

**ANTIBACTERIAL AND ANTIOXIDANT OF
NEEM TREE (*Azadirachta indica*) LEAF
EXTRACT ON *Staphylococcus aureus***

AN NUR UMILLAH BINTI ABDUL AZIZ

**BACHELOR OF SCIENCE (Hons.) BIOLOGY
FACULTY OF APPLIED SCIENCES
UNIVERSITI TEKNOLOGI MARA**

FEBRUARY 2023

**ANTIBACTERIAL AND ANTIOXIDANT OF NEEM TREE (*AZADIRACHTA
INDICA*) LEAF EXTRACT ON *STAPHYLOCOCCUS AUREUS***

AN NUR UMILLAH BINTI ABDUL AZIZ

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

JANUARY 2023

This Final Year Project Report entitled “Antibacterial and Antioxidant of Neem Tree Leaf Extract on *Staphylococcus aureus*” was submitted by An Nur Umillah binti Abdul Aziz 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

Mr. Muhammad Syukri bin Noor Azman
Supervisor
B. Sc. (Hons.) Biology
Faculty of Applied Sciences
Universiti Teknologi MARA
02600 Arau
Perlis

Mr. Muhammad Syukri bin Noor Azman
Supervisor
B. Sc. (Hons.) Biology
Faculty of Applied Sciences
Universiti Teknologi MARA
02600 Arau
Perlis

Dr Rosyaini Afindi Azman
Head of Programme
B. Sc. (Hons.) Physic
Faculty of Applied Science
Universiti Teknologi MARA
02600 Arau
Perlis

Date: _____

ABSTRACT

ANTIBACTERIAL AND ANTIOXIDANT OF NEEM TREE (*AZADIRACHTA INDICA*) LEAF EXTRACT ON *STAPHYLOCOCCUS AUREUS*

Numerous plants have been studied contain sufficient quantities of organic compounds that can be helpful as a medications. This include *Azadirachta indica* (neem) that has attracted considerable attention about its insecticidal and therapeutic characteristics. Quercetin and β -sitosterol are the first polyphenolic flavonoids to be discovered in fresh neem leaves which believed to have antibacterial and antifungal effects. In this study, neem leaves ethanolic extract has been determined to have potential in the inhibition of *Staphylococcus aureus*. Three different concentration of the extract was tested, and the results showed that 100 % concentration works greater than 50 % and 10 % concentration in the inhibition of the bacteria growth. Both 50 % and 10% concentration have the values of 4.5 ± 0.71 and 2 ± 0 respectively for zone inhibition. Not only have antibacterial characteristics, but neem leaves also have antioxidant capabilities, which have many advantages in the treatment of oxidative stress related ailments. DPPH assay was used to measure the antioxidant in neem leaves ethanolic extract.

TABLE OF CONTENTS

	Page
ABSTRACT	iii
ABSTRAK	v
ACKNOWLEDGEMENT	
vi	
TABLE OF CONTENTS	
vii	
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF SYMBOLS	
xi	
LIST OF ABBREVIATIONS	
xii	
CHAPTER 1 INTRODUCTION	
1.1 Background and problem statement	1
1.2 Significance of study	5
1.3 Objectives of study	6
CHAPTER 2 LITERATURE REVIEW	
2.1 Description of Neem Tree	7
2.2 Beneficial properties of Neem	11
2.2.1 Limitation of neems usage	17
2.3 Active Compounds of <i>Azadirachta indica</i> (Neem)	19
2.4 Antibacterial Properties of Neem	21
2.5 Antioxidant	25
2.5.1 Antioxidant in Neem (<i>Azadirachta Indica</i>) Leaf	27
2.6 Characteristics of <i>Staphylococcus Aureus</i>	28
2.6.1 Pathogenesis of <i>Staphylococcus Aureus</i>	29
CHAPTER 3 METHODOLOGY	
3.1 Materials	32
3.2 Methods	32
3.2.1 Preparation of Leaf Extract	32
3.2.2 Preparation of Nutrient Agar and Mueller-Hinton Agar	33
3.2.3 Preparation of Nutrient Broth	33
3.2.4 Preparation of Bacteria Subculture	34
3.2.5 Antibiotic Susceptibility Testing using Disc Diffusion Method	34
3.2.6 Antioxidant Free Radical Scavenging Activity Test	35