TABLE OF CONTENTS

ACKNOWLEDGEMENTS LIST OF FIGURES V CHAPTER ONE: GENERAL INTRODUCTION 1.1 Ultraviolet radiation 1.2 Photosensitising compounds 1.2.1 Furocoumarins 1.2.2 Polyacetylenes and their thiophenes derivatives 1.2.3 Dictamnine and β-carboline alkaloids 1.3 The genus Homalium Jacq.	
ACKNOWLEDGEMENTS LIST OF FIGURES LIST OF TABLES CHAPTER ONE: GENERAL INTRODUCTION 1.1 Ultraviolet radiation 1.2 Photosensitising compounds 1.2.1 Furocoumarins 1.2.2 Polyacetylenes and their thiophenes derivatives 1.2.3 Dictamnine and β-carboline alkaloids 1.3 The genus Homalium Jacq. 1.4 Objectives CHAPTER TWO: SECONDARY METABOLITES OF Homalium longifolium Benth. 2.1 Secondary metabolites of Homalium Jacq. 2.1.1 Isocoumarins 2.1.2 Alkaloids 2.1.3 Other components 4.2.2 Experimental 2.2.1 Instrumentation 2.2.2 Plant material 4.2.3 Thin layer chromatography 2.2.3.1 Preparative TLC 2.2.3.2 TLC for sugar analysis 2.4.4 Column chromatography 2.2.5 Visualizing reagents 2.2.5 Usualizing reagents 2.2.5 Visualizing reagents 2.2.5 Visualizing reagents 2.2.5.2 Varillin-Sulphuric acid	
ACKNOWLEDGEMENTS LIST OF FIGURES LIST OF TABLES CHAPTER ONE: GENERAL INTRODUCTION 1.1 Ultraviolet radiation 1.2 Photosensitising compounds 1.2.1 Furocoumarins 1.2.2 Polyacetylenes and their thiophenes derivatives 1.2.3 Dictamnine and β-carboline alkaloids 1.3 The genus Homalium Jacq. 1.4 Objectives CHAPTER TWO: SECONDARY METABOLITES OF Homalium longifolium Benth. 2.1 Secondary metabolites of Homalium Jacq. 2.1.1 Isocoumarins 2.1.2 Alkaloids 2.1.3 Other components 4.2.2 Experimental 2.2.1 Instrumentation 2.2.2 Plant material 4.2.3 Thin layer chromatography 2.2.3.1 Preparative TLC 2.2.3.2 TLC for sugar analysis 2.4.4 Column chromatography 2.2.5 Visualizing reagents 2.2.5 Usualizing reagents 2.2.5 Visualizing reagents 2.2.5 Visualizing reagents 2.2.5.2 Varillin-Sulphuric acid	
LIST OF FIGURES LIST OF TABLES CHAPTER ONE: GENERAL INTRODUCTION 1.1 Ultraviolet radiation 1.2 Photosensitising compounds 1.2.1 Furocoumarins 1.2.2 Polyacetylenes and their thiophenes derivatives 1.2.3 Dictamnine and β-carboline alkaloids 2.1 The genus Homalium Jacq. 2.1 Objectives CHAPTER TWO: SECONDARY METABOLITES OF Homalium longifolium Benth. 2.1 Secondary metabolites of Homalium Jacq. 2.1.1 Isocoumarins 2.1.2 Alkaloids 2.1.3 Other components 4.2.2 Experimental 4.2.1 Instrumentation 4.2.2.1 Instrumentation 4.2.2.1 Plant material 4.2.3 Thin layer chromatography 4.2.2.3 The for sugar analysis 4.2.4 Column chromatography 4.2.2.5 Visualizing reagents 4.2.2.5 Visualizing reagents 4.2.2.5 Uragendorff's reagent 4.2.2.5 Loragendorff's reagent	ii
LIST OF TABLES CHAPTER ONE: GENERAL INTRODUCTION 1.1 Ultraviolet radiation 1.2 Photosensitising compounds 1.2.1 Furocoumarins 1.2.2 Polyacetylenes and their thiophenes derivatives 1.2.3 Dictamnine and β-carboline alkaloids 1.3 The genus Homalium Jacq. 1.4 Objectives CHAPTER TWO: SECONDARY METABOLITES OF Homalium longifolium Benth. 2.1 Secondary metabolites of Homalium Jacq. 2.1.1 Isocoumarins 2.1.2 Alkaloids 2.1.3 Other components 4.2.2 Experimental 2.2.1 Instrumentation 2.2.2 Plant material 4.2.3 Thin layer chromatography 2.2.3.1 Preparative TLC 2.2.3.2 TLC for sugar analysis 2.4.4 Column chromatography 2.5.5 Visualizing reagents 2.2.5.1 Dragendorff's reagent 2.2.5.2 Visualizing reagents 2.2.5.2 Visualizing reagents 2.2.5.2 Visualizing reagents 2.2.5.2 Visualizing reagent	١
