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ETHNOMEDICINAL ASSETS OF PLANTS COLLECTED FROM NASARAWA STATE, NORTH CENTRAL NIGERIA

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ABSTRACT

An ethno-medicinal survey of plants used in treating various diseases and ailments was carried out in the study area of Nasarawa State, North Central Nigeria to obtain information on their uses and potentials. The ethno-medicinal survey was administered through structured questionnaires among local inhabitants from areas with high plant density and diversity within the various Local Government Areas of the State. A total of 82 (Eighty two) plant species belonging to 43 (Forty Three) families were found to be useful in treatment of various ailments such as diabetes, measles, fever, asthma, jaundice, pneumonia, sexually transmitted diseases(STDs), aches, diarrhea, cough, arthritis, yellow fever, typhoid, erectile dysfunction and excessive bleeding. Different parts of the plant such as the roots, leaves and stems are used in preparing herbal remedies which could be from dry or freshly collected plants. The main methods of preparation are decoction or infusion, while in some cases the plant parts used are consumed directly. Residents in the study areas find the herbal remedy cheaper and more accessible and claimed that there are no side effects compared to orthodox medicine. This study has confirmed the need towards the conscious conservation of plant genetic resources in order to ensure sustained access to these ethno-medicinal plant materials.

INTRODUCTION

The use of traditional medicine and medicinal plants in most developing countries as normative basis for the maintenance of good health, has been widely observed (Diallo, 1999). According to the world health organization (WHO) an estimated 3.5 billion people (about 80%) in the developing world depend on medicinal plants as part of their primary health care (Balick and Cox, 1996).The use of medicinal plants as traditional medicine is well known in rural areas of many developing countries. Rural communities in particular depend on plant resources mainly for herbal medicine, food, forage, fuel, shade, etc as reported by Veeramuthu (2006). Further more, an increasing reliance on the use of medicinal plants in the industrialized societies has been traced to the extraction and development of several drugs and chemotherapeutics from their plants as well as traditionally used rural herbal remedies (Moerman, and Daniel 1997). However, the indigenous traditional knowledge of plants used for medicinal purposes in various communities which has been transmitted orally over a long period of time is fast disappearing due to the advent of modern technology and transformation of traditional culture. Sani and Aliyu (2011) reported that, in most cases, this indigenous knowledge has not been recorded, and as such there is great danger that this cultural heritage basis for future research may be lost. Nasarawa State is an area that is very rich in flora due to it's location in the northern guinea vegetational belt of the country. The use of plants for various purposes is widespread in this location. It is therefore the responsibility of the scientific community to unravel and document this information for use of man. This paper is aimed at determining and assessing the major ethnomedicinal plants of the study area so as to document the indigenous knowledge use mechanisms of these plants by the locals for treatment of various ailments.

MATERIALS AND METHODS

An ethnomedicinal survey was conducted in the study area Nassarawa State, North Central Nigeria between September and November, 2015. The study area is located between Coordinates $8^{o}32'$N $8^{o}18'$E and it has the Guinea savannah type of climate and vegetation. As reported by the National meteriological data, the area has an average annual rainfall of 1,566mm with average RH being 43.8% (Nigerianstat, 2016). The area comprises of thirteen (13) Local Government Areas. However the current study covered Nine (9) Local Government Areas of Wamba, Akwanga, NassarawaEggon, Obi, Awe, Kokona, Nassarawa, Toto and Keffi. Data collected were based on oral interview with the aid of structured questionnaire administered to local inhabitants. Data on human ailment treated by the use of plants, name of plant, plant part(s) used, how plant part is used and method of preparation for medicinal use were all recorded. Data obtained from the study were entered into the computer and analyzed using Epi6-info version 60.04 (CDC, Atlanta, GA, USA) (Dean et al. 1994)

