

Screening of bioactive compounds from bacteria associated with marine and aquatic organism. / Aini Farzana Zulkefli.

SCREENING OF BIOACTIVE COMPOUNDS FROM BACTERIA ASSOCIATED WITH MARINE AND AQUATIC ORGANISM

By
Aini Farzana Binti Zulkefli

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

DEPARTMENT OF BIOLOGICAL SCIENCES
FACULTY OF SCIENCE AND TECHNOLOGY
UNIVERSITI MALAYSIA TERENGGANU
2008

This project should be cited as:

Aini Farzana, Z., 2008. Screening of bioactive compounds from bacteria associated with marine and aquatic organism. Undergraduate research report Bachelor of Science (Biological Sciences), Faculty of Science and Technology, University Malaysia Terengganu. 32pp.

JABATAN SAINS BIOLOGI
FAKULTI SAINS DAN TEKNOLOGI
UNIVERSITI MALAYSIA TERENGGANU

PENGAKUAN DAN PENGESAHAN LAPORAN PITA I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **SCREENING OF BIOACTIVE COMPOUNDS FROM BACTERIA ASSOCIATED WITH MARINE AND AQUATIC ORGANISM** oleh **AINI FARZANA BINTI ZULKEFLI**, No. Matrik: **UK12396** 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, UMT.

Disahkan oleh:

.....

Penyelia Utama

Nama: **DR. NORAZNAWATI ISMAIL**

Cop Rasmi: DR. NORAZNAWATI BINTI ISMAIL
Pensyarah
Jabatan Sains Biologi
Fakulti Sains dan Teknologi
Universiti Malaysia Terengganu
21030 Kuala Terengganu

Tarikh: 21/5/08

.....

Ketua Jabatan Sains Biologi

Nama: **PROF. MADYA DR. AZIZ 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 **Screening of Bioactive Compounds from Bacteria Associated with Marine and Aquatic Organism** is the result of my own research except as cited in the references.

Signature :.....

Name : Aini Farzana Binti Zulkefli

Matric. No : UK12396

Date : 19th May 2008

ACKNOWLEDGEMENTS

Assalamualaikum w.b.t

Special thanks go to my beloved supervisor Dr. Noraznawati Ismail for her smooth guidance, warm support and her valuable time to me from the beginning until in the end of this project.

In this opportunity, I would like to thank to the Science Officer, Miss Norazlina, and all lab assistants, Madam Ku Naiza, Madam Mahidawati, Mr. Abdul Ridzuwan, Madam Fatimah and Mr. Mazrul for their guidance during this project.

All my colleagues, Biological Sciences students 2005-2008, group members and also master students, thank you for your support and guidance.

Last but not least, thank you to my beloved family.

ABSTRACT

Searching for the bioactive compounds from the natural sources are actively conducted by many researches worldwide in order to produce antimicrobial, antitumor and any others beneficial compounds. Therefore, the aim of this study is to screen antimicrobial activity from bacteria associated with marine and aquatic organisms. The screening of the compounds was conducted by using two types of cultivation methods; "Air Membrane Surface" and Planktonic Suspension Shake Flask" culture. The Cell Free Supernatant from these two types of cultivation methods was filtered using filter syringe and impregnated onto the discs to undergo disc diffusion test. There were 196 bacteria isolates have been cultivated, 58 of them were collected from sponges and 138 were from freshwater fish. The results showed that 14 bacteria isolates from freshwater fish samples using AMS culture were screened with inhibition zone vary from 6 to 16 diameters. Based on the results, factors might involve in the production of bioactive compounds was the growth condition, especially the composition of the culture medium. It was also proven that the AMS cultivation method seems the best approach to produce bioactive compounds compared to Planktonic Suspension Shake Flask.

ABSTRAK

Pencarian sebatian bioaktif daripada sumber semulajadi sedang dijalankan dengan aktif sekali dikalangan penyelidik-penyelidik untuk dijadikan sebatian anti mikrob, anti tumor dan sebatian-sebatian berharga yang lain. Oleh itu, tujuan kajian ini dilakukan ialah untuk mendapakan sebatian anti mikrob daripada bakteria yang terdapat pada span dan ikan air tawar serta penyaringan dan pengkelasan sebatian anti mikro tersebut. Perolehan sebatian ini telah digunakan menggunakan dua kaedah iaitu pengkulturan "Air Membrane Surface" (AMS) dan pengkulturan "Planktonic Suspension Shake Flask". Supernatan bebas sel daripada dua teknik pengkulturan ini telah ditapis menggunakan penapis picagari dan dimuatkan keatas cakera kertas untuk menjalankan ujian penyerapan cakera. Secara keseluruhannya sebanyak 196 sampel telah dikultur, 58 daripadanya diperolah daripada sampel span dan 138 lagi daripada sampel ikan air tawar. Keputusan menunjukkan sebanyak 14 sampel daripada sampel ikan air tawar dengan menggunakan pengkulturan "AMS" telah disaring dengan menunjukkan aktiviti yang berbeza dari 6 hingga 16 diameter. Berdasarkan keputusan yang diperolehi, faktor yang mungkin terlibat dalam penghasilan sebatian bioaktif ini ialah keadaan petumbuhan terutamanya kandungan atau komposisi medium yang digunakan. Ia juga telah dibuktikan bahawa teknik pengkulturan "AMS" adalah teknik yang terbaik untuk menghasilkan sebatian bioaktif berbanding dengan Planktonic Suspension Shake Flask.