



Research Article

ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS USED BY THARAKA PEOPLE OF KENYA

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ABSTRACT

Though the majority of people in Kenya and Tharaka in particular, depend on ethnomedicine to manage different ailments, the indigenous knowledge largely is not documented. As a result, an ethnobotanical survey of medicinal plant species used to manage ailments in Tharaka, Kenya was conducted. The objectives were to identify and document plants traditionally used for medicinal therapy by the Tharakans, to find out the method used for preparing and administering the drugs and to find out the conservation practices for the medicinal plants. Ethnobotanical data was collected by observations and use of semi-structured interviews. 71 plants belonging to 51 genera in 30 families were identified and reported to be of medicinal value to the locals. Roots are the most used (38%) followed by leaves (29%) and stem/bark (26%). The study revealed other hitherto undocumented medicinal plant species that may be new records for treating various ailments. Traditional medicine in Tharaka provides a convenient, accessible and cheap remedy that suits the traditional lifestyle of the local community in comparison to the modern medicine. Majority of the plants reported in the current study were found to be under threat and this warrants for conservation measures so as to maximize the sustainable use of these vital resources in the study area.

KEYWORDS: Ethnobotany, traditional medicine, medicinal plants, indigenous knowledge.

INTRODUCTION

Since antique times plants have been essential source of both defensive and therapeutic traditional remedy measures for humans and livestock. In the Western world, the exploitation of herbal medicines is gradually rising with about 40 % of the residents reporting use of medicinal plants to treat diseases [1]. In India, medicinal plants are utilised in treating pains, mucous discharge, wounded animals, constipation, gastric difficulties, headaches, aching tongue in kids and fungal infections [2] These plants have also been exploited as sources of anthelmintics, antipruritic as well as remedy for food poisoning. In Kenya, 90 % of the inhabitants have used medicinal plants at least once for a variety of health situations. In the Bondo District, Siaya

County of Kenya, medicinal plants are usually used by rural Luo mothers for the treatment of fake teeth, oral infections, labour pain, constipation, inflammation, worms and flu in children [3]

Ethnobotany is part of human environmental science that defines the interface between people and plants, and provides clues needed for rural development based on sustainable yields from plants products [4]. Plants found in open areas seem to have potentials to provide options for rural livelihoods and biodiversity conservation [5]. These plants can contribute to poverty mitigation serving as subsistence "safety nets" or low income "gap fillers". Moreover, these plants are useful for socio-economic, cultural, industrial and pharmaceutical uses, generating a lot of money annually to the world's economy [6] Traditional societies in Africa and elsewhere have

always used plants to promote healing and traditional medicine is still the predominant means of health care in developing countries [4].

The knowledge of medicinal plants that may contain bioactive agents lies with the older generation who are slowly dying with this knowledge leading to the loss of important information. This can be attributed to the fact that knowledge and processing methods of the crude drugs are only available in the rural communities and only perpetuated by word of mouth and within families and communities. On the contrary, young people have now taken up formal education rarely get interested in traditional way of life. Much of this traditional knowledge therefore remains unreported and in the verge of getting lost. Furthermore, the effectiveness of most of the herbal drugs has not been tested to authenticate the traditionally claimed role in disease management [7].

The change in lifestyles has had a negative impact on maintaining traditional knowledge on herbal remedies; hence there is a danger of loss of this knowledge. Similarly, there is an escalating decline of traditional medicine practitioners and consequently a loss in authentic traditional knowledge [8]. Overexploitation and overgrazing of plant resources have already led to a decline of the plant material available [9]. With the advent of “modern medicine” and disinterest which many people from the third world countries show towards traditional medicine, there is a possibility of loss of the knowledge of traditional healers if action is not taken to document the procedure involved in preparation and administration. Due to eminent loss of natural habitats, cultural diversity, traditional community life and knowledge of medicinal plants, there is urgent need to document African traditional plants [10].

