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ETHNOMEDICINAL SURVEY OF PLANTS FOUND IN MANGU LOCAL GOVERNMENT AREA OF PLATEAU STATE, NIGERIA

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ABSTRACT

An ethno-medicinal survey of plants was carried out in Mangu Local Government Area of Plateau State, Nigeria. Oral interview and questionnaires were administered to traditional medicinal practitioners (14%), farmers (29%), civil servants (2%), herb sellers (47%), house-wives (5%) and unskilled workers (3%). A recent and valid nomenclature, along with scientific names, local names, prescription and mode of administration of the plant extract used in treating several ailments, was documented. The families Fabaceae and Combretaceae were found to be highest with 16.12% followed by Oleaceae, Anacardiaceae, Myrtaceae, Meliaceae with 6% and the rest of the 24 families with 3.22% each as well as their frequency of occurrence. The parts of plants used, method of preparation and mode of administration were also recorded. Majority of the plants used in ethno-medicine were trees (59.5%), shrubs (19.0%), herbs (14.2%), grasses (2.38%), creeping (2.38%) and parasitic (2.38%). The parts used were leaves (35%), stems (25%), roots (18%), bark (3%), fruit (9%), seed (6%), whole plant (3%) and twig (1%). Several plant parts were used for curing several ailments; the plant species were found to be important in the prevention of most diseases affecting the local dwellers in Mangu L.G.A.

Key words: Ailments; ethnobotanical; medicinal; plants, Mangu

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INTRODUCTION

Ethno-medicine is a branch of botany that deals with the study of traditional medicine in curing of different kinds of human ailments. Medicinal plants are of great importance to the health of individuals and communities (Edeoga *et al*., 2005). Ethnobotany is viewed as a source for identification of bio-active agents in plants that can be used in the preparation of synthetic medicine (Yusufu and Adelanwa, 2020). Plants are the primary source for the development of drugs (Mensah *et al*., 2008). In the last few years, there has been an exponential growth in the field of herbal medicines which are gaining popularity both in developing and developed countries, because of their natural origin and less side-effects (Modak and Dixit, 2007). According to World Health Organisation (WHO), about 80% of the people in developing countries primarily depends on medicinal plants as a source for their primary health-care (Wood and Kumar, 2008).

Synthetic drugs have been attributed with many side-effects on human body (Adjanahoun *et al.,* 2003). There is, however, lack of documented information on medicinal plants used in the treatment of diseases in the study area, hence the need for the survey. The documentation of traditional knowledge of native plant species has contributed a number of vital drugs. Currently, 25% of herbal drugs in modern pharmacopeia are plant-based and several synthetic drugs are manufactured by using chemical substances isolated from plants (Geneva, 2002).

The fundamental role of natural project in the development of new drugs has been reported (WHO, 1999). In recent era, the role of medicinal plant species in traditional health practice has diverted the attention of researchers towards ethno-medicines and the use of plant species as traditional medicines provides a real substitute in healthcare services for rural communities of developing nations (WHO, 1999).

Although knowledge of the medicinal plants is sometimes held in secrecy, the present generation can still learn from the indigenous people through research efforts. The indigenous knowledge of medicinal plants can be valuable resources for health management. The aim of this study was to carry out a survey on medicinal plants found in Mangu Local Government Area of Plateau State and to document the plants with plant parts used for the treatment of various ailments.

MATERIALS AND METHODS

Study Area

The survey was carried out in Mangu Local Government Area of Plateau State, Nigeria which is located in the central part of the state. It covers a land mass of about 1653 km^2 and has a population of about 294, 931 thousand, according to the 2006 census. It is located at longitude $9^0$26'N and latitude $9^0$08'E of the equator. Mangu Local Government Area hosts the factory of Nigeria's most cherished bottle water, SWAN spring water, located at the foot of the Kerang volcanic mountain.

Bio data Collection of Respondents

The bio-data of the respondents was obtained through oral interview and questionnaire method. The method of questioning used is the semi-structured interview method (Adelanwa and Safana, 2022). The respondents were traditional medical practitioners (native doctors), herbs sellers, traditional aged men and women who have the fore-knowledge about medicinal plants, farmers and civil servants. The interview was conducted in Hausa, which is commonly understood and spoken by the major tribes in order to establish sound information. The participants were assured that their responses would be used only for research purposes and that the information given would be treated with utmost care and confidentiality.