RESULTS

Results showed that about eighty two (82) various plant species belonging to forty Three (43) families were reported to be used in the treatment of various human ailments in the study area as indicated in Table 1. About 86.59% of the plants which constitute the majority are found in the wild whereas a few of the species about 13.41% of the medicinal plants reported are cultivated for medicinal use and other purposes (Table 2). The results showed that the plant growth form and habit, Trees had the highest frequency of occurrence with 41 (50%), followed by Herb with 22 (26.83) and then the Shrubs with 19 (23.71%) respectively as shown in Table 3. With regards to the plant part used for medicinal purposes, the results showed that 17 (20.73%) plants have only their leaves being used, Roots only were 2 (2.44%), Stem only were 2 (2.44%), Bark only are 3 (3.66%), Rhizhome with 1 (1.22%), the whole plant being used were 7 (8.45%) while the remaining 50 (60.98%) of the plants had more than one part in different combinations being used for medicinal purposes as indicated in Table 4. Herbal remedies can either be prepared from dry or freshly collected plant samples, however, respondents affirmed that both forms of plant materials are efficient in herbal preparation. The methods of preparation varies from decoction, infusion, mixture, soup, juice extraction, grinding, steeping (soaking) and strong heating depending on the individual need of the respondents. Water, pure honey, aqueous extracts from fermented maize, lime, palm oil and alcohol were the preferred solvents used in herbal preparation.

TABLE 1: Some major ethnomedicinal plants of Nassarawa State, their Botanical/ Hausa Names, parts used and medicinal uses

SCIENTIFIC NAME	LOCAL NAME (HAUSA)	FAMILY NAME	Habit	PART USED	MEDICINAL USES
Crossopteryxfebrifuga	kashinakuya	Rubiaceae	Tree	Leaf	Treatment of measles
Holarrhena floribunda	Bkinmayu, Sandarmayu	Apocynaceae	Shrub	Root, Bark	Roots for treatment of stomach problems, bark is used for amoeboid dysentry
Lophiralanceolate	Kujeme, Namijinkadanya	Ochnaceae	Tree	Leaf, Roots	Leaves for treating cough
Parkiabiglobosa	Dorowa	Mimosaceae	Tree	Seed, Bark	The bark is analgesic and antiseptic
Sarcocephaluslatifolius	Tafaskiya, Igiya	Rubiaceae	Shrub	Fruits, Stem, Roots, Leaves	Boiled roots for treatment of stomach ache and Jedi-Jedi in children
Brideliaferruginea	Kirni, Kisni	Euphorbiaceae	Tree	Leaf, Stem , Roots	Leaves are used for the treatment of diabetes and hypertension. Stem bark is used for treating wound.
Hymenocardiaacida	Jan yaro, Jan Itche	Hymenocardiaceae	Tree	Leaf	Leaves ground for stomach ache
romolaenaodorata		Asteraceae	Herb	Leaf	Leaf infusion used to treat fever
Piliostigmathonningii	Kalgo, Kargo	Caesalpiniaceae	Tree	Leaf, Bark, Seeds, Pods	Infusion of the bark used to treat respiratory problems, diarrhea and dysentery. Leaf poultice used to dress wound and leaf decoction taken for worm eradication. Pods and seeds are used for dressing wounds, boils and ulcer.
Elaeisguinensis	Kwakwanmanja, Kwakwa	Arecaceae	Tree	Stem, Fruits	Fresh sap is used as a laxative. Partially fermented palm wine is taken by nursing mothers to improve lactation
Zingiberofficinales	Cita, Zanzabir	Zingiberaceae	Herb	Rhizome	Rhizome is used in treating pains, hypertension, nausea and vomiting in early pregnancy and also to soothe smomach and remove flatulence. It is also used as a condiment and flavouring agent
Synedrellanodiflora		Asteraceae	Shrub	Leaf	Leaves infusion used as laxative and the juice is used to stop bleeding in wounds and cuts
Ipomea involucrate	Dumankwadi	Convolvulaceae	Herb	Stem, Leaf	Aerial part is used for treatment of convulsion in children
Ageratum conyzoides		Asteraceae	Herb	Leaf, Root, Fruits, Stem	A decoction of the plant is used is taken for treatment of fever and applied as lotion for treatment of scabies
Cissampelosmucronata	Damargaji, Fiyaki	Menispermaceae	Climber	Leaf, Root	Root and leaves are used to stop threatened abortions
Ocimumgratissimum	Daidoya, Daidoya ta gida	Lamiaceae	Shrub	Leaf, Whole plant	Whole plant is an antibiotic, also used for psychiatric illness, sickle cell anaemia, malaria and diarrhea. Fresh leaves decoction is used as febrifuge and treatment of menstrual cramps
Psidumguajava	Guava, Guiba	Myrtaceae	Tree	Leaf, Fruit	Leaves decoction used for treatment of stomach ache, diarrhea. Leaves also used for treatment of fever, cough, toothache and to promote fertility in women. Fruits used as tonic and laxative
Citrus sinensis	Lemunzaki	Rutaceae	Tree	Fruits, Leaf	Leaves are used to treat typhoid and Jaundice. Fruit is used as blood purifier and also to treat catarrh and fever.
Anogeissusleiocarpa	Marke	Combretaceae	Tree	Bark, Leaf, Root	Bark is used as a laxative and also as emulsifying agent. Bark is also used to treat cough, catarrh and burns. Leaf and root are febrifuge
Cajanuscajan	Waken tatabara	Papilionaceae	Tree	Leaf, Seed	Leaves are used as weak decoction for the treatment of measles, catarrh and hepatitis. The seeds are mixed with leaves and used for the treatment of sickle cell anaemia
Grewiamollis	Dargaza, Gurdugu, Daraji	Tiliaceae	Tree	Bark, Root	Bark is used for treatment of snake bites, cuts, sores and ulcers. Decoction of root and stem bark used as anti poison.

