

A Brief Ethnobotanical Survey of Some Medicinal Plants Used by the Kanjoo Community in Meru County, Kenya



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Abstract

Medicinal plants in Kenya are not adequately documented despite their widespread use. The threat of complete disappearance of the knowledge on herbal medicine warrants an urgent need to document the information. An ethno botanical study on traditional use of medicinal plants was conducted between January and February 2015 in Kanjoo location Meru County. The study focused on identification of the plants, diseases treated, plant part used, preparation methods, administration route and other plant uses. Data collection involved semi-structured interviews with 30 purposively selected traditional healers. Twenty eight plant species distributed in 26 genera, 22 families and three different life forms were identified as being useful for treating 17 human ailments. Majority of the species were trees and shrubs; leaves were the most dominant plant part used; oral route of administration was commonest and hot water decoction most preferred method of preparation. Various non-medicinal uses of the plants were also recorded. The study reveals that the Kanjoo area is rich in medicinal plants and the knowledge on herbal medicine is still part of the cultural heritage in the community. Preservation of this knowledge is important and phytochemical analysis of the plants may provide some useful leads for the development of new drugs.

Keywords: Kanjoo; Meru; Herbal medicine; Traditional healers; Ethno botany

Introduction

Plants form an integral part of human life. They have been used from time immemorial by humans as medicines [1]. Ancient civilizations' in the world thrived on use of plants for their livelihood [2]. In the recent past to date medicinal plants have generated lots of interest [3-5]. Several compounds currently in use as drugs or templates for synthesis of allopathic drugs have been derived from plants such as Vincristine, Vinblastine, Emetine, Quinine, Morphine, Codeine, and Artemisinin among others. There is need for new drugs to manage emerging and re-emerging diseases [6]. Currently microorganisms have a tendency of developing resistance to antibiotics in the market [7-9]. Large population in the world (80%) use traditional forms of treatment [10].

The Ameru are indigenous inhabitants in sub-Saharan Africa. They are Farmers and forest products users. The use of wild and cultivated plants in this part of Kenya is becoming

increasingly visible in regard to medicine, food, material, social uses, construction and fuel. Although ethnobotanical studies have been conducted in many parts of Meru County [11,12] little has been done in the Kanjoo Community. Traditional practitioners are regularly consulted by the community as they have a rich indigenous knowledge base and are always available. There is limited documentation of the medicinal plants used by the Kanjoo people as well as their pharmacological and phytochemical properties. The fragile forest ecosystems are getting disseminated due to population pressure and accelerated reduction in the biodiversity in these areas. There is fear of loss of valuable information due to acculturation of the present generation. Ethnic cells in the African set-up in most may give a completely monolithic cultural distinction with gradual succession into the neighbors. The Meru is one such group which the Kanjoo may serve as a representative. The study was undertaken to explore the Ethno medicine of the Kanjoo people, specifically to

A. Document some medicinal plants used in folklore medicine.

B. Identify the plants; part used, pharmacological profile and non-medicinal uses.

Materials and Methods

Study area and data collection

The study was conducted amongst Kanjoo Community in Meru County, Kenya, which is located at 0°07' N latitude and 37°43' E longitude, about 80km from Meru town, 1600m above sea level. It has a population of about 9,806 people. The community live is next to the Meru national Reserve. They have a lot common with wildlife hence are used to live in harmony with nature. The area receives about 380-1000mm rainfall in two seasons. Vegetation varies from typical tropical savanna to grassland interspersed with shrubs and small trees. The nature of the environment therefore accommodates a diverse variety of flora and fauna.

Ethno botanical data was collected between January and February 2015. Thirty traditional healers, 13 males and 17 females were purposefully sampled and interviewed using

semi structured questionnaires. The study focused on plant identification, disease(s) treated, plant part used, methods of preparation, route of administration and other uses of the plant. The collected specimens were prepared following standard herbarium procedures and identified using various floras [13,14]. Descriptive statistics was used to analyze the data.

Results and Discussion

Twenty eight plant species distributed in 26 genera and 22 families and encompassing four different life forms were identified as being useful for treating 17 human ailments (Table 1). Most of the plants used in the area are well known and are indigenous to the area. The knowledge correlates with uses reported elsewhere, for example, the leaves of *Ajuga integrifolia* and *Senna didymobotrya* are used for the treatment of malaria in other parts of Kenya [15]. Furthermore, it confirms the fact that knowledge is uniformly spread rural societies. The dominant families of Ethnobotanical importance were: Asteraceae 4 species, Fabaceae 2 species and Lamiaceae 2 species. Other studies have recorded Asteraceae as being among the families with high number of medicinal species [16,17].