LIST OF TABLES CHAPTER ONE: GENERAL INTRODUCTION 1.1 Ultraviolet radiation 1.2 Photosensitising compounds 1.2.1 Furocoumarins 1.2.2 Polyacetylenes and their thiophenes derivatives 1.2.3 Dictamnine and β-carboline alkaloids 1.3 The genus Homalium Jacq. 1.4 Objectives CHAPTER TWO: SECONDARY METABOLITES OF Homalium longifolium Benth. 2.1 Secondary metabolites of Homalium Jacq. 2.1.1 Isocoumarins 2.1.2 Alkaloids 2.1.3 Other components 4.2.2 Experimental 2.2.1 Instrumentation 2.2.2 Plant material 4.2.3 Thin layer chromatography 2.2.3.1 Preparative TLC 2.2.3.2 TLC for sugar analysis 2.4.4 Column chromatography 2.5.5 Visualizing reagents 2.2.5.1 Dragendorff's reagent 2.2.5.2 Visualizing reagents 2.2.5.2 Visualizing reagents 2.2.5.2 Visualizing reagents 2.2.5.2 Visualizing reagent	
CHAPTER ONE: GENERAL INTRODUCTION 1.1 Ultraviolet radiation 1.2 Photosensitising compounds 1.2.1 Furocoumarins 1.2.2 Polyacetylenes and their thiophenes derivatives 1.2.3 Dictamnine and β-carboline alkaloids 1.3 The genus Homalium Jacq. 1.4 Objectives CHAPTER TWO: SECONDARY METABOLITES OF Homalium longifolium Benth. 2.1 Secondary metabolites of Homalium Jacq. 2.1.1 Isocoumarins 2.1.2 Alkaloids 2.1.3 Other components 4.2 Experimental 2.2.1 Instrumentation 2.2.2 Plant material 4.2.3 Thin layer chromatography 2.2.3.1 Preparative TLC 2.2.3.2 TLC for sugar analysis 2.4.4 Column chromatography 2.2.5 Visualizing reagents 2.2.5 Usualizing reagents 2.2.5 Usualizing reagents 2.2.5 Uragendorff's reagent 2.2.5 2 Lantlin-Sulphuric acid	vi
1.1 Ultraviolet radiation 1.2 Photosensitising compounds 1.2.1 Furocoumarins 1.2.2 Polyacetylenes and their thiophenes derivatives 1.2.3 Dictamnine and β-carboline alkaloids 1. The genus Homalium Jacq. 1.4 Objectives CHAPTER TWO: SECONDARY METABOLITES OF Homalium longifolium Benth. 2.1 Secondary metabolites of Homalium Jacq. 3.1.1 Isocoumarins 2.1.2 Alkaloids 4.1.3 Other components 4.2.1 Instrumentation 4.2.2.1 Instrumentation 4.2.2.1 Instrumentation 4.2.2.2 Plant material 4.2.2.3 Thin layer chromatography 4.2.3.1 Preparative TLC 4.2.3.2 TLC for sugar analysis 4.4 Column chromatography 4.5 Visualizing reagents 4.2.5 Visualizing reagents 4.2.5.2 Variallin-Sulphuric acid	iii
1.1 Ultraviolet radiation 1.2 Photosensitising compounds 1.2.1 Furocoumarins 1.2.2 Polyacetylenes and their thiophenes derivatives 1.2.3 Dictamnine and β-carboline alkaloids 1. The genus Homalium Jacq. 1.4 Objectives CHAPTER TWO: SECONDARY METABOLITES OF Homalium longifolium Benth. 2.1 Secondary metabolites of Homalium Jacq. 3.1.1 Isocoumarins 2.1.2 Alkaloids 4.1.3 Other components 4.2.1 Instrumentation 4.2.2.1 Instrumentation 4.2.2.1 Instrumentation 4.2.2.2 Plant material 4.2.2.3 Thin layer chromatography 4.2.3.1 Preparative TLC 4.2.3.2 TLC for sugar analysis 4.4 Column chromatography 4.5 Visualizing reagents 4.2.5 Visualizing reagents 4.2.5.2 Variallin-Sulphuric acid	