Collection and Identification of Plant Specimens

Samples of all plants and photographs were collected and taken to the Herbarium of the Federal College of Forestry, Jos, Plateau state, Nigeria for proper identification and classification. Identification of plants was done using illustrations and description from flora (vernacular names of Nigerian plants) by Sadanau (2005) and Inusa and Ibrahim (2005) after collection while the authentication was done in the Herbarium of the College of Forestry Jos.

RESULTS

Table 1: List of medicinal plants used for curing different ailments by the people of Mangu L.G.A. of Plateau State, Nigeria

s/n	Scientific name	Family name	local name	Common name	parts used	uses/ administration
1	*Adansonia digitate* Linn.	Bombacaceae	Kuka	Baobab	Root, bark, seed, flower	Decoction of root and bark is taken to stop bleeding after delivery. Seeds are used for snake bite
2	*Vernonia amygdalina* Del.	Asteraceae	Shuwaka	Bitter leaf	Leaves	Leaves are taken for stomach pain
3	*Musa paradisiaca* Linn.	Musaceae	Ayaban turawa	Plantain	Unriped fruit	Fruit is a remedy for diabetes, dysentery, anaemia and malaria
4	*Carica papaya* Linn.	Caricaceae	Gwanda	Pawpaw	Stem, bark fruit, leaf	Bark is chewed as a laxative. Fruit and bark are used to treat jaundice. Leaves are used for malaria treatment
5	*Parkia biglobosa* Jacq.	Mimosaceae	Dorowa	Locust bean	Fruits, leaves, bark	Bark and leaves are remedy for body pain, tooth-ache and migraine Fruit powder is used for stomach upset
6	*Jatropha curcas* Linn.	Euphorbiaceae	Binidazugum	Barbados nut	Root white fluid	Boiled leaf decoction is used for tooth infection
7	*Cymbopogon citratus* De Cand.	Poaceae	Lemun ciyawa	Lemon grass	Leaves	Leaf decoction is used to steam patient to treat typhoid fever and catarrh
8	*Vitex doniana* Sweet.	Verbenaceae	Dinya	Black plum	Stem, Leaf	Leaves and stems are used to treat rashes. Seeds are burnt into ashes and rubbed on the affected part
9	*Ximeria Africana* Linn.	Olacaceae	Tsada	Hog plum	Root, Stem	Roots powder is taken orally with water for cancer treatment; stem powder is rubbed on swollen stomach
10	*Tamarindus indica* Linn.	Fabaceae	Tsamiya	Tamarind	Seed, Leaf	Soak seeds for 6-8 hours in warm water to treat cholera. Boiled leaves decoction is taken for body pain
11	*Mangifera indica* Linn.	Anacardiaceae	Mangoro	Mango	Leaf, Stem	Stem and leaves are used to treat diarrhoea, pile and typhoid fever

12	*Moringa oleifera* Lam.	Moringaceae	Zogale	Drum stick	Leaf	Squeezed leaf liquid is rubbed on affected part of scorpion sting
13	*Anacardium occidentale* Linn.	Anacardiaceae	Kashiu	Cashew	Stem	Powdered leaves are taken orally with water to treat typhoid fever
14	*Terminalia catappa* Linn.	Combretaceae	Itacen lema	Umbrella tree	Leaf	Leaves are decocted with warm water and taken to treat rheumatism and kidney problem
15	*Asparagus africana* Lam.	Liliaceae	Shekan bera	African tragacanth	Root	Root is decocted and taken orally for treating hepatitis
16	*Khaya senegalensis* Des.	Meliaceae	Madaci	African mahogany	Stem	Decocted stem is administered by steaming malaria patient for at least 2-3 days
17	*Calotropis procera* Aiton.	Ascleipidaceae	Timpapiya	Sodom apple	Fruit	Fruit is cut into 2 equal parts; water is added inside, kept overnight and is taken orally for malaria treatment
18	*Borassus aethiopum* Mart.	Aracaceae	Muruci	African fan	Tuber	With *W. indica* and fruit of *T. indica* all pounded and soaked in water and taken orally for erectile dysfunction
19	*Maranthes polyandra* Benth.	Chrysobalanceae	Shajini/ sirace	Maranthes	Stem, leaf	It is boiled and used to steam patient with fever
20	*Leptadenia hastate* Pers.	Apocynaceae	Yadiya	Decne	Stem	Stem is soaked in water for 6 hours and taken for treatment of diabetes
21	*Boswelia odorata* Huth.	Buseraceae	Ararabi	Indian Olibanum	Stem, Root	Root and stem are decocted with little red potash and taken orally to treat typhoid fever and increase blood
22	*Prosopsis africana* Gulli & Parr.	Fabaceae	Kirya	African mesquite	Leaf, Stem	Decocted stem is taken for pile and cancer treatment. Leaves and stem decoction is given to a babies to treat rashes
23	*Newbouldia laevis* Palisot. de Beau.	Bignoniaceae	Aduruku	Fertility plant	Root, Stem, Leaf	Powdered stem mixed with leaves of *A. indica* is taken with water for treatment of typhoid fever
24	*Zizyphus abyssinica* Hochst. ex A. Rich.	Rahmnaceae	Magarya	Zizy or force	Root	Sundried powdered root with red potash is orally taken with water 3 times daily for treatment of ulcer

