Ethnobotanical survey of biopesticides and other medicinal plants traditionally used in Meru central district of Kenya

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ABSTRACT

Ethnopharmacological relevance: The purpose of this study was to carry out a survey and document plants used in Meru-central district by traditional healers with emphasis on those used as biopesticides.

Methods: The study was carried out at Igane and Gatuiru sub-locations, Abaghuchu East division of Meru-Central district, Kenya. The data collection involving 23 traditional healers was done using semi-structured questionnaire, focused group discussion and transect walks. Plants samples were collected and botanically identified at the herbarium of the Department of Land Resource Management and Agriculture Technology in the University of Nairobi.

Results: The results of the ethnobotanical survey revealed that herbalists belonged to both gender with the majority being male (82.6%) and female (17.4%). Their ages ranged from 28 to 82 years. Seventy (70) plant species, belonging to 35 families, were identified as being used as biopesticides and also as medicinal. The families encountered were Asteraceae (10%), Euphorbiaceae (6.8%), Lamidaceae (5.1%), Fabaceae (4.6%), Celastraceae (5.7%), Rubiaceae (5.7%), Liliaceae (4.3%), Apocynaceae (2.0%), Flourensiaaceae (2.0%), Verbenaceae (2.0%) and the rest of the 24 families had 1.4% each. These medicinal plants were used to treat and manage a wide range of diseases and conditions including parasitic, microbial, helminthosis, protozoa, cuts and wounds, fractures, dental, arthritis, allergic, snake bites, reproductive as well as metabolic. Among the plants used, shrubs were the most common at 42.8%, trees were 32.5%, while herbs and liana were at 22.5% and 1.4%, respectively. Majority of the respondents used leaves, roots and bark to make their herbal preparations with only a few using seeds, flowers, whole plant, flower sap and pods. The plants that were cited by the respondents to be used as biopesticides were Pterocynthus barbatus Andr., (47.8%), Tephrosia vogelii Hookf. (39.1%), Ocimum gratissimum L (34.7%), Vernonia lasiopus D.Hoffm. (8.7%), Cissaba tessela L., Lippia (4.3%) and Orobota randiakine Sprague (4.3%).

Conclusions: Meru central district is rich in biodiversity of biopesticides and other medicinal plants and there is need for further pharmacological studies to validate their use as potential drugs for pests and disease control.

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1. Introduction

It is estimated by the World Health Organization (WHO) that around 80% of the population in Africa use traditional medicines and about 85% of traditional medicine involves the use of plant extracts (Farnsworth and Soejarto, 1985; Hack-Seang, 2005). Similarly in developed countries 70% to 80% of the population has used some form of alternative or complementary medicine (World Health Organization (WHO), 2008). There is a refocusing interest on traditional medicine due to global demand for more affordable therapeutics and concern for side effects (Singh, 2007). Plants have been used in traditional medicine for several thousand years (Abu-Rabia, 2005). The higher plants who mostly originate from Africa, Asia and South America are estimated to contribute 33% of drugs produced in developed countries (Rogo, 2004).

Medicinal plants are the major raw materials for both traditional and conventional medicine. These plants are also used as source of nutrition (soup and tonics in children milk), appetizers (Acacia nilotica), and energy boosters (Catha edulis) and for aroma in teas (Ocimum spp) (Maundu et al., 2004). They are harvested for local use and also an ingredient of herbal medicine for use in pharmaceutical industry both locally and internationally. The traditional medical knowledge of medicinal plants and their utilization by indigenous cultures are vital for conservation of cultural traditions and biodiversity, community healthcare and also in the current drug development and in the near future (Pei, 2001).

Many communities in Kenya rely on a wide range of indigenous practices to manage human and animal diseases and conditions (Gathuma et al., 2004; Githiori, 2004; Kokwaro, 1993; Miron et al.)