ISOLATION AND CHARACTERIZATION OF BACTERIA FROM ELEVATOR BUTTON OF UiTM KUALA PILAH

NUR LIYANA NAJWA BINTI ZULKIFLI

Final Year Project Report Submitted in
Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science (Hons.) Biology
in The Faculty of Applied Sciences
University Teknologi MARA

JULY 2018

This Final Year Project entitled **"Isolation and Characterization of Bacteria from elevator button of UiTM Kuala Pilah"** was submitted by Nur Liyana Najwa binti Zulkifli, in partial fulfillment of the requirement for the Degree of Bachelor of Science (Hons.) Biology, in the Faculty of Applied Sciences, and was approved by

_____

Mohd Syahril bin Mohd Zan
Supervisor
Faculty of Applied Sciences
Universiti Teknologi MARA (UiTM)
Negeri Sembilan, Kampus Kuala Pilah,
Pekan Parit Tinggi, 72000 Kuala Pilah
Negeri Sembilan

_____

Puan Lili Syahani binti Rusli
Coordinator FSG661 AS201
Faculty of Applied Sciences
Universiti Teknologi MARA (UiTM)
Negeri Sembilan, Kampus Kuala Pilah,
Pekan Parit Tinggi, 72000 Kuala Pilah
Negeri Sembilan

_____

Dr. Aslizah binti Mohd Asri
Head of Biology School
Faculty of Applied Sciences
Universiti Teknologi MARA (UiTM)
Negeri Sembilan, Kampus Kuala Pilah
Pekan Parit Tinggi, 72000 Kuala Pilah
Negeri Sembilan

Date: _____

TABLE OF CONTENTS

		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 of study	1
1.2	Problem statement	2
1.3	Significance of the study	4
1.4	Objectives of study	4
CHAPTER 2: LITERATURE REVIEW		
2.1	Site study	5
2.2	Bacteria	6
2.3	Gram-Positive Bacteria	7
2.4	Gram-Negative Bacteria	8
2.5	Pathogenic Bacteria	8
2.5.1	*Escherichia coli*	8
2.5.2	*Staphylococcus aureus*	9
2.6	Bacteria Identification	9
2.6.1	Gram stain	10
2.6.2	Catalase test	10
2.6.3	Oxidase test	11
2.6.4	IMViC test	12
CHAPTER 3: METHODOLOGY		
3.1	Materials	
3.1.1	Sample	13
3.1.2	Chemicals	13
3.1.3	Apparatus	13
3.2	Methods	
3.2.1	Sample collection	14
3.2.2	Preparation of serial dilution	14
3.2.3	Isolation of bacteria	15
3.2.4	Microbiological analysis	15

3.2.4.1 Morphologies of bacteria 15
3.2.4.2 Gram stain 16
3.2.4.3 IMViC test 16
3.2.4.3.1 Indole test 17
3.2.4.3.2 Methyl Red test 18
3.2.4.3.3 Voges-Proskauer test 19
3.2.4.3.4 Simmons Citrate test 20
3.2.4.4 Catalase test 20
3.2.4.5 Oxidase test 21

CHAPTER 4: RESULTS AND DISCUSSION
4.1 Isolation of Bacteria 22
4.2 Morphologies of Bacteria 28
4.3 Identification of Bacteria 30

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS 34

APPENDICES 35
CITED REFERENCES 40
CURRICULUM VITAE 45

ABSTRACT

ISOLATION AND CHARACTERIZATION OF BACTERIA FROM ELEVATOR BUTTONS OF UiTM KUALA PILAH

The control of microorganisms in university environment is the main concern in order to avoid the spread of infectious diseases. The aim of this study was to isolate, characterize and identify selected bacteria from elevator buttons at academy building of Faculty of Applied Science, Universiti Teknologi MARA (UiTM) Kuala Pilah, Negeri Sembilan. The sample were taken from elevator buttons at academy building. Detection types of bacteria was done on Eosin Methylene Blue Agar, Mannitol Salt Agar and Salmonella Shiegella Agar according the standard microbiological methods. Besides that, Gram-positive and Gram-negative bacteria also were identified by performing gram staining. The research that conducted on 8 buttons from two elevator at academy faculty reveal that all buttons had bacterial contamination with kind of Gram-positive and Gram-negative bacteria. All the buttons was colonized by *Staphylococcus aureus* and *Escherichia coli*. Thus from this study it reveal that elevator buttons could lead to the transmission of pathogenic microorganisms, hence it is necessary to clean and disinfectant elevator buttons regularly especially department that has high potential contamination such as elevator that place at laboratories building.