25	*Ficus polita* Vahl.	Moraceae	Durumi	Fig tree	Leaf	One tea cup-full of decocted leaf is taken orally 3 times daily for malaria treatment
26	*Guiera senegalensis* J.F. Gmel.	Combretaceae	Sabara	Moshi medicine	Leaf	Sundried powdered leaf is taken orally with water for treatment of pile
27	*Acacia villosa* Sweet.	Fabaceae	Farin kaya	Gum Arabic tree	Twig with thorns	Twig with thorns decoction is given to babies orally to hasten teeth protrusion
28	*Sesamum indicum* Linn.	Pedaliaceae	Ridi	Beniseed	Seeds	Oil is extracted from seeds and 2 or 3 drops is applied once daily for treatment of ear problems
29	*Waltheria indica* Linn.	Sterculaceae	Hankufa	Sleepy morning	Stem, Root, Leaf	Decocted root, stem and leaves with red potash is taken to treat STDs, snake-bite and to increase blood
30	*Nuclea latifolia* Smith.	Rubiaceae	Tuwon biri	Starviolet	Stem, Root	Decocted root and stem is taken for treatment of hernia. Powdered stem is taken daily with pap for stomach ache
31	*Azadirachta indica* A. Juss.	Meliaceae	Darbejiya	Neem	Stem, Leaf	Decocted stem is taken orally for stomach ache. Boiled leaves are used to steam patients for treatment of fever
32	*Tridax procumbens* Hatem A.	Asteraceae	Kashin para	Tridax daisy	Whole plant	Whole plant decocted with red potash is taken for treatment of malaria, diarrhoea, dysentery
33	*Annogeissus leicocarpus* Gulli & Perr.	Combretaceae	Marke	Button tree	Stem, leaf	Decocted root with *A. senegalensis* is taken orally for cough
34	*Sterculia setigera* Delile.	Malvaceae	Kukuki	Hairy stericulia	Stem	The stem is decocted and administered orally for malaria and typhoid treatment
35	*Pterocarpus erinaceus* Poiret.	Fabaceae	Madubiya	Prikly paduak	Stem, root	Stem is used to treat malaria and pile, root decoction is taken as energy booster and malaria treatment
36	*Combretum sp* Linn.	Combretaceae	Gamji	Bush willow	Stem	Decocted stem is prepared with pap and taken orally for typhoid fever treatment
37	*Lophira alata* Bouivert. Y.	Ochnaceae	Namijin kadanya	Red iron wood	Leaf	Used in the treatment of itching in genital parts of women and stomach disturbance

38	*Cassia arereh* Delile.	Fabaceae	Marga	Cassia mannii	Stem, root	For treatment of hernia when decocted with little red potash
39	*Tapinanthus dodoneifolius* DC.	Loranthaceae	Dace		Haustorium	Combined with leaves of *M. olifera* and *P. guajava* is taken orally for treatment of ulcer and malaria
40	*Terminalia microcarpum* Gulli & Perr.	Combretaceae	Baushe	Damson	Leaf	Combined with root and stem of *W. indica* and decoct is taken for treatment of congenital problems
41	*Hymenocardia acida* Tul.	Phyllanthaceae	Janyaro	Large red heart	Stem, root	Mix root with root of *N. latifolia* for rheumatism, hepatitis, decoct stem for low erection and congenital
42	*Psidium guajava* Linn.	Myrtaceae	Gwaiba	Guava	Leaf	Leaves with leaves of neem are boiled and orally taken for typhoid fever
43	*Olea europaea* Linn.	Oleaceae	Itili	Olive	Seed	Oil extracted from seeds is mixed with shear butter and applied to the body for skin desiccation and hair growth
44	*Eucalyptus camaldulensis* Dehnh.	Myrtaceae	Zaiti	Eucalyptus	Leaf	Leaves with leaves of *A. indica, P. guajava, M. indica* for treatment of typhoid fever. Leaves with lemon grass and sour lemon for sore throat. Leaves with honey to treat ulcer

