

**ANTIBACTERIAL ACTIVITY OF FIVE SELECTED
FRUIT'S PEELS IN KUALA PILAH**

NIK NURUL AINI CHE ISA

**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 Report entitled “**Antibacterial Activity of Five Selected Fruit’s Peels in Kuala Pilah**” was submitted by Nik Nurul Aini binti Che Isa, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Biology, in the Faculty of Applied Sciences, and was approved by

Dr. Rosli bin Noormi
Supervisor
Faculty of Applied Sciences
Universiti Teknologi MARA (UiTM)
Negeri Sembilan, Kampus Kuala Pilah,
Pekan Parit Tinggi, 72000 Kuala Pilah
Negeri Sembilan

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 Aris
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 PLATES	vii
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS	x
ABSTRACT	xi
ABSTRAK	xii
CHAPTER 1: INTRODUCTION	
1.1 Background Study	1
1.2 Problem Statement	1
1.3 Significance of the Study	2
1.4 Objectives of the Study	3
CHAPTER 2: LITERATURE REVIEW	
2.1 Watermelon	4
2.1.1 Benefits of watermelon peels	4
2.2 Honey dew	5
2.2.1 Aroma component of honey dew	6
2.3 Dragon fruit	7
2.3.1 Content of dragon fruit peels	8
2.4 Papaya	9
2.4.1 Medical uses of papaya	9
2.5 Banana	10
2.5.1 Medical uses of banana	11
2.6 <i>Escherichia coli</i>	12
2.6.1 Clinical disease of <i>Escherichia coli</i>	12
2.7 <i>Salmonella</i>	13
2.7.1 Clinical disease of <i>Salmonella</i>	14
CHAPTER 3: METHODOLOGY	
3.1 Materials	15
3.1.1 Raw Materials	15
3.1.2 Chemicals	15
3.1.3 Apparatus	15
3.2 Methods	16
3.2.1 Sample Preparation	16
3.2.2 Solvent Extraction	17
3.2.3 Disc Diffusion Method	17

3.2.4	Minimum inhibition concentration	18
3.2.5	Time kill study	19
3.3	Statistical Analysis	20
CHAPTER 4: RESULTS AND DISCUSSION		
4.1	Disc Diffusion Method	21
4.2	Minimum Inhibition Concentration	33
4.3	Time Kill Study	40
CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS		46
CITED REFERENCES		47
APPENDICES		55
CURRICULUM VITAE		60

ABSTRACT

ANTIBACTERIAL ACTIVITY OF FIVE SELECTED FRUIT'S PEELS IN KUALA PILAH

A research was carried out on five selected fruit's peels namely watermelon (*Citrullus lanatus*), honey dew (*Cucumis melo l.*), dragon fruit (*Hylocereus polyrhizus*), papaya (*Carica papaya*) and banana (*Musa acuminata*) that were obtained from agro market Kuala Pilah, Negeri Sembilan by determining the antibacterial activity against *Escherichia coli* and *Salmonella* species. Three methods were used in order to analyse the antibacterial activity from these plants extract which were disc diffusion, minimum inhibition concentration (MIC) and time kill study. Based on disc diffusion results, the highest and smallest inhibition zone recorded were 16 ± 0.10 mm and 6 ± 0.00 mm respectively. Two fruit's peels extract for each bacteria that obtained the highest inhibition zone were chosen in order to proceed with MIC which were papaya and watermelon extracts for the test against *Escherichia coli* while papaya and banana extracts for the test against *Salmonella*. For MIC, the least concentration of extract that showed less turbidity was at 25 mg/mL of papaya extract against *Salmonella*. As for time kill study, the papaya extract actively killed the bacteria at 8 hours. The results obtained provide the evidence that the five selected fruit's peels especially papaya can be exploited more on its antibacterial potential as a source of antibacterial drug to be used in medicinal field in future.