MATERIALS AND METHODS

Area of Study

Tharaka is situated in Eastern, Kenya. Its geographical coordinates are 0° 18' 0" South, 38° 1' 0" East. Tharaka, experiences a bimodal rainfall pattern with annual rainfall averaging between 500- 800mm per year [11]. Its ecosystem and culture is that of Kenya's semi-arid areas where people practice livestock and crop farming and other non-farming activities. The area experiences drought conditions occasionally which affect the overall productivity of the ecosystems [12]. The area is inhabited by Tharaka people whose language is known as Kitharaka. The limited health facilities are inaccessible due to poor infrastructure. In addition, the doctor to patient ratio is very low 1: 100,992 indicating a lack of health personnel [13].

Collection of ethnobotanical data

This study was carried out between July–December 2014 in the main areas (Chiakariga, Gatunga and Marimanti) of Tharaka. Open-ended, semi-structured questionnaires were used in gathering information on harvesting methods, preparation, and administration of herbal remedies, along with other field information on herbal practice. Local

administrators (chiefs and assistant chiefs) and health workers were used as guides in tracing the respondents. Authentic informants were interviewed randomly but independently from home to home during prearranged appointments. Approximately forty five (33men and 12 women) traditional medical practitioners aged between 50 and 80 years were interviewed. The respondents provided plant names, parts used, mode of preparation and administration, and the diseases treated. Authenticity was achieved when at least three independent respondents provided corroborative information.

RESULTS

A total of 71 plant species in 51 genera and 30 families were determined to be of ethnomedical value in Tharaka. The ethnomedicinal uses of the plant species are illustrated in table 1. The medicinal plants used in herbal practices in this region shows that roots were the most utilized plants parts (38%). They were followed by leaves (29%), stem/bark (26%), other parts like fruits or seeds, and the whole plant, in that order. The percentage of “other parts” and “whole plant” each amounted to less than 5%. The traditional medical practitioners from this region reported that they did not have any role in conservation of the medicinal plants. Instead, they claimed that it was the government's responsibility through the local leaders, chiefs and sub chiefs to oversee that all plants both medicinal and non medicinal were conserved from overexploitation.

Table 1: Medicinal plants used by Tharaka people of Kenya

Botanical Name	Kitharaka Name	Family	Processing and Ailments cured
<i>Acacia ataxacantha</i> D/C	Murangare	Fabaceae	1. Roots are chewed to treat coughs. 2. Pounded leaves are smeared on the body to treat pneumonia.
<i>Acacia brevisca</i> Harms	Munwa	Fabaceae	Decoction of leaves is used to treat Tremors (fevers) in livestock.
<i>Acacia mellifera</i> (Vahl.) Benth	Muthigiira	Fabaceae	1. Crushed leaves are used to treat pen open wounds. 2. The bark is chewed or boiled to treat coughs.
<i>Acacia nilotica</i> (L.) Del.	Mwemba	Fabaceae	Juice from the fruit (when green) is used to treat eye infection.
<i>Acacia tortilis</i> (Forssk.) Hayne	Mugaa	Fabaceae	1. Inhaling the smoke from the roots helps cure coughs. 2. The bark is tied around fresh wounds to aid healing.
<i>Albizia anthelmintica</i> Brogn.	Mwaarwa	Fabaceae	Boiled stem bark is used to treat intestinal worms.
<i>Bauhinia taitensis</i> Taub	Muthara-njuki	Fabaceae	Crushed roots cure sores and wounds.
<i>Bauhinia tomentosa</i> L.	Mujirujiru	Fabaceae	Decoction of roots is used to remove retained placenta in women.
<i>Cassia occidentalis</i> L.	Muganjaganjo	fabaceae	1. Crushed leaves are applied on the body to treat fever. 2. Root decoction is drunk to treat fever.
<i>Cassia longiracemosa</i> Vatke	Mugenda-na-akuru	Fabaceae	Crushed leaves are used to treat stomach ache and coughs.
<i>Delonix elata</i> (L.) Gamble	Mwarange	Fabaceae	1. The bark and leaves are boiled to treat skin infections in livestock. 2. The bark is also added to honey to act as a preserving agent.
<i>Entada leptostachys</i> Harms.	Munyaritha	Fabaceae	Sap from any part of the tree has curative properties over snake bites. The sap also restores victims of arrow poison.
<i>Piliostigma thonningii</i>	Mukuura	Fabaceae	Decoction fro stem bark is used to treat

