

**BUSITEMA
UNIVERSITY**
Pursuing Excellence

**FACULTY OF AGRICULTURE AND ANIMAL SCIENCES
DEPARTMENT OF ANIMAL PRODUCTION**

A FINAL YEAR PROJECT REPORT

**ANTIMICROBIAL SCREENING OF SELECTED MEDICINAL PLANTS
USED FOR TREATING WOUND INFECTIONS IN CATTLE IN ACHOLI
SUB REGION (KITGUM DISTRICT)**

By

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(BU/UP/2020/1539)

**This Final Year Project Report is submitted to the Department of Animal
Production in a partial fulfillment of the requirement for the award of the
degree of Bachelor of Animal Production and Management**

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Declaration

I Oketayot Allan hereby do declare that this special project research dissertation submitted for verification and examination is my original work guided by my research supervisor Professor Olila Deo. This work has never been submitted for any award from any University or Higher Institution of learning

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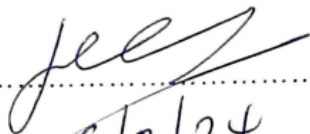
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Approval

This research report has been submitted with the approval of my Academic Supervisor assigned by Busitema University Research Department.

Prof. Olila Deo

Signature.....



Date.....

6/3/24

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Table of Contents

Declaration	i
Approval	ii
Acknowledgement	iii
List of figures	vi
List of tables.....	vii
List of abbreviations	viii
Abstract	ix
CHAPTER ONE: INTRODUCTION.....	1
1.0 Introduction.....	1
1.1 Background of the study	1
1.2 Problem statement	3
1.3 Objectives of the study	4
1.3.1 General objective	4
1.3.2 Specific objectives	4
1.4 Research questions	4
1.5 Significance of the study	4
1.6 Justification of the study	5
1.7.0 Scope of the study	5
1.7.1 Geographical scope.....	5
1.7.2 Experimental scope.....	5
1.7.3 Time scope.....	5
CHAPTER TWO: LITERATURE REVIEW	6
2.0 Literature review	6
2.1 Wounds and wound management	6
2.2 Causation and the infectious etiology of wounds in cattle.....	9
2.3 The use of natural products in wound management.....	10
CHAPTER THREE: MATERIALS AND METHODS	11
3.0 Materials and methods	11
3.1 Research design.....	11
3.2 Study area.....	11

3.3 Sample size determination	11
3.4 Plant collection and identification.....	12
3.5 Sample processing.....	12
3.6 Preparation of extract	13
3.7 Source of bacteria and inoculation	13
3.8 Antibacterial activity/screening.....	13
3.9 Statistical design and experimental analysis	14
3.10 Data presentation.....	14
3.11 Environmental consideration.....	14
3.12 Ethical consideration	14
3.13 Limitation of the research	14
CHAPTER FOUR: RESULTS AND DISCUSSION	15
4.1 Results.....	15
4.1.1 Results of the medicinal plants used in the treatments of wound infections in Labongo Layamo Sub County, Kitgum district.	15
4.1.2 Results of the antibacterial activity of the ethanolic plant extracts.....	20
4.2.2 Antibacterial activity of the various ethanolic plant extracts screened	24
5.0 Conclusion and Recommendations.....	26
5.1 Conclusion.....	26
5.2 Recommendation.....	26
Appendix.....	32
Questionnaire	
Plan of work	
Research Budget	
Photos	

List of figures

Figure 4- 1. Respondents by Gender.....	15
Figure 4- 2. Education level of respondents	17
Figure 4- 3 Medicinal plants used in Labongo Layamo S/C	18
Figure 4- 4 Medicinal plants recorded with the highest Fidelity level	19
Figure 4- 5 Parts of the medicinal plants used.....	19
Figure 4- 6 Methods of medicinal plant preparation	20

List of tables

Table 4 - 1. Results of Respondents and their Gender.....	15
Table 4 - 2. Age of the Respondents.....	16
Table 4 - 3. Education level of respondents.....	16
Table 4 - 4. Effectiveness of medicinal plant	20
Table 4 - 5. Zones of inhibition of different ethanolic extracts	21
Table 4 - 6. Means of the different plant extra	22

