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Isolation and identification of bacterial fauna associated with male and female of horseshoe crabs / by Nur Maizatul Idayu Othman.

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Lihat Sebelah

**ISOLATION AND IDENTIFICATION OF BACTERIAL FAUNA ASSOCIATED  
WITH MALE AND FEMALE OF HORSESHOE CRABS**

**By:  
NUR MAIZATUL IDAYU BINTI OTHMAN**

**A research report 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  
2010**



**JABATAN SAINS BIOLOGI  
FAKULTI SAINS DAN TEKNOLOGI  
UNIVERSITI MALAYSIA TERENGGANU**

**SBB/SBD 4399B  
PENGAKUAN DAN PENGESAHAN LAPORAN PITA**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: Isolation And Identification of Bacterial Fauna Associated With Male And Female of Horseshoe Crabs oleh Nur Maizatul Idayu Binti Othman no. matrik: UK15895, 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 research report entitled Isolation and Identification of Bacterial Fauna Associated with Male and Female of Horseshoe Crabs is the result of my own research except as cited in the reference.

Signature :   
Name : NUR MAIZATUL IDAYU BINTI OTHMAN  
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## **ISOLATION AND IDENTIFICATION OF BACTERIAL FAUNA ASSOCIATED WITH MALE AND FEMALE OF HORSESHOE CRABS**

### **ABSTRACT**

The data on distribution and diversity of bacteria associated with horseshoe crabs are still limited. An experiment was conducted to isolate bacterial fauna associated with different organs of male and female of horseshoe crab, to screen useful compound produced from bacteria isolates and to characterize the bacteria found on the protosoma, opisthosoma, and book gills of horseshoe crabs from the species *Tachypleus gigas* and *Carcinoscorpius rotundicauda*. Samples of horseshoe crabs were collected from Cherating, Pahang. A total of 47 Gram-negative isolates and three Gram-positive isolates were obtained and characterized. Number of isolates from *C. rotundicauda* is higher than *T. gigas*. The isolates were cultured in AMS cultivation method to mimic the real environment of the bacteria. Test that was conducted to screen the bioactive compound was Disc Diffusion Test (DDT). Results from DDT test were determined through the inhibition zones found around the disc implemented with compounds produced by bacteria. Two isolates that showed positive result in DDT were identified using biochemical tests and analysis of 16S rDNA gene fragment. No bands were appeared during agarose gel electrophoresis. The biochemical tests used were starch hydrolysis test, catalase test, oxidase test, MR-VP test, Sulfur Indole Mortility (SIM test), and Triple Sugar Iron (TSI agar test). The genus of bacteria were *Pseudomonas* sp. and *Neisseria* sp. As a conclusion, total numbers of Gram-negative bacteria are dominant compared to Gram-positive bacteria associated with horseshoe crabs..

## ISOLASI DAN IDENTIFIKASI BAKTERIA PADA BELANGKAS JANTAN DAN BETINA

### ABSTRAK

Data taburan dan diversiti bakteria pada organ belangkas masih terhad. Penelitian dilakukan untuk mengasingkan fauna bakteria yang berkaitan dengan organ-organ yang berbeza dari belangkas jantan dan betina, untuk mengasingkan sebatian bioaktif yang dihasilkan pada bakteria dan untuk mengenalpasti ciri-ciri bakteria yang ditemui pada protosoma, pada opisthosoma, dan buku insang dari spesies *Tachypleus gigas* dan *Carcinoscorpius rotundicauda*. Sampel belangkas dikumpulkan dari Cherating, Pahang. Sebanyak 47 isolat adalah bakteria Gram-negatif, dan tiga isolat adalah bakteris Gram-positif. Jumlah isolat dari *C. rotundicauda*, lebih tinggi dari jumlah isolat pada *T. gigas*. Isolat dikultur dengan kaedah penanaman AMS untuk meniru persekitaran nyata dari bakteria. Ujian yang dilakukan untuk mengasingkan sebatian bioaktif adalah Ujian Serapan Disk. Ujian Serapan Disk adalah berdasarkan penghasilan zon perencat pada strain bakteria lain. Keputusan dari Ujian Serapan Disk dikenalpasti melalui zon perencat yang ditemui di sekitar cakera yang dihasilkan oleh tindak balas sebatian yang dihasilkan oleh bakteria. Dua Isolat menunjukkan keputusan positif dalam Ujian Serapan Disk telah diidentifikasi dengan menggunakan ujian biokimia dan analisis fragmen gen 16S rDNA. Eletroforesis gel agarosa tidak menunjukkan penghasilan jalur. Ujian biokimia yang digunakan adalah ujian hidrolisis kanji, katalase, oksidase, MR-VP, ujian Sulfur Indole Mortility (SIM), dan ujian Agar Triple Sugar Iron (TSI). Genus bakteria yang dikenal pasti melalui ujian biokimia adalah *Pseudomonas* sp. dan *Neisseria* sp. Kesimpulannya, taburan bakteria Gram-negatif adalah lebih dominan berbanding bakteria Gram-positif yang terdapat pada belangkas.