Schumach. Milne.Redh.			coughs.
<i>Newtonia hildebrandtii</i> (Vatke) Torre	Mukame	Fabaceae	1. Infusion from the ash of the bark is taken to treat dysentery. 2. Decoction of the bark is used to treat asthma and other respiratory disorders.
<i>Tamarindus indica</i> L.	Muthithi	Fabaceae	Decoction from the bark is used to treat sexually transmitted diseases such as gonorrhoea.
<i>Adansonia digitata</i> L.	Muramba	Bombacaceae	Decoction of stem bark is used to treat skin infections.
<i>Aloe secundiflora</i> Engl.	Kibirincha	Liliaceae	Leaf sap is applied on open wounds. The sap also reduce pain and swelling on scorpion sting.
<i>Aspilia mossambicensis</i> (Oliv.) Wild	Muuti	Compositae	1. The leaves and roots are used to treat stomach ache, coughs, pneumonia and yellow fever. 2. The sap also acts as a clotting agent.
<i>Balanites aegyptiaca</i> (L.) Del.	Muboobua	Balanitaceae	Decoction from the bark is used to treat kwashiorkor.
<i>Berchemia discolor</i> (Klotzsch) Helmsl	Muthwana	Rhamnaceae	Root decoction is used to treat diarrhoea.
<i>Boscia coriacea</i> Pax.	Muthiuthiu	Capparaceae	1. Leaves are chewed to treat stomach ache. 2. Crushed tubers are applied to treat fleas and mites.
<i>Bridelia taitensis</i> Pax. And vatke	Muyee	Euphorbiaceae	Crushed bark is used to treat ear ache.
<i>Combretum aculeatum</i> Vent.	Muthigoora	Combretaceae	Leaves or a fresh twig are chewed to treat stomach ache and constipation. It is also used to treat wounds and sores.
<i>Combretum molle</i> G. Don	Murama	Combretaceae	Decoction from the root is used to treat back ache. It is also used to treat skin warts.
<i>Combretum mossambicense</i> Kl.Engl.	Mutega-kwaare	Combretaceae	The sap is used to treat ear ache.
<i>Combretum apiculatum</i> Sond.	Mutiithi	Combretaceae	Leaf decoction is used to treat stomach pains and eye infections.
<i>Commiphora ovalifolia</i> Gillett.	Mucaguca	Burseraceae	The oily sap is used to treat scabies.
<i>Commiphora rostrata</i> A. Rich	Mutunkuuri	Burseraceae	Leaves or young twigs are chewed to treat mild chest pains and coughs.
<i>Cordia ovalis</i> D.C.	Muthugaagu	Boraginaceae	Crushed leaves are used to remove retained placentas in women and cows.

