



**BIO-PROSPECTING FOR ENDOPHYTES AND THEIR SECONDARY
METABOLITES FROM ALOE ELGONICA AS A POTENTIAL
ANTIMICROBIAL AGENTS**

BY

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Table of Contents

DECLARATION.....	
DEDICATION.....	
ACKNOWLEDGEMENT.....	
List of figures.....	
List of tables.....	
ACRONYMS.....	
ABSTRACT.....	
CHAPTER ONE	8
1.0 INTRODUCTION.....	8
1.1 Background	8
1.2 Problem statement.	11
1.3 Objectives.....	11
1.3.1 General objectives	11
2.0 LITERATURE REVIEW	12
2.1 Endophytes	12
2.1.1 Diversity and distribution of Endophytes	12
2.2 Medicinal plants.....	13
2.3 The genus Aloe.....	13
2.4 Medicinal uses of Aloe	14
2.5 Phytochemical constituents of Aloe species.....	14
2.5.1 Chromones	14
2.5.2 Anthraquinones and anthrones	15
2.5.6.1 Classification	20
3.1.1 Collection of plant materials	21

3.1.2	Reagents and apparatus	21
3.2	Isolation of fungal endophytes	21
3.3	Procedure of PDA preparation.....	21
3.4	Isolation of fungal endophyte.....	22
3.4.1	Procedure.....	22
CHAPTER FOUR		27
4.1	RESULTS AND DISCUSSION	27
4.1.1	Isolation and characterization of fungal endophytes	27
CHAPTER FIVE		38
5.0	CONCLUSION AND RECOMENDATION	38
5.1	CONCLUSION.....	38
5.2	RECCOMENDATION.....	38
CHAPTER SIX:.....		39
6.0	REFERENCES.....	39
References		39

ABSTRACT

The main objective of the project was to isolate endophytes and characterize secondary metabolites from the endophyte. During assessment, extracts from test tube R8 with concentrations 80 μ g/ml and 40 μ g/ml showed the greatest anti-bacterial properties/activities bacteria streptococci with inhibition zone of 6.3 mm and 4.92mm respectively.

Phytochemical analysis showed that extracts in test tubes R 1, R 2, up to R 8 contained Saponnins, flavonoids and tannins. Extracts in test tubes R 1, R 3 and R 4 contained some traces of pink solution on the aqueous layers indicating some presence of few free anthraquinones.

DECLARATION

I, Okello Robin hereby declare that the content herein is my original work with exception from the quotations and literature review. It is entirely my own work and effort under the guidance of my supervisor. This piece of work has never been presented to any other institution of learning for an award or publication.

Signed.....

Okello Robin

Date

Approved by.....

Dr. Andima Moses

Date.....

DEDICATION

I dedicate this piece of work to my beloved farther, Mr Adoko Joe Fay and mothers, teddy Adoko, Brenda Akullu, Susan Awidi who have done great work to ensure that I reach this far. Their love, car and support cannot be measured may the almighty God bless them abundantly.

I also want to dedicate it to Sarah Mbabazi who supported with the computer laptop to accomplish this wonderful piece of work. May the almighty God loss you and finally to all my brothers and sisters and my relatives who supported me spiritually, morally, financially and encourage me to through this program.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Endophytes are microorganisms, principally fungi and bacteria which inhabit intercellular spaces in the plant tissues. Endophytes are often transmitted to host plant vertically (directly from parents to the offspring's) or horizontally (among individuals). Vertically transmitted fungal endophytes are typically considered as clonal and transmit via fungal hyphae penetrating the embryo within the host's seeds or vegetative propagation such as seen with the *Neotyphodium*.

Endophytes may contribute to their host plant by producing a plethora of substances that provide protection to plants from herbivory by producing certain compounds which will prevent them from further grazing on the same plant and also sometimes act as bio control agents. The benefits of endophytes was not much known until in recent decades when fungal endophytes were seen as the alternative sources of pharmaceutically valuable compounds originally isolated from higher plants. Endophytic fungi are an outstanding source of bio active products occupying millions of unique biological niches and they can grow in different environment. The number of secondary metabolites produced by fungal endophytes is larger than other endophytic microorganisms. (Natanong Yodsing, 2018).

Secondary metabolites are organic compounds produced by bacteria, fungi or plants which are not involved directly in normal growth, development or reproduction of the organism. Several studies indicate that endophytes have the potential to produce secondary metabolites with potential agricultural, pharmaceutical, and industrial application. Paclitaxel (**1**) (Mutsa Madondo, 2015), camptothecin (**2**) (Ramawat, 2019), vincristine (**3**), podophyllotoxin (**4**), azardiractins (**5**), and so on are typical examples of compounds produced by endophytes with potential application as anticancer, antimicrobial and insecticidal agents. Thus endophytes represents a rich source of novel biomolecules for sustainable exploitation. The diversity of endophytes represents among the

CHAPTER SIX:

6.0 REFERENCES

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