ADREANNA SYAZANA MOHD SAYUTHI

AS201 FSG

UiTM 2022

THE POTENTIAL OF *Carica papaya* PEEL AND LEAF EXTRACTS AS ANTIBACTERIAL AND ANTIOXIDANT AGENT

ADREANNA SYAZANA MOHD SAYUTHI

BACHELOR OF SCIENCE (Hons.) BIOLOGY

FACULTY OF APPLIED SCIENCES

UNIVERSITI TEKNOLOGI MARA

AUGUST 2022

THE POTENTIAL OF *Carica papaya* PEEL AND LEAF EXTRACTS AS ANTIBACTERIAL AND ANTIOXIDANT AGENT

ADREANNA SYAZANA MOHD SAYUTHI

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

AUGUST 2022

This Final Year Project Report entitled **"The Potential of *Carica papaya* Peel and Leaf Extracts as Antibacterial and Antioxidant Agent"** was submitted by Adreanna Syazana binti Mohd Sayuthi 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

_____

Dr Roziana Mohamed Hanaphi
Supervisor
BSc. (Hons.) Biology
Faculty of Applied Sciences
Universiti Teknologi MARA
02600 Arau
Perlis

_____

Mr. Syukri Noor Azman
Project Coordinator
BSc. (Hons.) Biology
Faculty of Applied Sciences
Universiti Teknologi MARA
02600 Arau
Perlis

_____

Mrs. Zalina Zainal Abidin
Programme Coordinator
BSc. (Hons.) Biology
Faculty of Applied Sciences
Universiti Teknologi MARA
02600 Arau
Perlis

Date: 15/8/2022

ABSTRACT

THE POTENTIAL OF *Carica papaya* PEEL AND LEAF EXTRACTS AS ANTIBACTERIAL AND ANTIOXIDANT AGENT

Carica papaya which is also known as paw paw or papaya is one of the highly demanded fruits around the world. Traditionally used as a treatment for diseases like sinuses, eczema, constipation, and many more which has crowned papaya as one of the natural neutraceutical sources. This is due to high content of vitamin A, B, and C as well as proteolytic enzyme such as papain that have antibacterial and antioxidant properties. The purpose of the study was to determine antibacterial and antioxidant activity of papaya peel and leaf against Gram-negative and Gram-positive bacteria, *Escherichia coli* and *Bacillus licheniformis.* In this study, papaya peel and leaf were extracted through solvent extraction method by using acetone as the solvent. After extraction, the percentage yield of peel extract was 1.110% while leaf extract was 0.0005%. The low yield percentage were due to the improper extracts storage which indirectly impacted the constituents within the samples. The dried powdered form of papaya peel and leaf were extracted using acetone. The crude from both samples were obtained by drying in incubator shaker. Then, three concentrations, 400 µg/ml, 600 µg/ml, 800 µg/ml were prepared by diluting with 5% DMSO. Antioxidant test was done through DPPH Scavenging Assay by mixing 1 ml of DPPH solution with 100 µl for each sample of ascorbic acid (standard sample), peel extract (test sample 1), and leaf extract (test sample 2) respectively. Peel extract recorded the lowest IC_{50} value at 3.714 µg/ml, and highest percentage inhibition followed by ascorbic acid at 6.496 µg/ml and leaf extract at 7.766 µg/ml. Antibacterial activity was carried out through disc diffusion method and tested onto *E. coli* and *B. licheniformis*. Antibacterial activity was expressed in terms of diameter of bacterial inhibition zone surround the disc. The antibacterial test was done two times. However, only the first attempt showed inhibition surround the extracts discs. For the second attempt, no technical inhibition zone was produced due to technical error. Theoretically, papaya peel and leaf possessed alkaloids and flavonoids which are proven to express antibacterial activity. Papaya peel and leaf extracts exhibit good antioxidant reaction which could be useful in substituting synthetic antioxidant agent. As conclusion, peel and leaf extracts have the potential as antibacterial and antioxidant agent.

Keywords: papaya peel and leaf extracts, antioxidant test, antibacterial test

TABLE OF CONTENTS