Table1: Plant species based on traditional their reputation for use as medicine.

Family	Species	Local Name	Habit	Part Used	Disease Treated	Preparation/ Administration Route	Preparation/ Administration Route
Amarathus palmeri S. Wats.	<i>Amarathus palmeri S. Wats.</i>	Terere	Herb	L	Diarrhea	Hot water Decoction; Oral	Leaves used as vegetables
Amaryvidaceae	<i>Allium sativum L.</i>	Kubuturu	Herb	W/P	Ulcers	Infusion; Oral	Used as spice
Apocynaceae	<i>Apocynaceae</i>	Kamuraia	Shrub	RB	Malaria, relieves pain	Hot water decoction; Oral	Fruits edible
Asteraceae	<i>Bidens pilosa L.</i>	Muratha ngii	Herb	W/P	Fresh wounds	Crushing and squeezing; Dermal	Fodder
	<i>Sckhuriapinnata(Lam.) O.Kunte.</i>	Gakuinini	Herb	W/P	Malaria, diarrhea	Infusion; Oral	
	<i>Vernonia auriculifera Hiern</i>	Muthakwa	Shrub	L	Malaria, loss of appetite	Infusion; Oral	Leaves used as vegetables
	<i>Vernonia lasiopos O.Hoffm</i>	Mwatha	Shrub	L/RB	Malaria	Infusion; Oral	Dry sticks used for honey harvesting
Bignoniaceae	<i>Kigelia Africana Lam.</i>	Muratina	Tree	L	Malaria	Hot water decoction; Oral	Making traditional beer
Caricaceae	<i>Carica papaya L</i>	Mubabai	Tree	Seeds	Amoeba	Chewing; Oral	Fruits edible
Cerastraceae	<i>Catha edulis (Vahl) Forssk.</i>	Muraa	Shrub	RB	Stomachache	Hot water decoction; Oral	Leaves used as stimuli
	<i>Maytenus undatus (Thunb.)Blakelock</i>	Muthithio	Shrub	L/ RB	Malaria, syphilis	Hot water decoction; Oral	Fruits edible
Cucurbitaceae	<i>Cucurbita maxima L.</i>	Kirenge	Herb	L	Fungal infection, healing of umbrical cord	Hot water decoction, infusion; Oral, dermal	Leaves and fruits edible
Euphobiaceae	<i>Neoboutonia Neoboutonia</i>	Mutuntuki	Tree	SB	Malaria	Hot water decoction; Oral	Building

Building	<i>Acacia mearnsii</i> De Wild.	Muthanduku	Tree	L	Measles	Hot water decoction; Dermal	Building, ethno veterinary
	<i>Senna didymobotrya</i> Fres.	Murao	Shrub	L/ RB	Malaria, chicken pox	Hot water decoction; Oral, dermal	Ethno veterinary
Lamiaceae	<i>Ajuga integrifolia</i> Buch.-Ham.	Kirurite	Herb	W/P	Malaria	Infusion; Oral	
	<i>Plectranthus barbatus</i> Andrews	Kijara	Shrub	L	Fresh wounds	Crushing and squeezing; Dermal	Fencing, home tissue
Liliaceae	<i>Aloe secundiflora</i> Engel.	Cukurui	Shrub	L	Malaria, wounds	Infusion; Oral, dermal	Poultry
Malvaceae	<i>Malva verticillata</i> L.	Muganjo	Herb	RB	Wounds	Grinding; Dermal	Ornamental
Meliaceae	<i>Azadirachta indica</i> A. Juss	Mwarubainne	Tree	L	Malaria toothache, stomach pain	Hot water decoction; Oral	
Moringaceae	<i>Moringa oleifera</i> Lam.	Moringa	Tree	L	Loss of appetite, diabetes, high blood pressure	Hot water decoction; Oral	Leaves used as vegetables
Oleaceae	<i>Olea europaea</i> L.	Mutero	Tree	SB	Malaria	Hot water decoction; Oral	For building
Rosaceae	<i>Prunus Africana</i> Hook.f.	Mwiria	Tree	SB	Malaria	Hot water decoction; Oral	For building
Rubiaceae	<i>Vangueria madagascariensis</i> J.F. Gmel.	Mubiru	Tree	SB	Malaria	Hot water decoction; Oral	Fencing, fruits edible
Rutaceae	<i>Citrus limon</i> (L) Burm. f.	Muriimo	Tree	Fruits	Common cold	Infusion; Oral	Fruits edible
Solanaceae	<i>Solanum incanum</i> L.	Mutongu	Shrub	RB	Stomachache, malaria	Hot water decoction; Oral	
Urticaceae	<i>Urtica massaica</i> L.	Kithaa	Herb	L	Common cold, menstrual pains	Hot water decoction; Oral	Leaves used as vegetables
Verbernaceae	<i>Lantana camara</i> L.	Kithiriti	Shrub	L	Common cold	Hot water decoction; Oral	Fodder, fruits edible