1.2 Photosensitising compounds 1.2.1 Furocoumarins 1.2.2 Polyacetylenes and their thiophenes derivatives 1.2.3 Dictamnine and β-carboline alkaloids 1.3 The genus Homalium Jacq. 1.4 Objectives CHAPTER TWO: SECONDARY METABOLITES OF Homalium longifolium Benth. 2.1 Secondary metabolites of Homalium Jacq. 2.1.1 Isocoumarins 2.1.2 Alkaloids 2.1.3 Other components 4.2 Experimental 2.2.1 Instrumentation 2.2.2 Plant material 4.2.3 Thin layer chromatography 2.2.3.1 Preparative TLC 2.2.3.2 TLC for sugar analysis 2.4.4 Column chromatography 2.2.5 Visualizing reagents 2.2.5 Usualizing reagents 2.2.5 Uragendorff's reagent 2.2.5.2 Vanilin-Sulphuric acid	2
1.2.1 Furocoumarins 1.2.2 Polyacetylenes and their thiophenes derivatives 1.2.3 Dictamnine and B-carboline alkaloids 1.3 The genus Homalium Jacq. 1.4 Objectives 2.1 Secondary METABOLITES OF Homalium longifolium Benth. 2.1 Secondary metabolites of Homalium Jacq. 2.1.1 Isocoumarins 3.1.2 Alkaloids 2.1.3 Other components 2.2 Experimental 2.2.1 Instrumentation 2.2.2 Plant material 2.2.3 Thin layer chromatography 2.2.3.1 Preparative TLC 2.2.2.2.2 TLC for sugar analysis 2.2.4 Column chromatography 2.2.5 Visualizing reagents 2.2.5.2 Valillin-Sulphuric acid	5
1.2.2 Polyacetylenes and their thiophenes derivatives 1.2.3 Dictamnine and B-carboline alkaloids 1.3 The genus Homalium Jacq. 1.4 Objectives 3 3 3 4 4 5 5 5 5 5 5 5 5	
1.2.3 Dictamnine and β-carboline alkaloids 1.3 The genus Homalium Jacq. 1.4 Objectives CHAPTER TWO: SECONDARY METABOLITES OF Homalium longifolium Benth. 2.1 Secondary metabolites of Homalium Jacq. 2.1.1 Isocoumarins 3.2.1.2 Alkaloids 4.1.3 Other components 4.2.Experimental 2.2.1 Instrumentation 4.2.2.2 Plant material 4.2.3 Thin layer chromatography 2.2.3.1 Preparative TLC 2.2.3.2 TLC for sugar analysis 4.2.4 Column chromatography 2.2.5 Visualizing reagents 2.2.5 Usualizing reagents 2.2.5 Dragendorf's reagent 2.2.5.2 Vanilin-Sulphuric acid	6
1.3 The genus Homalium Jacq. 3 1.4 Objectives 3 CHAPTER TWO: SECONDARY METABOLITES OF Homalium longifolium Benth. 3 2.1 Secondary metabolites of Homalium Jacq. 3 2.1.1 Isocoumarins 3 2.1.2 Alkaloids 4 2.1.3 Other components 4 2.2 Experimental 4 2.2.1 Instrumentation 4 2.2.2 Plant material 4 2.2.3 Thin layer chromatography 4 2.2.3.1 Preparative TLC 4 2.2.2.2 TLC for sugar analysis 4 2.2.4 Column chromatography 4 2.2.5 Visualizing reagents 4 2.2.5.2 Valialiin-Sulphuric acid 4	22
1.4 Objectives CHAPTER TWO: SECONDARY METABOLITES OF Homalium longifolium Benth. 2.1 Secondary metabolites of Homalium Jacq. 2.1.1 Isocoumarins 33 2.1.2 Alkaloids 4 2.1.3 Other components 4 2.2 Experimental 4 2.2.1 Instrumentation 4 2.2.2 Plant material 4 2.2.3 Thin layer chromatography 4 2.2.3.1 Preparative TLC 4 2.2.3.2 TLC for sugar analysis 4 2.2.4 Column chromatography 4 2.2.5 Visualizing reagents 4 2.2.5 Dragendorff's reagent 4 2.2.5.1 Dragendorff's reagent 4 2.2.5.2 Vanilin-Sulphuric acid 4	
