

BACTERIOLOGICAL STUDY OF FRESHWATER GIANT  
PRAWN LARVAE

SITI NORHAIZA ZAMAL ABIDIN

ENGINEERING, AGROTECHNOLOGY AND FOOD SCIENCE  
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BACTERIOLOGICAL STUDY OF FRESHWATER PRAWN (*Macrobrachium  
rosenbergii*) LARVAE

By  
Siti Norhaiza binti Zainal Abidin

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the requirements for the degree of  
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**FAKULTI AGROTEKNOLOGI DAN SAINS MAKANAN  
UNIVERSITI MALAYSIA TERENGGANU**

**PENGAKUAN DAN PENGESAHAN LAPORAN  
PROJEK ILMIAH I DAN II**

Adalah ini diakui dan disahkan bahawa laporan ilmiah bertajuk:

Bacteriological study of freshwater giant prawn (*Macrobrachium rosenbergii*) larvae

oleh..... Siti Norhaiza binti Zainal Abidin ....., No.Matrik UK15281.... telah  
diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan  
kepada Jabatan Sains Perikanan dan Akuakultur..... sebagai memenuhi  
sebahagian daripada keperluan memperoleh Ijazah Sarjana Muda  
Sains Agroteknologi (Akuakultur)....., Fakulti  
Agroteknologi dan Sains Makanan, Universiti Malaysia Terengganu.

Disahkan oleh:

Penyelia Utama

Nama:

Cop Rasmi:

ASSOC. PROF. DR. NAJIAH MUSA @ ZAKARIA  
LECTURER  
Dept. of Fisheries & Aquaculture  
Faculty of Agrotechnology & Food Sciences  
Universiti Malaysia Terengganu (UMT)  
21030 Mengabang Telipot, Terengganu

Tarikh: 22/04/09

Penyelia Kedua (jika ada)


Nama:

Cop Rasmi

Tarikh: .....

## DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledge.

Signature : .....  .....

Name : Siti Norhaiza binti Zainal Abidin

Matric No : UK15281

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## ABSTRACT

A total of 49 isolates were obtained from diseased *Macrobrachium rosenbergii* larvae of marine hatchery UMT. This study was carried out to identify the bacterial genera of *Macrobrachium rosenbergii* larvae and their resistance to various antibiotics and heavy metals used commonly in aquaculture. Fifteen different types of antibiotic were used in antibiotic analysis. Antibiotics such as Amoxicillin (AML, 25 µg), Erythromycin (E, 15 µg), Novobiocin (NV, 30 µg), Florfenicol (FFC, 30 µg), Flumequine (UB, 30 µg), Colistin sulphate (CT, 25 µg), Ampicillin (AMP, 10 µg), Fosfomycin (FOS, 50 µg), Nitrofurantoin (F, 50 µg), Oleandomycin (OL, 15 µg), Spiramycin (SP, 100 µg), Tetracycline (TE, 30 µg), Oxolinic acid (OA, 2 µg), Doxycycline (DO, 30 µg), and Lincomycin (MY, 15 µg) were used for determination of bacterial resistant to the antibiotic. Heavy metals such as copper (Cu), cadmium (Cd), mercury (Hg) and potassium dichromate (Cr) were used for heavy metal analysis. The isolates were identify by morphological typing using selective agar: TCBS, XLD, GSP, EMB, and Mac Conkey Result showed that they are four genera of bacteria that were observed, which are genera *Vibrio*, *Enterobacter*, *Aeromonas* and *E. coli*. All the isolated bacteria were resistant to lincomycin and amoxylin. MAR index of 0.61 had shown that the UMT hatchery was frequently exposed to antibiotic. Heavy metal test against four different heavy metals with five different concentrations showed that all the isolates were resistant to heavy metals.



## ABSTRAK

Sebanyak 49 pemencilan bacteria dilakukan ke atas larva *Macrobrachium rosenbergii* berpenyakit yang diperolehi di pusat penetasan air masin UMT. Kajian ini dilakukan untuk mengenalpasti genera bacteria yang terdapat di dalam larva *M. rosenbergii* serta mengkaji tahap kerintanganya terhadap pelbagai jenis antibiotik dan logam berat yang biasa digunakan dalam akuakultur. 15 jenis antibiotik digunakan untuk tujuan analisis antibiotik. Antibiotik yang digunakan ialah Amoxicillin (AML, 25 µg), Erythromycin (E, 15 µg), Novobiocin (NV, 30 µg), Florfenicol (FFC, 30 µg), Flumequine (UB, 30 µg), Colistin sulphate (CT, 25 µg), Ampicillin (AMP, 10 µg), Fosfomycin (FOS, 50 µg), Nitrofurantoin (F, 50 µg), Oleandomycin (OL, 15 µg), Spiramycin (SP, 100 µg), Tetracycline (TE, 30 µg), Oxolinic acid (OA, 2 µg), Doxycycline (DO, 30 µg), dan Lincomycin (MY, 15 µg). Logam berat seperti copper (Cu), cadmium (Cd), mercuri (Hg) dan kalium dikromat (Cr) digunakan untuk analisis logam berat. Pemencilan bacteria telah dikenalpasti berdasarkan morfologinya dengan menggunakan agak selektif iaitu TCBS, XLD, GSP, EMB, dan Mac Conkey . Keputusan menunjukkan empat genera bacteria telah diperhatikan iaitu *Vibrio*, *Enterobacter*, *Aeromonas* dan *E. coli*. Kesemua pemencilan bacteria resistan kepada linomycin dan amoxillin. Index MAR iaitu 0.61 menunjukkan pusat penetasan tersebut telah terdedah kepada penggunaan antibiotik. Ujian logam berat dengan empat logam berat dengan lima kepekatan yang berbeza menunjukkan kesemua pemencilan adalah rintang kepada logam berat tersebut.