<i>Craibia brownie</i> Dunn	Mugunkuma	Papilionaceae	Roots are chewed to treat coughs.
<i>Crinum macowanii</i> Bak.	Maguo maingi	Amarylidaceae	The bulbs are boiled to treat urinary tract infections, chest pains and boils.
<i>Cyperus alternifolius</i> L.	Nthanje	Cyperaceae	Root decoction is used to treat boils and rushes.
<i>Duosperma kilimandscharicum</i> (Lindau). Dayton	Muthuuti	Acanthaceae	Crushed leaves are used to treat cuts, sore and wounds.
<i>Erythrina melanacantha</i> Harms.	Mukuungu	Papilionaceae	1. Concoction from the bark is used to treat stomach aches. 2. Leaf concoction is used to treat venereal diseases and eradicate mites from chicken and cattle.
<i>Euclea divinorum</i> Hiern.	Mukonde	Ebenaceae	1. Stem bark decoction is used to treat heartburn. 2. Concoction of the root is used to treat tooth ache by gurgling.
<i>Euphorbia cunneata</i> Vahl.	Nthenge	Euphorbiaceae	Young twig is chewed to treat constipation and increase fertility in both men and women.
<i>Euphorbia gossypina</i> Pax.	Kararu kara gacege	Euphorbiaceae	The milky latex is applied on a ring worm affected area.
<i>Harrisonia abyssinica</i> Oliv.	Mutagata	Simaroubaceae	Decoction of the root is used to treat stomach ache, coughs and malaria.
<i>Hibiscus vitifolius</i> Linn.	Muthaambia	Malvaceae	Ash from the root is applied to treat inflammations.
<i>Hibiscus micranthus</i> L.F.	Mwegere	Malvaceae	Crushed leaves are used to treat eye infections.
<i>Indigofera lupatana</i> Bak. F.	Muthaara	Papilionaceae	Roots are chewed to treat coughs.
<i>Ipomoea kituiensis</i> Vatke	Mugombogombwe	Convolvulaceae	The stem is chewed to treat constipation and other digestive disorders.
<i>Justicia odora</i> Forrsk. (Vahl.)	Muthaande	Acanthaceae	The twigs and bark are chewed to act as aphrodisiac.
<i>Lannea alata</i> (Engl.) Engl.	Mutuungu	Anacardiaceae	Crushed leaves are used to treat burns.
<i>Lannea tryphylla</i> (A. Rich.) Engl.	Mutherema	Anacardiaceae	Root decoction is used to treat bloody diarrhoea.
<i>Lantana camara</i> L.	mucimooro	Verbanaceae	Crushed leaves are used to treat wounds.
<i>Lantana viburnoides</i> (Forrsk.) Vahl.	Mukenia	Verbanaceae	Leaves are chewed to act as aphrodisiac.
<i>Lonchocarpus eriocalyx</i> Harms.	Muthigiiri	Papilionaceae	1. Steam from boiling leaves is used to treat eye infections. 2. Crushed leaves are used to treat wounds and

			ulcers.
Maerua endlichii Gilg. And Bened.	Mwaare	Capparaceae	Crushed bark is applied to swollen and bruised skin.
Maerua kirkii (Oliv) F. White	Muyogwe	Capparaceae	Root decoction is used to treat constipation and other stomach disorders.
Maerua subcordata (Gilg.) De Wolfe	Munatha	Capparaceae	1. Crushed leaves are smeared on the body to treat pneumonia. 2. The roots are used to treat mites.
Mangifera indica L.	Muembe	Anacardiaceae	1. The roots are mixed with those of pawpaw and boiled to treat gonorrhoea. 2. Leaves are chewed to cure coughs and stomach ache. 3. Crushed leaves are used to treat ear infections.
Maytenus putterlickioides (Loes) Excell.	Muthunthi	Celastraceae	1. Decoction from the roots is used to treat bloody diarrhoea. 2. Leaves are chewed to treat tooth ache and ear infections.
Maytenus senegalensis Lam.	Mugugutu	Celastraceae	Young twigs are chewed as they contain mild stimulant.
Melia volkensii Guerke	Mukau	Meliaceae	The leaves are crushed and applied as insecticide.
Ochana ovate F. Hoffm.	Muruti	Ochnaceae	Crushed leaves are used to treat sore or inflamed skin.
Ormocarpum keninse Gillet.	Murema-muthwa	Papilionaceae	Leaf concoction is used to treat worms in humans.
Phoenix reclinata Jacq	Mukiindu	Arecaceae	Sap trapped from the trunk is used as stimulant.
Premna resinosa. (Hochst.) Schauer	Mukarakara	Verbenaceae	Crushed leaves are applied on the body to cure fever.
Rauvolfia caffra Sond.	Mukinduri munene	Apocynaceae	The bark is boiled and used in treatment of coughs and other respiratory disorders.
Salvadora persica L.	Makayayu	Salvadoraceae	Decoction of the root is used to cure coughs, malaria, blocked nose and thrust.
Flueggea virosa (Roxb. ex Willd.) Royle	Mukururu	Phyllanthaceae	1. The fruit is used to treat irritated and itching skin. 2. Decoction of the root is used to treat malaria. 3. Concoction of the leaves is used to treat stomach ache.