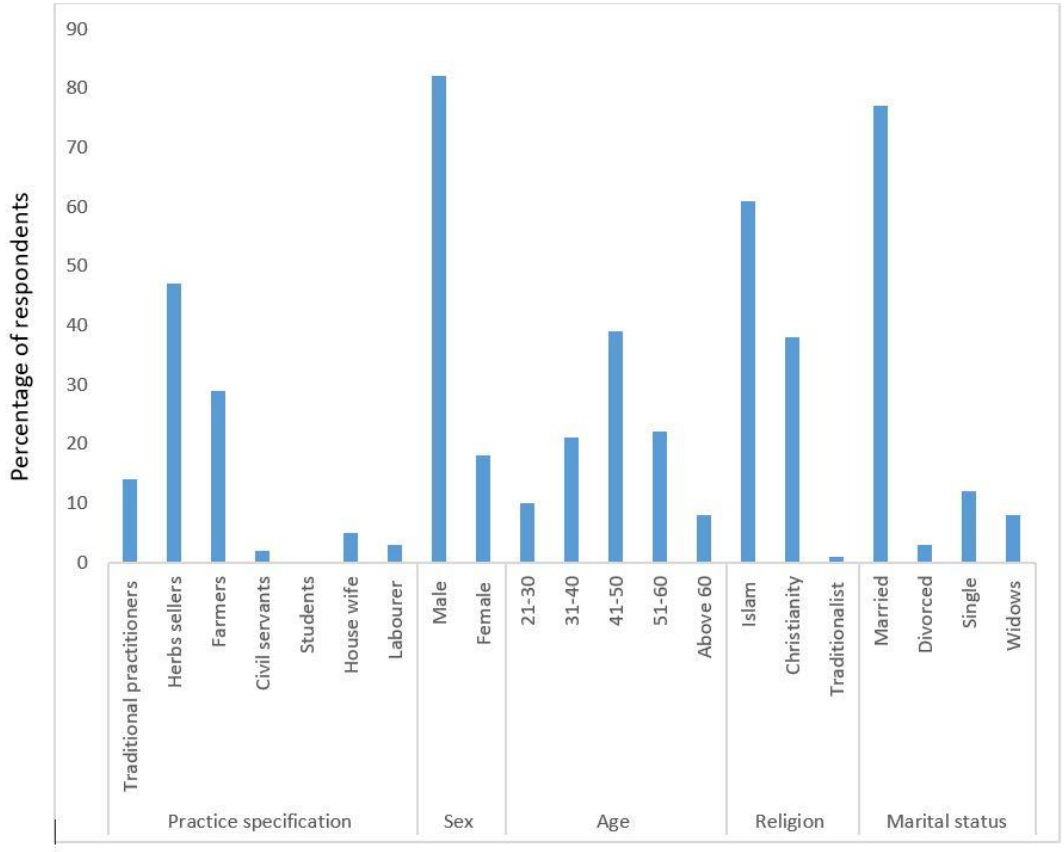

Fig. 1: Demographic characteristics of the respondents on the knowledge of medicinal plants

