Effect of *Zingiber officinale* and *Citrus limon* extracts on *Aspergillus flavus.*

BY

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A RESEARCH REPORT SUBMITTED TO THE DEPARTMENT OF BIOLOGY IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF BACHELOR OF SCIENCE AND EDUCATION DEGREE OF BUSITEMA UNIVERSITY

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DECLARATION

I Kabuye Derrick declare that this research report is my own original work and all the contents presented are original with the exception of the references and that this report has not been submitted for any academic qualifications at any other University or institution.

Signature

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Date

……..

APPROVAL

This report has been submitted for examination to the Faculty of Science and Education Busitema University with the approval of my supervisor;

BARUGAHARE BANSON, B.Sc., M.Sc., MPHIL

Signed……. Date……

DEDICATION

I dedicate this report to my parents Mr. Kasule Nathan Talemwa and Mrs. Namaganda Noeline, Mr. Girivazio Ssemusu, Al-Hajji Aramanham Walugembe RDC Lwengo District, Mr. Olowo Moses, Matanda Brian, Late Ddungu Destine, brothers, sisters and friends for their love and support they have rendered to me to see that I succeed in my academic endeavor.

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ABBREVIATION OF TERMS

PDA – Potato Dextrose Agar

TABLE OF CONTENTS

Contents

ABSTRACT

Citrus limon, commonly known as lemon is an important medicinal plant of the family Rutaceae, ginger is a perennial herbaceous plant that produces a fleshy and articulated rhizome, with rough brownish epidermis.

The effect of *Zingiber officinale* and *Citrus limon* extracts on *the selected fungus* was determined using paper disc diffusion method. Crude extracts of ginger and Lemon were tested for antimicrobial activity against *Aspergillus niger*. Ginger extract showed an inhibition zone of 1.26 mm. Lemon extract showed 2.72 mm inhibition zone. The mixture of Lemon and Ginger showed an inhibition zone of 3.22 mm. The results showed that lemon plant extract was more efficient than Ginger plant extract but the mixture was the most effective.

The results of this study conclude that both ginger and lemon extracts have an effective antimicrobial activity against *A. flavus* however a mixture of Lemon and Ginger is more effective than individual plant extracts.

Keywords: Antimicrobial activity; Inhibition zone; ginger, lemon; more effective; Rutaceae

CHAPTER ONE: INTRODUCTION

1.1. BACKGROUND

Citrus limon, commonly known as lemon is an important medicinal plant of the family Rutaceae. It is used mainly for its alkaloids, which are having anticancer activities and the antimicrobial potential in crude extracts of different parts. *Zingiber officinale*, commonly known as gengibre, ajengibre, jengibre dulce (Brazil, Argentina, and Spain), ginger (United States and England), and gingembre (France), is a perennial herbaceous plant that produces a fleshy and articulated rhizome, with rough brownish epidermis.

Vegetable kingdom organisms are the major contributors to the significant number of organic substances in nature. Plants have enormous potential to biosynthesize the most varied types of molecular structures that perform various functions in your body. The substances responsible for ensuring the cells development and maintenance are called primary metabolites. From these compounds, through very complex biosynthetic routes, plants produce secondary metabolites, which help in the defense and adaptation of plants to the environment.

Composed of several secondary metabolites synthesized by plants, we highlight the essential oils that are characterized by being a complex mixture of low molecular weight liposoluble constituents with strong aroma. Essential oils stand out for their great therapeutic and economic importance, occupying a preponderant place in the pharmaceutical, cosmetic, and agri-food industries due to their high biological activity. (Andrade, 2010)

Although plants have been used since ancient times for spice and medicinal purposes, only in recent past research has been intensifying for application of these compounds in food preservation and control of diseases of microbial origin.

Nowadays, there is a serious problem of microbial resistance to commercially available antibiotics that occurs due to the wide distribution of antimicrobials and easy access to consumption by the population, which leads to indiscriminate use and self-medication. The uncertain diagnosis, the absence of a rational program for antimicrobial use, and sub doses of antimicrobial are also factors that contribute to the increased prevalence of drug-resistant microorganisms, rendering antibiotics ineffective. (Mota L. M, Vilar F. C, Dias L. B. A, Nunes T. F, 2010)

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