

**ISOLATION AND DETECTION OF *Pseudomonas* sp. FROM
LOCAL SELECTED *ULAM***

NURUL FAQIIHAH BINTI NASARY

**Written Thesis Submitted in
Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science (Hons.) Biology
In the Faculty of Applied Sciences
Universiti Teknologi MARA**

JANUARY 2019

This Final Year Project Report entitled “**Isolation and Detection of *Pseudomonas* sp. From Local Selected *Ulam*”** was submitted by Nurul Faqiihah binti Nasary, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Biology, in the Faculty of Applied Sciences, and was approved by

Nur Azimah Binti Osman
Supervisor
B.Sc.(Hons.) Biology
Faculty of Applied Sciences
Universiti Teknologi MARA (UiTM)
Negeri Sembilan, Kampus Kuala Pilah,
Pekan Parit Tinggi, 72000 Kuala Pilah
Negeri Sembilan

Siti Norazura binti Jamal
Coordinator FSG661 AS201
B.Sc. (Hons.) Biology
Faculty of Applied Sciences
Universiti Teknologi MARA (UiTM)
Negeri Sembilan, Kampus Kuala Pilah
72000 Kuala Pilah
Negeri Sembilan

Dr. Aslizah Binti Mohd Aris
Head of Biology School
B.Sc. (Hons.) Biology
Faculty of Applied Sciences
Universiti Teknologi MARA (UiTM)
Negeri Sembilan Kampus Kuala Pilah
72000 Kuala Pilah
Negeri Sembilan

Date : _____

TABLE OF CONTENT

	PAGE
ACKNOWLEDGEMENTS	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF ABBREVIATIONS	viii
ABSTRACT	ix
ABSTRAK	x
CHAPTER 1: INTRODUCTION	
1.1 Background Study	1
1.2 Problem Statement	4
1.3 Significance of the Study	4
1.4 Objectives of the Study	5
CHAPTER 2: LITERATURE REVIEW	
2.1 Pathogenic bacteria	6
2.1.1 <i>Pseudomonas</i> sp.	6
2.2 Agricultural Plants as a Reservoir	8
2.3 Identification of bacteria	9
2.3.1 Biochemical identification	10
2.3.2 Molecular Identification	11
CHAPTER 3: METHODOLOGY	
3.1 Materials	13
3.1.1 Raw materials	13
3.1.2 Chemicals	13
3.1.3 Apparatus	14
3.2 Methods	14
3.2.1 Samples collection	15
3.2.2 Isolation and cultivation of bacteria	15
3.2.3 Broth-culture preparation	15
3.2.4 Gram staining	16
3.2.5 Genomic DNA Extraction	16
3.2.6 Polymerase Chain Reaction method	17
3.2.7 Gel electrophoresis	18

CHAPTER 4: RESULTS AND DISCUSSION	
4.1 Isolation of <i>Pseudomonas</i> sp. from <i>Ulam</i> Samples	21
4.2. Gram Staining of the <i>Pseudomonas</i> sp. Colonies from Broth	27
4.3 Gel Electrophoresis of DNA Extraction Product	31
4.4. Gel Electrophoresis of Polymerase Chain Reaction Product	34
CHAPTER 5: CONCLUSION AND RECOMMENDATIONS	39
CITED REFERENCES	40
APPENDICES	45
CURRICULUM VITAE	47

ABSTRACT

ISOLATION AND DETECTION OF *Pseudomonas* sp. FROM LOCAL SELECTED *ULAM*

Ulam can be defined as a part of plants consisting of leaves, shoots, stems, tubers, seeds, fruits and umbels eaten raw, distilled or boiled before. *Ulam* is also a must in food dish as well as it is able to open the appetite, also treat its high nutrition and used as medicine. However, these *ulam* are sold and sourced from various uncertain sources of origin and may be contaminated by the bacteria found on the ground or from the source of water during the cultivation and growth process. *Pseudomonas* sp. is one of the bacteria species usually can be found in plants and soils which are harmful to human. There were five types of local selected *ulam* used in this study which were *Centella asiatica*, *Cosmos caudatus*, *Anacardium occidentale*, *Ocimum basilicum* and *Ipomoea aquatica*. Those samples which were collected in Hulu Langat Selangor then being isolated on *Pseudomonas* Isolation Agar (PSI) at 37°C for 48 hours. From the isolation, the pure colonies were use in Gram staining for morphological characterization. Gram negative bacteria species have been proved by this method since the appearance were pink in color. Besides, the *Pseudomonas* sp. was successfully detected by specific primers of Pse435F and Pse686R through molecular identification which was from *Cosmos caudatus*, *Anacardium occidentale*, *Ocimum basilicum* and *Ipomoea aquatica*. Polymerase chain reaction was performed on all bacteria isolates presumptively identified as *Pseudomonas* sp. which amplified at 251bp fragments except for *Centella asiatica* sample.