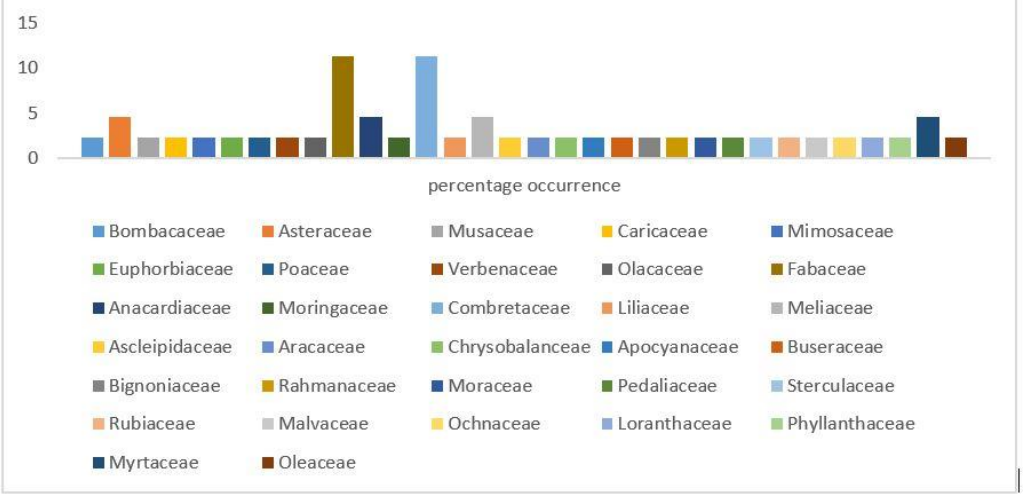

Fig. 2: Percentage of family occurrence of all the medicinal plants

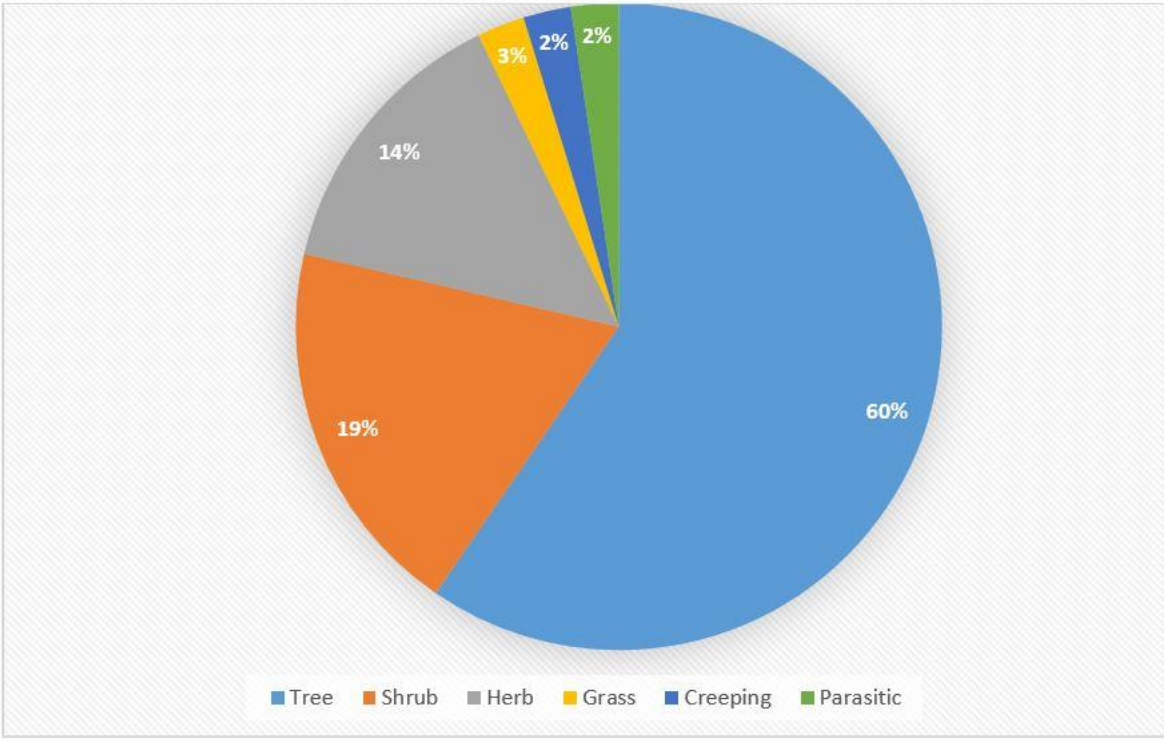

Fig 3**:** Percentage of plant habit/type used for the treatment of human ailments

DISCUSSION

The ethno-botanical survey conducted in Mangu Local Government of Plateau State revealed a total number of 44 plants from 32 families which are used in the treatment of various human ailments as shown in Table 1. These plants are used in the treatment of 33 common diseases that affect man. Decoction (an extraction of something obtained by boiling it down) and sun-dry are the most common methods of preservation; method of administration is mostly oral (most reported mode of administration) followed by external application. This is in line with the documentation of herbal medicines used for the treatment and management of human diseases by Sadanau (2005) and Mohammed (2007), where decoction was the most common preparation method used. More than one plant species have been reported to be used in remedy preparation for various ailments. This could be due to the additions or synergetic effect that they could have during the treatment while some plants are prepared singly (Haile and Delenasaw, 2007).