List of abbreviations

AMR	Antimicrobial Resistance
HOD	Head of Department
MDR	Multi Drug resistance
WHO	World Health Organization
MHA	Mueller Hinton Agar
APM	Animal Production and Management
DMSO	Dimethyl sulfoxide
MIC	Minimal inhibitory concentration

Abstract

Antimicrobial resistance is currently having a significant impact due to treatment failure associated with multidrug-resistant bacteria and it has become a global animal and public health concern. Medicinal plants form an integral part of many health care systems in developing countries. Basing on the growing resistance of MDR microbe strains to antibiotics and other drugs, the search for alternatives is urgently necessary. This study aimed at documenting and evaluating the antimicrobial activities of the selected plant extracts which have been used as traditional medicines by the Acholi community in treating wound infections in cattle. A survey was done to identify the medicinal plants used in treating wound infections and the laboratory experiment was done to screen the antimicrobial activities of the ethanolic plant extracts against bacteria isolates *E.coli*, *P. aeruginosa* and *S. aureus*. Information was obtained from 25 respondents and a total of 16 medicinal plants were reported to treat wound infections in cattle in the study area with the highest fidelity level calculated for *Chamaecrista nigricans* 56%, followed by *Azadirachta indica* (52%), *Aloe vera* (44%), *Vernonia amygdalina* (44%) and *Euphorbia tirucalli* (38%) respectively. In the disc diffusion method used, the extract of *Aloe vera*, *Chamaecrista nigricans*, *Euphorbia tirucalli* and *Azadirachta indica* have the ability to inhibit the growth of *P. aeruginosa* and *S. aureus* with the highest mean susceptibility of 10.67 mm diameter seen in *P. aeruginosa*, while resistance was registered with *E. coli*. Conclusively, the people in Labongo Layamo Sub County and Kitgum district at large widely use several medicinal plants to manage wounds and other ailments in cattle. There is need therefore to conserve these species for sustainable utilization of plant resources. The results indicated that the extracts of *Azadirachta indica*, *Euphorbia tirucalli*, *Aloe vera* and *Chamaecrista nigricans* have the antibacterial effect on the bacteria tested, especially *P. aeruginosa*. This was confirmed by determination of zone of inhibition. This indicated that these plants have antibacterial properties and could be used in the development of novel antibacterial agents, hence combating the global rise in antimicrobial resistance.

CHAPTER ONE: INTRODUCTION

1.0 Introduction

1.1 Background of the study

Medicinal plants have been used practically in all societies to manage health ailments for ages and are still a critical intervention for many people in developing countries (Friday *et al.*, 2022).

Farmers have acknowledged the indigenous and traditional knowledge of ethno veterinary medicine and its application through a course of experience spanning hundreds of years. As seen by Nabukenya *et al.*(2014), in addressing veterinary ill cases, livestock keepers still rely on traditional and folk practices of plant medicines.

Friday *et al.* (2022) pointed out the exploitation of natural resources in discoveries of active ingredients which can be developed into plant therapeutic agents by suitable modification. Given that many plants in various geographical areas have not been scientifically explored for their pharmacological activities, nature undoubtedly holds a great potential for the possible discovery of bioactive herbs and compounds (Radio & Pack, 2020).

Antimicrobial resistance is currently having a significant impact due to treatment failure associated with multidrug-resistant bacteria and it has become a global animal and public health concern. Antimicrobial Resistance (AMR) according to Dadgostar (2019) occurs when microorganisms including bacteria, viruses, fungi, and parasites undergo mutation after a long time and are able to adapt and grow in the medications that were once used against them. Sapkota *et al.*(2018) pointed that numerous bacteria, especially *Staphylococcus aureus*, *E. coli* and *Pseudomonas* species among others have innate resistance. Animal infection with AMR strain leads to increased and prolonged severe illnesses, increased cost of treatment, reduced production and increased morbidity and mortality (Dadgostar, 2019). One of the most well-known cases of AMR, methicillin resistance in *Staphylococcus aureus*, has been associated with high mortality rate in animal across the globe. In addition, multi drug resistant gram negative bacteria has made treatment of various infection difficult (Marston *et al.*, 2016) .

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