CHAPTER TWO: SECONDARY METABOLITES OF Homalium longifolium Benth. 2.1 Secondary metabolites of Homalium Jacq. 2.1.1 Isocoumarins 2.1.2 Alkaloids 2.1.3 Other components 4.2.Experimental 2.2.1 Instrumentation 2.2.2 Plant material 4.2.3 Thin layer chromatography 2.2.3.1 Preparative TLC 2.2.3.2 TLC for sugar analysis 4.2.4 Column chromatography 2.2.5 Visualizing reagents 2.2.5 Usualizing reagents 2.2.5 D ragendorff's reagent 2.2.5.2 Valilin-Sulphuric acid	31
Homalium longifolium Benth.	37
2.1 Secondary metabolites of Homalium Jacq. 3 2.1.1 Isocoumarins 3 2.1.2 Alkaloids 4 2.1.3 Other components 4 2.2 Experimental 4 2.2.1 Instrumentation 4 2.2.2 Plant material 4 2.2.3 Thin layer chromatography 4 2.2.3.1 Preparative TLC 4 2.2.3.2 TLC for sugar analysis 4 2.2.4 Column chromatography 4 2.2.5 Visualizing reagents 4 2.2.5.1 Dragendorff's reagent 4 2.2.5.2 Vanillin-Sulphuric acid 4	
2.1.1 Isocoumarins 3 2.1.2 Alkaloids 4 2.1.3 Other components 4 2.2 Experimental 4 2.2.1 Instrumentation 4 2.2.2 Plant material 4 2.2.3 Thin layer chromatography 4 2.2.3.1 Preparative TLC 4 2.2.3.2 TLC for sugar analysis 4 2.2.4 Column chromatography 4 2.2.5 Visualizing reagents 4 2.2.5.1 Dragendorff's reagent 4 2.2.5.2 Vanillin-Sulphuric acid 4	Q
2.1.2 Alkaloids 4 2.1.3 Other components 4 2.2 Experimental 4 2.2.1 Instrumentation 4 2.2.2 Plant material 4 2.2.3 Thin layer chromatography 4 2.2.3.1 Preparative TLC 4 2.2.3.2 TLC for sugar analysis 4 2.2.4 Column chromatography 4 2.2.5 Visualizing reagents 4 2.2.5.1 Dragendorff's reagent 4 2.2.5.2 Vanillin-Sulphuric acid 4	-
2.1.3 Other components 4 2.2 Experimental 4 2.2.1 Instrumentation 4 2.2.2 Plant material 4 2.2.3 Thin layer chromatography 4 2.2.3.1 Preparative TLC 4 2.2.2 TLC for sugar analysis 4 2.2.4 Column chromatography 4 2.2.5 Visualizing reagents 4 2.2.5.1 Dragendorff's reagent 4 2.2.5.2 Vanillin-Sulphuric acid 44	
2.2 Experimental 4 2.2.1 Instrumentation 4 2.2.2 Plant material 4 2.2.3 Thin layer chromatography 4 2.2.3.1 Preparative TLC 4 2.2.3.2 TLC for sugar analysis 4 2.2.4 Column chromatography 4 2.2.5 Visualizing reagents 4 2.2.5.1 Dragendorff's reagent 4 2.2.5.2 Vanillin-Sulphuric acid 44	
2.2.1 Instrumentation 4 2.2.2 Plant material 4 2.2.3 Thin layer chromatography 4 2.2.3.1 Preparative TLC 4 2.2.3.2 TLC for sugar analysis 4 2.2.4 Column chromatography 4 2.2.5 Visualizing reagents 4 2.2.5.1 Dragendorff's reagent 4 2.2.5.2 Vanillin-Sulphuric acid 4	-
2.2.2 Plant material 4 2.2.3 Thin layer chromatography 4 2.2.3.1 Preparative TLC 4 2.2.3.2 TLC for sugar analysis 4 2.2.4 Column chromatography 4 2.2.5 Visualizing reagents 4 2.2.5.1 Dragendorff's reagent 4 2.2.5.2 Vanillin-Sulphuric acid 4	
2.2.3 Thin layer chromatography 4 2.2.3.1 Preparative TLC 4 2.2.3.2 TLC for sugar analysis 4 2.2.4 Column chromatography 4 2.2.5 Visualizing reagents 4 2.2.5.1 Dragendorff's reagent 4 2.2.5.2 Vanillin-Sulphuric acid 4	-
2.2.3.1 Preparative TLC 4 2.2.3.2 TLC for sugar analysis 4 2.2.4 Column chromatography 4 2.2.5 Visualizing reagents 4 2.2.5.1 Dragendorff's reagent 4 2.2.5.2 Vanillin-Sulphuric acid 44	
2.2.3.2 TLC for sugar analysis 4. 2.2.4 Column chromatography 4. 2.2.5 Visualizing reagents 4. 2.2.5.1 Dragendorff's reagent 4. 2.2.5.2 Vanillin-Sulphuric acid 4.	
