

**ISOLATION AND IDENTIFICATION OF ANTIBACTERIAL, ANTIFUNGAL
AND NEMATICIDAL COMPOUNDS FROM SELECTED KENYAN *CROTON*
SPECIES USED IN TRADITIONAL MEDICINE.**

BY

PETER WAMBUA MULUNDI

A thesis submitted in partial fulfillment of the requirement for the degree of Master of

Science in Chemistry.

Faculty of Science

Jomo Kenyatta University of Agriculture and Technology.

2005

ABSTRACT

Croton species belonging to the family *Euphorbiaceae* are reputed medicinal plants that have been used in traditional medicine for infectious diseases.

Kenyan *Croton* species are used for the treatment of many ailments including whooping cough, tuberculosis, anthrax, venereal diseases, asthma, wounds, cholera, dysentery, pneumonia and as anthelmintics. There are over fifteen species found in Kenya, with at least eight of them being used in traditional medicine by local communities.

The species, which have been studied elsewhere, are known to possess antifungal, antibacterial and nematocidal properties.

The search for antifungal, antibacterial and nematocidal agents from these plants was necessitated by the continuing emergence of antibiotic resistance, which threatens to reverse the progress made during the latter half of the twentieth century to effectively treat bacterial and other infectious diseases.

The crude aqueous and methanol extracts of the leaves, stem bark and root bark of *Croton. alienus* Pax., *C. megalocarpoides* Friis and Gilbert., *C. dichogamus* Pax. and *C. pseudopuchellus* Pax. were separately screened for brine shrimp lethality, antifungal, antibacterial and nematocidal activity. From the results, stembarks of the two most bioactive plants, *C. alienus* and *C. pseudopuchellus* were selected for fractionation and isolation of the pure compounds from their organic extracts. Vacuum Liquid chromatography (VLC) and thin layer chromatography (TLC) were used for isolation and purification of bioactive principles. Spectral data obtained by Infrared spectroscopy (IR), mass spectrometry (MS), Proton and carbon-13 nuclear magnetic resonance (^1H -NMR and ^{13}C -NMR) were used for structure elucidation and identification of isolated compounds.

Three pure compounds, crotepoixide, 4-hydroxy-1-methylproline and HP7 were identified from these species and were found to have antimicrobial and nematocidal activities.