(RB = Root Bark, SB = Stem Bark, W/p=Whole Plant, L=leaves)

Table 2: Diseases/Uses and percentage plant species usage

Diseases Treated	Scores	% out of 28 Species
Malaria	14	50
Diarrhea	2	7.1
Appetite loss	1	3.6
Amoeba infection	4	14.3
Syphilis	2	7.1
Fungal infection	1	3.6
Healing of umbilical cord	1	3.6
Measles	1	3.6
Chicken pox	1	3.6
Toothache	1	3.6
Stomach pain	3	10.7
Diabetes	1	3.6
High blood pressure	1	3.6
Common cold	3	10.7
Menstrual pain	1	3.6

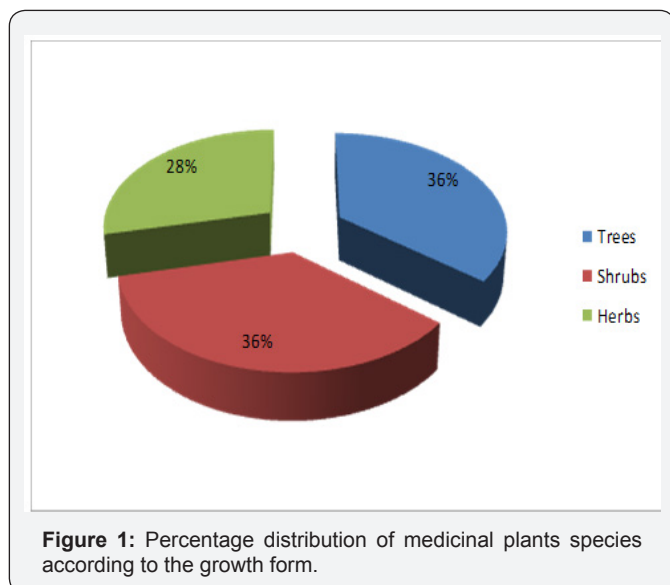


Figure 1: Percentage distribution of medicinal plants species according to the growth form.

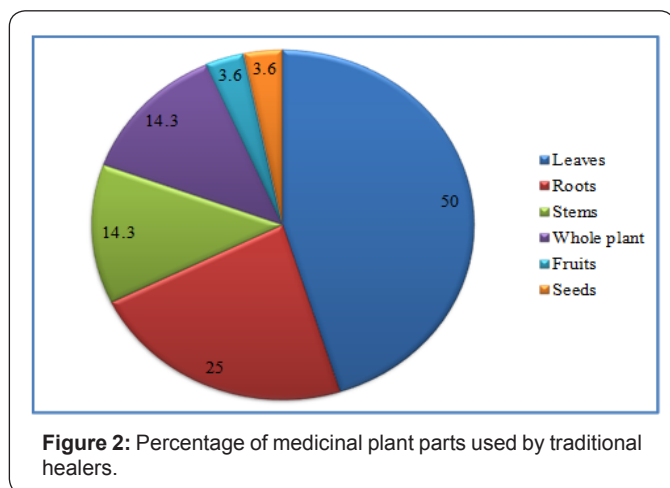


Figure 2: Percentage of medicinal plant parts used by traditional healers.

