UNIVERSITI TEKNOLOGI MARA

DETECTION OF PATHOGENIC BACTERIA ISOLATED FROM RAW VEGETABLES (*ULAM*)

By

IZZAFAIQAAINAA BINTI MOHD NOR

Thesis Submitted in Partial Fulfillment of the Requirements for

Bachelor of Medical Laboratory Technology (Hons.)

Faculty of Health Sciences, Universiti Teknologi MARA

2017

DECLARATION

I hereby declare that the work presented in this thesis is my own to the best of my knowledge, original, except for quotations and summaries which have been dully acknowledged. I also declare that this thesis has not been submitted or accepted, either in whole or in part, for a degree at this or any other university

Name of candidate	:	IZZAFAIQAAINAA BINTI MOHD NOR
Candidate's ID No	:	2013857536
Programme	:	BACHELOR OF MEDICAL LABORATORY TECHNOLOGY (HONOURS)
Faculty	:	HEALTH SCIENCES
Thesis	:	DETECTION OF PATHOGENIC BACTERIA ISOLATED FROM RAW VEGETABLES (*ULAM*)

JULY 2017   ……..……..………………………..

IZZAFAIQAAINAA BINTI MOHD NOR

9209117115048

2013857536

ABSTRACT

Raw vegetables or *ulam* are one of essential diets of human being and become a side dish in a daily plate. But, all these salad vegetables might be contaminated with pathogenic bacteria that can caused food borne illness. Three different types of *ulam* were selected from two different retail outlet located in Puncak Alam, Selangor and their bacteriological attributes were examined by using routine microbiological method. Twenty one of bacteria isolated from *ulam* were further investigated by using, polymerase chain reaction (PCR) assay targeting 16s rDNA gene. Total viable count (TVC) and total coliform count (TCC) in all three samples were both too numerous to count (TNTC) .The highest total staphylococcal count (TSC) was found in *selom* (4.0×10^6) followed by lettuce (3.8×10^6) and *kacang botol* (2.0×10^6). Twenty one bacterial isolates from three *ulam* samples have both gram positive and gram negative bacteria. More than four predominating bacteria are detected in the isolates which are *Enterobacter spp*., *Citrobacter spp*., *Klebsiella spp*., *Staphylococcus aureus*, *Acinetobacter spp*., and *Bacillus spp.* Bacterial identification by using 16s rDNA primer showed only *Staphylococcus aureus* was identified from the studied of bacterial isolates. Proper transportation, hygiene handling and proper storage are essential to prevent cross contamination of pathogenic bacteria in salad vegetables.

Keywords: Pathogenic Bacteria, Raw Vegetables, 16s rDNA, Antibiotic Sensitivity Test (AST)

ACKNOWLEDGEMENT

In the name of Allah, the Most Gracious and the Most Merciful.

Alhamdulillah, all praises to Allah for the strengths and His blessing in completing this thesis. Special appreciation goes to my supervisor, Dr. Maimunah Mustakim, for her supervision and constant support. Her invaluable help of giving constructive comments and suggestions throughout the experimental and thesis works have contributed to the success to complete this project. I would like to express my appreciation and my acknowledgement also goes to all of laboratory staffs of Universiti Teknologi MARA for their co-operations especially Mr. Mohd Zainuddin Ibrahim, Mrs. Aziyana Zainol, Mr. Nazzihan Md Ajis, Mrs. Norzila Shafeai, Mrs. Nurjulei Mat Jamin for allowing me to use Molecular Lab, Virology Lab, Final Year Project Lab, Vector Lab and Pathogen Lab and also providing the laboratory equipment and apparatus needed for this project.

Special thanks to my beloved parents, husband and family members for their prayers, encouragement, and motivation. Last but not least, I would like to say a lot of thanks to fellow friends, especially to Nur Fadhillah bt Adam, Nur Azira bt Che Azmi, and Noraini bt Abdul Razak for their kindness, ideas, and comments upon accomplishment of the thesis. To all my classmates, to whom I indebted, however great or small their respective contribution, your kindness means a lot to me. May God blesses and rewards them. Thank you.

TABLE OF CONTENTS