



**PHYTOCHEMICAL INVESTIGATION OF *HARRISONIA ABYSSINICA* AND
THESPESIA GARCKEANA FOR ANTIPLASMODIAL AND ANTIMICROBIAL
COMPOUNDS.**

BY

MASILA VERONICA MUTINDI

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

Masila Veronica Mutindi

Reg. No. I56/70606/2011

This thesis has been submitted for examination with our approval as University supervisors.

Prof. Jacob Ogweno Midiwo

Dr. Leonidah Kerubo Omosa

Department of Chemistry,

Department of Chemistry,

University of Nairobi,

University of Nairobi,

P.O. Box 30179-00100,

P.O. Box 30197-00100,

Nairobi.

Nairobi.

DEDICATION

This thesis is dedicated to my dear friend and sister Everlyne Mueni Nthale.

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ABSTRACT

Harrisonia abyssinica (Simaroubaceae) and *Thespesia garckeana* (Malvaceae) have been used in folk medicine but there is no scientific data on them. This study therefore sought to investigate the phytochemical and microbial principles in these plants so as to improve the knowledge base and hopefully produce lead compounds. The stem bark of *H. abyssinica*, the roots and stems of *T. garckeana* were subjected to solvent extraction by cold percolation. The crude extracts underwent chromatographic separation and a total of seven compounds were isolated. The seven compounds were characterized using spectroscopic techniques and identified as obacunone (**1**), from *H. abyssinica* stem barks, gossypol (**2**), 6,6'-dimethoxygossypol (**3**), 6-methoxygossypol (**4**), stigmasterol (**5**) from *T. garckeana* roots, *E*-docosyl 3-(3,4-dihydroxyphenyl) acrylate (**6**) and betulinic acid (**7**) from *T. garckeana* stems. The crude extracts and all the seven compounds were tested for antiplasmodial and antimicrobial activity. The crude extract of *H. abyssinica* exhibited antiplasmodial activities with IC₅₀ values of 5.6 and 4.4 µg/ml against the (D6) and (W2) strains of *Plasmodium falciparum* respectively. The crude extract from the roots of *T. garckeana* showed no antiplasmodial activity at concentrations less than 50 µg/ml, but exhibited 100 % inhibition against *Candida glabrata* at concentrations of 50 µg/ml. Obacunone (**1**) was found to have a moderate activity against D6 and W2 strains of *P. falciparum* with IC₅₀ values > 4.76 µg/ml. Some compounds including gossypol (**2**) showed strong activity of IC₅₀ value of 0.89 µg/ml against vancomycin resistant Enterococcus (VRE) ATCC 700221 and antimicrobial activities against *Candida glabrata*, *Staphylococcus aureus* and methicillin resistant *Staphylococcus* (MRS) with IC₅₀ values of 3.21, 6.98 and 4.19 µg/ml respectively. However, its monomethoxylated derivative, 6-methoxygossypol (**4**) showed interesting activities against *C. glabrata*, MRS and vancomycin resistant *Enterococcus* (VRE) ATCC 51299 and ATCC 700221 strains with IC₅₀ values of 0.8, 9.37, 2.31 and 1.45 µg/ml respectively