The result showed that most of the practitioners were herb sellers (47%) followed by farmers (29%), traditional practitioners (14%), house wives (5%), civil servants (2%) and unskilled workers (3%) as shown in Fig. 1. It was also observed from Fig. 1 that the highest percentage of those engaged in herbal medicinal practices were male (82%) with female having 18%; hence, indigenous medicinal knowledge is dominated by the male gender. This is in line with other findings in similar research such as Sulaiman *et al*. (2015) in ethnobotanical survey of some medicinal plants used in the treatment of maternal healthcare and the findings of Adelanwa and Safana (2022) where only 25% of the informants were females in Katsina state, Nigeria. The

age range of 21-30 years was found to be 10%, 31-40 years was 21%, 41-50 years had 39%, 51-60 years with 22% and above 60 years had 8%. The percentage of married men and women was 77%, divorced had 3%, single with 12% and widows had 8%. This is similar to the age range reported by Ogbole *et al.* (2010).

The indigenous knowledge among the medicine practitioners with regard to their age shows that both male (82%) and female (18%) were involved in herbal practices and there is a good transfer of knowledge from old to the younger ones, who are deeply engaged in the practice but the low level of education of the respondents may probably affect the standard of the herbal medicine preparations and record-keeping. The inadequate education among the medicine practitioners generally has been known to be responsible for passing down of information on traditional medicine from generation to generation orally instead of documenting the uses of these plants (Ogbole *et al*., 2010).

Results from the study area show that most of the ethno-medicinal plants reportedly used were from the wild. This is in line with the findings of Adelanwa and Safana (2022), who reported that 70% of the medicinal plants used in Nasarawa state were collected from the wild. Yusufu and Adelanwa (2020) reported that 80% of the plants collected from Makarfi L. G. A. were from the wild and 20% were cultivated. This clearly indicated that most of the medicinal plants are not yearly cultivated by the traditional herbals. Thirty-two (32) families were reported with families Fabaceae and Combretaceae having the highest occurrence of 11.36% (Fig. 2). Mudansiru *et al*. (2016) and Adelanwa and Safana (2022) reported that the family Fabaceae was the dominant family used in the treatment of diseases.

The parts used were leaves (35%), stems (25%), roots (18%), bark (3%), fruit (9%), seed (6%), whole plant (3%) and twig (1%). These were found to be the reported plant parts used by the herbalists or traditional medicine practitioners for the preparations of various medications in the study area. The part mostly used is the leaf. A similar observation was reported by Ugbogu and Akinyemi (2004). Most preparations were reported to have no side-effects except for watery stool and headache, which are signs of overdose. Improper collection of plant parts such as leaves, stems and roots can lead to species depletion and destructions. The circular debarking of medicinal plants may lead to the death of plants (Kayode, 2006).

The study also showed that majority of the plants used in ethno-medicine were trees with 59.5%, shrubs, 19.0%, herb, 14.2%, grasses, 2.38%, creeping, 2.38% and parasitic parts 2.38% (Fig. 3). Trees were found to have higher percentage of occurrence, which may be due to the relative abundance of rain in this region all year round (Albuquerque *et al*., 2006).

Another major threat to the availability of medicinal plants is deforestation because the basic occupation of the dwellers is farming. This could be attributed to the additional value of the majority of medicinal plants in the study area as well as the current demand for fuel wood as a source of energy which is high. The interest and demand for plants with medicinal properties and potency for the treatment of various ailments have resulted in over-exploitation (Igoli *et al*., 2005).

The major challenges of the traditional medicine practitioners in the study area are preservation, education, transportation, safety and efficacy because some drugs are kept for months or years without proper storage, leading to poor efficacy of the herbal

product. Measurement and dosage are also serious problems as the plant extracts are prescribed based on assumption or instructions passed on from fore-fathers.

CONCLUSION

This study has shown that several plant parts such as leaf, stem, root, fruit, seed and whole plants are used for treatment of several ailments in Mangu Local Government Area of Plateau State.

Plant species such as *Azadirachta indica, Adansonia digitata, Moringa oleifera, Tamarindus indica, Carica papaya, Mangifera indica* and *Psidium guajava* were found to be important in the prevention of most diseases affecting the local people.

Sustainable traditional medicine is required to save many species of plants from extinction. This will enhance the proper utilisation of neglected species, and transfer of knowledge and skills which could lead to the discovery of new drugs. Therefore, steps should be taken to ensure continuity of herbal medicine.

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