

IDENTIFICATION AND CHARACTERIZATION OF BACTERIA  
FROM FRESHWATER FISH (*Rasbora bankanensis*)

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**IDENTIFICATION AND CHARACTERIZATION OF BACTERIA FROM  
FRESHWATER FISH (*Rasbora bankanensis*)**

By

Nor Azura Binti Md Nor

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  
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## 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 bankanensis*)** oleh **NOR AZURA BINTI MD NOR**, no. matric: **UK12815** 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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## DECLARATION

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

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Date : 22 May 2008

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## ABSTRACT

The knowledge of isolation and identification of bacteria from aquatic animal and aquatic environment is expanding at a rapid rate. Recent study indicated that there has been great interest in studying the occurrences and distribution of the various bacterial pollution indicators in water and the associated environment *Rasbora bankanensis* is fresh water fish that caught at the Paya Sungai Udang, Kuala Berang, Hulu Terengganu. Paya Sungai Udang is one of the polluted rivers at this area. The aims of this study are to identify and characterize of bacteria isolated from *R. bankanensis*. The bacteria were isolated from two parts of the fish which were external and internal of fish body. The internal part of fish included gill and intestine. In this study, a few methods were used including isolation of bacteria, Gram-staining and micromorphology method and biochemical tests. As the results, about 103 bacteria were managed to isolate and all the bacteria were successfully identified. Result indicated that 12 genus bacteria isolated which were *Klebsiella* spp. was the most abundant bacteria that are 28%. It was because the *Klebsiella* spp. was from the family Enterobacteriaceae that have higher percentages among other bacteria. The second highest bacteria that manage to identify was *Enterobacter* spp. which was 26% and followed by *Pseudomonas* spp. 14%, *Staphylococcus* spp. 10%, *Yersinia* spp. 5%, *Serratia* spp. 4%, *Bacillus* spp. 4%, *Aeromonas* 3%, *Moraxella* spp. 2%, *Escherichia* spp. 2%, *Shigella* spp.1% and *Citrobacter* spp. 1%. Result indicated that *Klebsiella* spp. were abundance in *R. bankanensis*. Results obtained with high population of *Klebsiella* spp. as a result of polluted area of Paya Sungai Udang with faecal contaminations.



## ABSTRAK

Mengenal pasti dan menentukan ciri-ciri bacteria yang terdapat pada ikan air tawar, (*R. bankanensis*). Pengambilan ikan tersebut dijalankan di Paya Sungai Udang, Kuala Berang, Hulu Terengganu yang berdekatan dengan kawasan pelupusan sampah. Selepas pengambilan ikan, kajian diteruskan di makmal mikrobiologi. Kaedah yang dijalankan adalah pemencilan bacteria, pewarnaan bacteria, mengenal pasti ciri-ciri fizikal bacteria dan melakukan ujian biokimia ke atas semua sampel. Selepas mendapat semua keputusan ujian biokimia, penentuan nama bacteria dilakukan sehingga peringkat Genus. Sebanyak 103 bacteria diperolehi dan penamaan bacteria dikenal pasti menggunakan Bergey' Manual. Peratusan bacteria yang berjaya dikenal pasti adalah 28% *Klebsiella* spesis, 26% *Enterobacter* spesis, 14% *Pseudomonas* spesis, 10% *Staphylococcus* spesis, 5% *Yersinia* spesis, 4% *Serratia* spesis, 4% *Bacillus* spesis, 3% *Aeromonas* spesis, 2% *Moraxella* spesis, 2% *Escherichia* spesis, 1% *Shigella* spesis dan 1% *Citrobacter* spesis. Oleh itu, dapat disimpulkan bahawa ikan air tawar ini (*R. bankanensis*) tidak sesuai untuk dijadikan sebagai makanan manusia kerana telah diketahui mengandungi bacteria berbahaya yang boleh memudaratkan kesihatan. Secara keseluruhannya, projek ini telah berjaya dijalankan kerana telah menambahkan pengetahuan masyarakat setempat dan secara tidak langsung memberi sumbangan penyelidikan terbaru dalam bidang mikrobiologi.