Sida ovate Forrsk.	Muruundu	Malvaceae	1. Root concoction is used to remove retained placenta in cows. 2. Crushed leaves are applied on wounds to cause fast healing.
Spirostachys venenifera (Pax) Pax	Mureetha	Euphorbiaceae	The stem bark is burnt and used as fragrance in women.
Terminalia brownii Fresen	Mururuku	Combretaceae	1. When the bark is dried and ground, it is used as a clotting agent. The clotting can also be speeded by tying the cut with a strip of a fresh bark. 2. The bark is also chewed to treat coughs and joint stiffness. 3. Concoction of the stem bark is also used to treat excessive bleeding after birth.
Terminalia prunioides Lawson	Mutooro	Combretaceae	Decoction from the leaves is used to treat mild madness.
Trichilia emetica Vahl	Mutuati	Meliaceae	Crushed seeds produce oil used as a moisturiser.
Ximenia caffra Sond.	Muroroma	Olacaceae	Crushed leaves are administered to goats to treat diarrhoea.
Zanthoxylum chalybeum Engl.	Muguucwa	Rutaceae	1. Decoction of the leaves is used as anti-malaria. 2. Root decoction is used to treat sores and wounds.
Zizyphus mucronata Willd	Mubuuyu	Rhamnaceae	Root decoction is used to treat diarrhoea.
Grewia bicolour A.Juss.	Muraagwa	Tiliaceae	1. Crushed stem bark is used to cure boils and sores. 2. Roots decoction is used as a remedy for chest complaints and colds, for gonorrhoea and female infertility and in case of delayed afterbirth to expel the placenta in humans, and sometimes cattle.

DISCUSSION

Roots and barks were the mostly used plant part since these normally have a high partitioning for the photosynthates or exudates [8] which act as toxins for protection against devourers and most of these are of medicinal value to man. Roots are vital organs of plants and their use detrimental to plant life as compared to the leaves or branches. The utilization of the roots calls for conservation measures on the medicinal plants since the use of roots do not allow sustainable utilization as the plants in question are depleted by continual use. Plant remedies were prepared mostly as concoction or

decoctions. Medicinal plants used in local health traditions are gradually becoming extinct due to their overuse, increase population and other human factors which contribute to their decline. To reverse this decline, domestication of medicinal plants is required. This will supplement the income of most rural communities and ultimately help in the conservation of species. With the changes in lifestyle and increased population in various regions, it is possible that traditional knowledge might get lost or disappear forever in the near future. This is can be even supported by the fact that traditional knowledge is still mostly taught orally without any documentation. Since

traditional medicine is not yet regulated in Kenya, many of the locally renowned Herbalists have remained unknown. This contributes a lot to intimidation by their counterparts in the modern healthcare system, as well as to the low payments offered to them by the local community although they serve with honesty and effectiveness just like the conventional health healers.

CONCLUSION

This study has revealed that medicinal plants still play a vital role in the provision of primary healthcare for the people in this area. Awareness campaigns on the importance of cultivating medicinal plants should be carried out to the community levels to do away with cultural beliefs that prevent individuals from cultivating medicinal plants. Rules and regulations should be enacted which will enable herbalists to practice without restriction or fear of intimidation from their counterparts in conventional medicine. Further pharmacological studies should be carried out on the most likely prospective medicinal plants used in herbal practice so as to establish their bioactivity potentials and possible development as drugs to deal with human and livestock health complications.

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