IDENTIFICATION AND CHARACTERIZATION OF BACTERIA FROM FRESHWATER FISH, *Rasbora rotura*

HAIRANI BINTI IBRAHIM

FAKULTI SAINS DAN TEKNOLOGI
UNIVERSITI MALAYSIA TERENGGANU

2008

c/N 5807

1100057809

Perpustakaan Sultanah Nur Zahirah (UMT)
Universiti Malaysia Terengganu

LP 13 FST 1 2008

1100057809

Identification and characterization of bacteria from freshwater fish, Rasbora notura. / Hairani Ibrahim.

PERPUSTAKAAN SULTANAH NUR ZAHIRAH
UNIVERSITI MALAYSIA TERENGGANU (UMT)
21030 KUALA TERENGGANU

1100057809

Lihat sebelah

HAK MILIK
PERPUSTAKAAN SULTANAH NUR ZAHIRAH UMT

IDENTIFICATION AND CHARACTERIZATION OF BACTERIA FROM FRESHWATER FISH, *Rasbora notura*

By
Hairani bt Ibrahim

A thesis submitted in partial fulfillment
of the requirements for the award of the degree of
Bachelor of Science (Biological Sciences)

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

1100057809

This project should be cited as:

Hairani, I. 2008. Identification and Characterization of Bacteria from Freshwater Fish, *R. notura*. Undergraduate thesis, Bachelor of Sciences in Biological Sciences, Faculty of Science and Technology, Universiti Malaysia Terengganu, Terengganu, 64p.

No part of this project report may be produced by any mechanical, photographic or electronic process or in the form of phonographic recording, nor may be it be stored in a retrieval system, transmitted or otherwise copied for public or private use, without written permission from the author and the supervisor (s) of the project.

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: IDENTIFICATION AND CHARACTERIZATION OF BACTERIA FROM FRESHWATER FISH, *Rasbora notura* oleh HAIRANI BINTI IBRAHIM, No. Matrik UK11331 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:

.....
Penyelia Utama

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

Cop Rasmi:

Tarikh: 21/5/08

.....
Ketua Jabatan Sains Biologi

Nama: PROF. MADYA DR. AZIZ BIN AHMAD
Ketua
Jabatan Sains Biologi
Fakulti Sains dan Teknologi
Universiti Malaysia Terengganu
21030 Kuala Terengganu

Cop Rasmi:

15 JUN 2008

Tarikh:.....

DECLARATION

I hereby declare that this thesis entitled Identification and Characterization of Bacteria from Freshwater Fish, *Rasbora notura* is the result of my own research except as cited in the references.

Signature : .....
Name : Hairani bt Ibrahim
Matrix No : UK11331
Date : 11/05/08

ACKNOWLEDGEMENT

First and foremost, I would like to thank Allah The Almighty for His blessings; I acquired the spiritual strength to complete this thesis.

First of all, I would like to thank my respective project supervisor, Dr. Noraznawati Ismail and her research assistance Mr. Loqman for their patience, guidance and encouragement. Without them I would not able to finish up my final year project successfully. Thank you very much.

I sincerely thank to lectures and all friends especially to group member Nuraidah, Nor azura, Humairah, Maizura, Sena, Izyan, Huda, Azie, Firdaus and Azan for giving me full support and advice throughout this project

My best regards to my beloved parents Mrs. Salma bt. Othman and Mr. Ibrahim b. Bakar and also family for their patience and comprehend on my situation. Their sacrifice and tolerance for these two semesters was invaluable and meaningful to me.

Last but not least thank you to Biological Sciences Department and all laboratory assistances especially to microbiology laboratory assistance for their guidance, cooperation and giving me more than just a lab space but the permission to use all the facilities in order to complete my project.

Perpustakaan Sultanah Nur Zahirah (UMT)
Universiti Malaysia Terengganu

ABSTRACT

Some of the pathogenic bacteria in freshwater fish can cause disease in human hence the identification of bacteria from fish will help to prevent contamination in human. Bacteria from fish also could be a potential indicator for environmental pollution and play important roles in the maintenance of water quality. The aims of this study are to isolate the bacteria from freshwater fish, *Rasbora notura* and to identify and characterize the bacteria isolates. Gram-staining and seven biochemical tests were carried out in these study including oxidase, catalase, MR, VP, starch hydrolysis, TSI and SIM. 91 bacteria isolates were successfully isolated from *R. notura* but only 14 different species of bacteria isolates have been identified up to genus and species level which were *Megasphaera* sp., *Veillonella* sp., *Aeromonas* sp., *Bacillus* sp., *Neisseria* sp., *Staphylococcus* sp., *Micrococcus* sp., *Pseudomonas* sp., *Corynebacterium kutsceri, Corynebacterium xerosis, Enterbacter aerogenes, Enterbacter intermedius, Klebsiella pneumoniae* and *Serratia liquefaciens.* Gram-negative bacteria were dominant in *R. notura* and in agreement with previous study which almost 90 percent of Gram-negative bacteria were dominant in freshwater animals. The dominance of *Megasphaera* sp. and *Klebsiella pneumoniae* in this study indicates that fecal contamination was occurring in Paya Sungai Udang.

Pengecaman dan Pengcirian Bakteria daripada Ikan Air Tawar,

Rasbora notura

ABSTRAK

Sesetengah daripada patogenik bakteria dalam ikan air tawar boleh mendatangkan penyakit kepada manusia, oleh itu mengenalpasti bakteria daripada ikan akan membantu untuk menghalang jangkitan pada manusia. Bakteria daripada ikan juga boleh menjadi petunjuk kepada pencemaran alam sekitar dan memainkan peranan penting dalam penyelenggaraan kualiti air. Tujuan kajian ini dijalankan adalah untuk memencilkan bakteria daripada ikan air tawar, *Rasbora notura* dan untuk mengenalpasti dan mencirikan pemencilan bakteria. Pewarnaan-Gram and ujian biokimia telah dijalankan di dalam kajian ini termasuklah oksidase, katalase, MR, VP, hidrolisis kanji, TSI dan SIM. 91 pencilan bakteria telah berjaya di pencilkan daripada *R. notura* tetapi hanya 14 spesies pencilan bakteria sahaja yang dapat dikenalpasti sehingga ke tahap genus dan spesies seperti *Megasphaera* sp., *Veillonella* sp., *Aeromonas* sp., *Bacillus* sp., *Neisseria* sp., *Staphylococcus* sp., *Micrococcus* sp., *Pseudomonas* sp., *Corynebacterium kutsceri, Corynebacterium xerosis, Enterbacter aerogenes, Enterbacter intermedius, Klebsiella pneumoniae* dan *Serratia liquefaciens.* Bakteria Gram-negatif merupakan dominan di dalam *R. notura* dan selaras dengan kajian sebelum ini iaitu hampir 90 peratus bakteria Gram-negatif dominan di dalam haiwan air tawar. Penguasaan bakteria *Megasphaera* sp. dan *Klebsiella pneumoniae* dalam kajian ini menunjukkan bahawa pencemaran bahan buangan (tinja) sedang berlaku di kawasan Paya Sungai Udang.