Trees and shrubs constituted the highest number of plant species recorded (10 species, 35.7%) each (Figure 1). This demonstrates that they are the most commonly used plant habits in the study area. This could be linked to the high abundance of trees and shrubs in the area, making them easily accessible to the users [18]. Malaria and wounds were the commonly reported diseases (Table 2). Leaves were the most widely used plant part (14 species, 50%) followed by roots (7 species, 25%) (Figure 2). These results are in agreement with Chandrakumar et al. [19] who reported leaves as the most commonly used plant part of the reported medicinal plant uses. However the results of this study differ with other findings which recorded roots as the commonly used plant part for treatment [17,20,21]. The preference of harvesting leaves and root bark for ethno medicine is a threat to the continued existence of the target plants. Leaves and roots perform vital functions on plants and therefore their frequent and unsustainable harvesting can lead to the extinction of the species [22].

Majority of the remedies were prepared in the form of hot water decoction (17 species, 60.7%), followed by infusion (8

species, 28.6%), crushing and squeezing (2 species, 7.1%), Chewing (1 species, 3.6%) and grinding (1 species, 3.6%) (Figure 3). Most remedies were taken orally (21 species, 75%) followed by dermal (4 species, 14.3%) and both dermal and oral (3 species, 10.7%) (Figure 4). These approaches of remedy preparation and administration were also reported in other studies [17,20,23]. There were no standardized dosage for the herbal remedies and most were administered through approximation (Table 3).

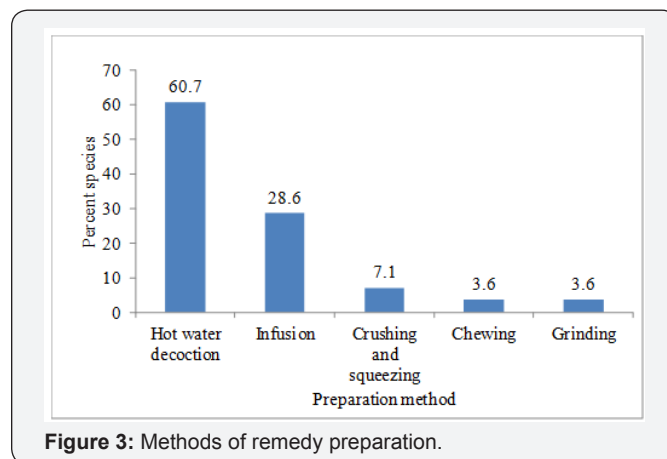


Figure 3: Methods of remedy preparation.

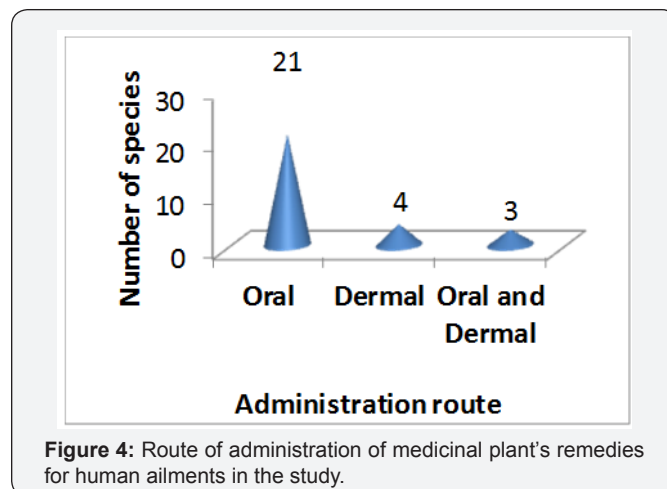


Figure 4: Route of administration of medicinal plant's remedies for human ailments in the study.

Table 3: Non-medicinal uses of the plants.

Use	Number of Species	%
Food	12	42.9
Building & construction	4	14.9
Ornaments	1	3.6
Ethno-veterinary	2	7.1
Fodder	2	7.1
Traditional beer	1	3.6
Others	4	14.9

Conclusion and Recommendations

The Kanjoo of the Ameru community have empirical knowledge about the use of medicinal plants, their ailments and

diseases they are used to manage. This confirms the universal understanding that the traditional forms in health provision still dominates the lives of human for survival all over the world particularly in developing countries. There is, however, very scanty documentation of the medicinal flora of the area. There is an urgent need to document these plants and the indigenous knowledge for future references. The scientific validation of the plant species may help in discovering new drugs to tackle new, reemerging and resistant pathogens. Not all the plants were covered in the study; more exhaustive documentation should be carried out to include them. It is also prudent that environmental education should be intensified for the harvesting techniques so that such plants whose roots are harvested for purposes of drugs are not exterminated but propagated in designated areas [24,25].

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