SCREENING FOR ANTIMICROBIAL, PHYTOCHEMICAL AND ANTIOXIDANT PROFILE OF SOME WILD FRUITS AND SEEDS IN CANAANLAND, OTA

BY

ABAH KINGSLEY ADEJOH

BSc. Igbinedion University, Okada

Matriculation Number: 15PCQ01223

A DISSERTATION SUBMITTED TO THE DEPARTMENT OF BIOLOGICAL SCIENCES, COLLEGE OF SCIENCE AND TECHNOLOGY, COVENANT UNIVERSITY OTA, NIGERIA

IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF SCIENCE DEGREE (MSc.) IN MICROBIOLOGY

JUNE, 2017

ACCEPTANCE

This is to attest that this dissertation is accepted in partial fulfillment of the requirements for the award of Master of Science (M.Sc.) degree in Microbiology in the Department of Biological Sciences, College of Sciences, College of Science and Technology, Covenant University, Ota, Ogun state.

MR. J. A. PHILIP _____

(Secretary, School of Postgraduate Studies) Signature and Date

PROFESSOR S. WARA _____

(Dean, School of Postgraduate Studies) Signature and Date

DECLARATION

I, **ABAH KINGSLEY ADEJOH (**15PCQ01223), hereby declare that this research work titled: "SCREENING FOR ANTIMICROBIAL, PHYTOCHEMICAL AND ANTIOXIDANT PROFILE OF SOME WILD FRUITS AND SEEDS IN CANAANLAND, OTA" was undertaken by me under the supervisor of Professor Solomon Oranusi. The work presented in this dissertation has not been presented, either wholly or partly for any degree elsewhere before. All sources of scholarly information used were duly acknowledged.

ABAH KINGSLEY ADEJOH _____

(Student) Signature and Date

CERTIFICATION

This is to certify that ABAH, KINGSLEY ADEJOH (Matric No: 15PCQ01223) carried out this research work in partial fulfilment of the requirements for the award of Master of Science (M.Sc.) degree in Microbiology of Covenant University, Ota, under the supervision of Professor Solomon Oranusi.

PROFESSOR S. ORANUSI _____

(Supervisor) Signature and Date

PROFESSOR A. A. AJAYI _____

(Head of Department) Signature and Date

PROFESSOR A. SANNI _____

(External Examiner) Signature and Date

DEDICATION

This review is dedicated to the Almighty God and to my parents Mr. and Mrs. Abah.

ACKNOWLEDGEMENTS

My deepest gratitude to God who has brought me this far and the strength for making the completion of this project a reality.

To my H.O.D, Prof. A. A. Ajayi, and supervisor Professor S. Oranusi for all their untiring efforts and attention and to all the lecturers in the Microbiology Unit of the Department of Biological Sciences that have brought me this far. Thank you all for all you have taught me.

I would also like to express my sincere gratitude to my parents, Mr. and Mrs. Abah B. C., my siblings, Paul, George, John, James and numerous relatives for their love support and encouragement.

To my course mates and friends for making my stay in Covenant University worthwhile and to all those who have touched my life in one way or the other, thank you.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The spread of antimicrobial resistance among pathogenic microorganisms has rendered most conventional drugs redundant. New sources of antimicrobial agents are being harnessed to develop novel drugs. Wild plants are veritable sources of bioactive compounds that may act as alternatives to antibiotics in treatment of infections caused by resistant microorganisms. Plants also possess natural antioxidants that protect the body from oxidative stress. This study was carried out to determine the antibacterial, phytochemical and antioxidant profiles of some wild plants in Canaan land, Ota, Ogun state, Nigeria. The antibacterial activity of the aqueous and ethanol extracts of twenty fruits and seeds were evaluated against *Staphylococcus aureus*, *Salmonella typhii*, *Pseudomonas aeruginiosa* and *Escherichia coli*. Broad spectrum antibacterial activity was shown by extracts of six plants namely *Caryota mitis*, *Cassia javanica*, *Syzygium samarangense*, *Veitchia merrilli*, *Bauhinia tomentosa* and *Cassia fistula* with inhibition zones ranging from 20±0.8 to 25±0.1 mm. The minimum inhibitory concentration of the extracts to the isolates was between 7.8 to 31.2mg/ml and minimum bactericidal concentration between 15.6 and 62.5mg/ml. Flavonoids, phenolic compounds, saponins, alkaloids, terpenoids and glycosides were observed qualitatively. The antioxidant capacity of the extracts was evaluated using total antioxidant capacity and reducing power assays. Effective antioxidant activity did not vary considerably. *C. mitis* had a total antioxidant capacity of 34.89mg/100g. Free radical scavenging capacity was evaluated using 2, 2-diphenyl-1-picrylhydrazyl and nitric oxide radical scavenging assays. The highest radical scavenging activity was observed in *B. tomentosa* and *C. fistula* with IC_{50} values of 41.12µg/ml and 36.57µg/ml respectively. High phenol and flavonoid contents significantly correlated with high antioxidant capacity. The presence of antimicrobial and antioxidant properties in these wild fruits and seeds opens up a new perspective in biotherapeutic research as they could be harnessed as alternative drugs for treatment of microbial infections and management of chronic diseases.