

**SYNERGISTIC STUDY OF *Lawsonia inermis* (HENNA) LEAVES
EXTRACT AND *Citrus limonum* (LEMON) JUICE AGAINST
BACTERIA CAUSING SKIN INFECTIONS**

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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 Study	1
1.2 Problem Statement	3
1.3 Significance of the Study	3
1.4 Objectives of the Study	4
CHAPTER 2: LITERATURE REVIEW	
2.1 Skin Bacterial Infections	5
2.2 <i>Lawsonia inermis</i> (Henna)	
2.2.1 Morphology and chemical constituents of <i>Lawsonia inermis</i>	6
2.2.2 Traditional and common usage of <i>Lawsonia inermis</i>	7
2.2.3 Biological activity	8
2.3 <i>Citrus limonum</i> (Lemon)	
2.3.1 Morphology and chemical constituents in <i>Citrus limonum</i>	9
2.3.2 Traditional and common usage of <i>Citrus limonum</i>	10
2.3.3 Biological activity	11
CHAPTER 3: METHODOLOGY	
3.1 Materials	
3.1.1 Raw materials	12
3.1.2 Chemicals	12
3.1.3 Apparatus	13
3.2 Methods	
3.2.1 Henna and Lemon Collection	14
3.2.2 Extraction preparation for henna leaves and lemon juice	15
3.2.3 Phytochemical screening	16
3.2.4 Preparation of bacterial culture	18
3.2.5 Antibacterial screening of extract	18
3.2.6 Minimum Inhibitory Concentration (MIC) of extract	19

3.3	Flowchart of procedure	21
CHAPTER 4: RESULTS AND DISCUSSION		
4.1	Evaluation on Phytochemical Analysis of the Plant Extract	22
4.2	Evaluation on Antibacterial Activities of the Plant Extract	25
4.3	Evaluation on Minimum Inhibitory Concentration of the Plant Extract	30
CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS		
CITED REFERENCES		36
APPENDICES		43
CURRICULUM VITAE		45

ABSTRACT

SYNERGISTIC STUDY OF *Lawsonia inermis* (HENNA) LEAVES EXTRACT AND *Citrus limonum* (LEMON) JUICE AGAINST BACTERIA CAUSING SKIN INFECTIONS

Bacterial invasion through the skin layers can cause various types of Skin and Soft Tissue Infections (SSTI) that mainly caused by *S. aureus* and *P. aeruginosa*. Recent study also found that *E. coli* causes a rare type of SSTI. Pharmaceutical industries have manufacture many types of synthetic antibiotics to treat SSTI but prolonged usage of these antibiotic treatment will lower its effectiveness due to the increasing in bacterial resistance cases towards the common antibiotics. The aim of this study is to determine the antibacterial activity of *Citrus limonum* (Lemon) juice and *Lawsonia inermis* (Henna) leaves combination extract by using agar well-diffusion method and 96-well microtiter plate for MIC test. The samples used were pure lemon juice and henna leaves that were extracted by using 100% methanol. Phytochemical component in the extract that possess antibacterial properties such as saponin, tannin, alkaloid, flavonoid, steroid and phenolic were also determined. The result of antibacterial screening test shows that combination extract has higher antibacterial activity towards *S. aureus* and lower effect towards *P. aeruginosa* and *E. coli* with diameter of inhibition zone of 18.67 ± 1.53 mm and 13 ± 1.73 mm, 13 ± 1.0 mm respectively. The MIC result shows higher antibacterial activity against *S. aureus* at 1.5625 mg/ml and lower effect towards *P. aeruginosa* and *E. coli* at 3.125 mg/ml. Overall, combination extract shows higher antibacterial effect towards the chosen bacteria compared to single usage of extract.