

PROBLEMS IN MATHEMATICS OF *Thiruvalluvar*
AND HIS CONTEMPORARIES (A collection of articles)

DEPARTMENT OF MATHEMATICS AND FOOD SCIENCE
KOLEJAH KANDAMBAI

LP
1
FASM
2
2006

2006

**MOLECULAR CHARACTERIZATION OF *Vibrio vulnificus* ISOLATED
FROM OYSTERS (*Crassostrea irredalei*)**

Nagalaxmy d/o Markandan

**This project report is submitted in partial fulfilment of the requirement of the
degree of Bachelor of Science in Agrotechnology
(Aquaculture)**

**FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGY MALAYSIA**

2006

1100044330

This project report should be cited as:

Nagalaxmy, M.V. 2006. A study on molecular characterization of *Vibrio vulnificus* isolated from oyster, *Crassostrea iredalei*. Undergraduate thesis, Bachelor of Science in Agrotechnology (Aquaculture), Faculty of Agrotechnology and Food Science, Kolej Universiti Sains dan Teknologi Malaysia, Terengganu. 57p.

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

ACKNOWLEDGEMENT

Here, I would like to take this opportunity to express my sincere gratitude to my dearest supervisor, Dr. Najiah Musa for her generous contribution and guidance in assisting me throughout the project. I also would like to express my gratitude to my co-supervisor Dr Ahmad Shamsudin Ahmad who allowed us to use his lab for running our experiments.

I also would like to acknowledge my deepest appreciation to Dr. Najiah Musa's Master student, Miss Ruhil Hayati Hamdan who has been dedicating her time and effort for this project. I also like to express my gratitude to two Dr. Najiah Musa's Master students; Noorasikin Hajijama and Lee Seong Wei. Sincere thanks to Mr Shahreza Md. Sheriff and Mrs Nur Asma Ariffin for their concern and guide throughout this project. Besides that, my heartfelt gratitude goes to Mr Sharol Ali, Mr Lukman and Mr Zaidad for their cooperation and permission to use facilities in laboratory.

Besides that I also love to offer my gratitude to my dearest friend Soh Hwee Ling who give me support and help me throughout this project. I also love to wish thanks to my housemates: Satminder kaur, Gurdeep kaur and See Huey Chun who help me a lot.

Finally, I owe much thanks to each of my family members for indulging me through this creative venture and supporting me in pursuing my goals.

ABSTRACT

Seafood especially the shellfish can be readily contaminated with pathogenic microorganisms because of the texture of their flesh and also their living habits. In the case of being contaminated with pathogenic bacteria, shellfish pose a serious threat for public health. This study was conducted to investigate the presence of pathogenic bacteria species such as *Vibrio vulnificus* in the shellfish sample collected from Sg. Merchang, Marang, Terengganu. The bacteria was successfully isolated and identified using conventional and commercial test. Resistance of *Vibrio vulnificus* to antimicrobial agents was tested using Kirby Bauer's method. The Genei Spin Mini Prepkit was used for plasmid extraction. *Vibrio vulnificus* were genetically characterized using RAPD-PCR. Five isolated of *Vibrio vulnificus* were isolated and identified (V1, V2, V3, V4 and V5). From the study, Nalidixic acid (30 µg), Chloramphenicol (30 µg), Furazolidone (15 µg), Kanamycin (30 µg) and Oxytetracycline (30 µg) are proved to be suitable antibiotic therapy for organisms infected by *Vibrio vulnificus*. Out of five isolates only 1 isolates (V3) harbored plasmid with size of 1800 bp. RAPD-PCR profiles indicate three different strains of *Vibrio vulnificus*. These findings reveal genetic distances and percentage of similarity between strains. The result obtained in this study indicates that's strain belongs to the same origin are not necessary closely related genetically.

ABSTRAK

Makanan laut terutamanya organisma bercengkeram secara semula jadi dicemari dengan mikroorganisma patogenik, ini disebabkan oleh tektur daging organisma tersebut dan juga tabiat hidupnya sendiri. Dalam hal pencemaran yang disebabkan oleh bakteria patogenik, organisma bercengkeram ini menyebabkan ancaman serius bagi kesihatan orang ramai. Kajian ini telah dijalankan untuk menyelidik kehadiran bakteria patogenik iaitu *Vibrio vulnificus* dalam sample organisma bercengkeram seperti tiram yang dikutip dari Sg. Merchang, Marang, Terengganu. Pemencilan dan pengecaman bakteria telah berjaya dilakukan melalui kit pengenalanpastian komersial. Ketahanan oleh *Vibrio vulnificus* terhadap agen antimikrob telah di uji dengan menggunakan prosedur Kirby Bauer. Geneti Spin Mini Prepkit telah digunakan untuk pengesanan kehadiran plasmid. *Vibrio vulnificus* telah dikaji dari segi genetik dengan menggunakan RAPD-PCR. Lima Isolat *Vibrio vulnificus* telah berjaya di kenalpasti, (V1, V2, V3, V4 and V5). Daripada keputusan yang diperolehi Nalidixic acid (30 µg), Chloramphenicol (30 µg), Furazolidone (15 µg), Kanamycin (30 µg) and Oxytetracycline (30 µg) merupakan antibiotik yang sesuai digunakan untuk merawat penyakit yang disebabkan oleh *Vibrio vulnificus*. Daripada lima isolat bakteria hanya isolat ke tiga (V3) hadir plasmid yang bersaiz 1800 bp. Profil RAPD-PCR menunjukkan wujudnya tiga strain *Vibrio vulnificus* yang berbeza dari segi genetik. Keputusan ini menunjukkan kesamaan genomik pada isolat dan peratus kesamaan dari segi genetik diantara strain. Keputusan daripada kajian ini jelas menunjukkan bahawa strain dari asal usul yang sama tidak semestinya mempunyai genetik yang berhubung rapat.