2.2.4 Column chromatography 4 2.2.5 Visualizing reagents 4 2.2.5.1 Dragendorff's reagent 2.2.5.2 Vanillin-Sulphuric acid	
2.2.5 Visualizing reagents 4. 2.2.5.1 Dragendorf's reagent 4. 2.2.5.2 Vanillin-Sulphuric acid 4.	
2.2.5.1 Dragendorff's reagent 4 2.2.5.2 Vanillin-Sulphuric acid 44	
2.2.5.2 Vanillin-Sulphuric acid	-
	-
2.2.3.3 Anisaldehyde-Sulphuric acid	-
2.2.(Di	
2.2.6 Phytochemical screening of H. longifolium	
2.2.7 Phytochemical investigation of H. longifolium	3
2.2.7.1 Isolation of compound from fraction F1 49)
2.2.7.2 Isolation of compound from fraction F2)
2.2.7.3 Isolation of compound from fraction F3)
2.3 Results and discussion 51	i
2.3.1 Phytochemical screening of H. longifolium	i
2.3.2 Phytochemical investigation of <i>H. longifolium</i>	i
2.3.2.1 Isolation of compound from fraction F1	i
2.3.2.2 Isolation of compound from fraction F2	í
2.3.2.3 Isolation of compound from fraction F3	,

2.3.3 Structural elucidation of compound labelled		
HL-1 2.3.4 Structural elucidation of compound labelled		57
HL-7		60
2.3.5 Structural elucidation of compound labelled		
HL-9		67
CHAPTER THREE: PHOTOSENSITIZING ACTIVITIES		
OF Homalium longifolium Benth.		
3.1 Experimental model for photosensitivity assay		74
3.2 Experimental		79
3.2.1 Brine Shrimp Lethality Test		79
3.2.1.1 Test sample preparation		79
3.2.1.2 Lethality assay		79
3.2.2 Photosensitivity against microorganisms		80
3.2.2.1 Test microorganisms		80
3.2.2.2 Preparation of solid media		80
3.2.2.2.1 Medium for culture of yeast		81
3.2.2.2.2 Medium for culture of		•••
bacteria		81
3.2.2.2.3 Preparation of plates and		01
slopes medium		82
3.2.2.3 Preparation of liquid media		82
3.2.2.3.1 Broth for culture of yeast		82
3.2.2.3.2 Broth for culture of bacteria		83
3.2.2.4 Cultivation of stock and routine		0.5
cultures		83
3.2.2.5 Disc Diffusion Technique		84
3.2.2.6 Technique involving Thin Layer		84
Chromatography		07
3.2.2.7 Photosensitivity assay		87
3.2.3 Photosensitivity in animals		88
3.2.3.1 Experimental animals		90
3.2.3.2 Preparation of test samples		90
3.2.3.3 Light source		91
3.2.3.4 Treatment of animals		91
3.3 Results and discussion		92
3.3.1 General screening for biological activity		94
3.3.2 Screening for <i>in vitro</i> photosensitizing activity		94
3.3.3 Investigations on photosensitizing properties of		96
H. longifolium		
3.3.3.1 Detection of the photoactive		98
compound/s		
	•••••	98
3.3.3.2 Phototoxicity of compound labelled HL-1		
		107
3.3.3.3 UVA-mediated antibacterial activity		
of fraction labelled F3		118
3.3.3.4 Photosensitizing activity on rats skin		125
CHAPTER FOUR: GENERAL DISCUSSION		134

CHAPTER FIVE: CONCLUSION	 138
REFERENCES	 139