Annona senegalensis	Gwandardaji	Annonaceae	Tree	Leaf, Bark, Fruits, Roots	Leaves medicinal for stomach ache. Leaves and bark are used to treat colds and pneumonia.
Mitracarpusvillosus	Magori, Yarwatsi	Rubiaceae	Tree	Leaf	Medicinal for eczema. Juice from leaves is used to treat skin disease
Cleistopholis patens		Annonaceae	Tree	Stem, Bark	As ornamental. Stem bark is used for treatment of malaria
Erythrophleumsuaveolens	Gwaska	Caesalpinaceae	Tree	Bark	Bark is poisonous and the cold infusion is emetic, purgative and astringent
Aspilia Africana	Jamajina, Nanake, Kalankuwa	Asteraceae	Shrub	Leaf	Medicinal, juice from leaves used on fresh wound
Tamarindusindica	Tsamiya	Caesalpiniaceae	Tree	Root, Bark	Aqueous extract of wood taken as purgative. Wood ash used to treat gonorrhea. Root bark is used as an antibiotic.
Combretummollis		Combretaceae	Shrub	Leaf, Bark	Bark used treatment of dysentery and leaves used for treatment of jaundice and yellow fever
Entadaafricana		Mimosaceae	Tree	Leaf	Leaves have haemostatic and antiseptic properties
Syzygiumguineense		Myrtaceae	Tree	Leaf, Bark, Root	Bark, roots and leaves are astringent and used for treating diarrhea and veneraldiseaes
Waltheriaamericana		Sterculiaceae	Tree	Root	The root is a purgative. Decoction of plant is used as preventive medicine against syphilis
Phyllanthusmuellerianus		Phyllanthaceae	Shrub	Leaf, Root	Root decoction is used as febrifuge for anaemia. Leaves could be chewed or macerated and taken as antidote to poison
Cissusaraliodes	Dadori, Dadoriya, Kwaloko	Ampelidaceae	Herb	Stem	Juice of the stem is applied for rheumatism and other swellings.
Hyptissuaveolens	Sarakuwarsauro *Daidoyarkare*	Lamiaceae	Shrub	Leaves	Leaves are used to treat malaria. Juice of pressed leaves is taken for colic and stomach ache
Cassia tora		Caesalpiniaceae	Tree	Whole Plant	Leaves are used for treatment of ulcer and ringworm and also to ease irritation of itchy skin eruption. Root is purgative and antihelminthic
Costusafer	Tabarmarzomo	Zingiberaceae	Herb	Stem	Stem used for treating cough and hypertension. The plant is also used for treating diabetes
Vitexdoniana	Dinya	Verbanaceae	Tree	Leaf, Root, Bark	Leaves for treating diarrhea, dysentery and cold. Shoot used for treatment of inflammation of the eye. Root used for treating leprosy. The bark is used for treating cough, trypanosomiasis and as a sedative
Adenodolichospaniculatus	Kwiwa, Kwiya	Papilionaceae	Herb	Leaf, Root	Leaf used for treating burns and scald as well as toothache. Root used for treating blennorrhoea.
Daniella oliveri	Maje, Kadaura	Caesalpiniaceae	Tree	Leaf, Bark	Gum is taken as purgative and for gonorrhea. Root bark decoction used for craw-craw.
Nelsonia canescens		Acanthaceae	Herb	Leaf	Leaf sap applied typically to treat guinea worm sores
Paulliniapinnata	Zarafi, Kankana	Sapindaceae	Herb	Leaf, seed pods	Leaves and seed pods used for the treatment of dysentery
Cassiasieberiana		Caesalpinaceae	Shrub	Root, pods	Roots used as a diuretic. Pods are used as laxative
Tephrosiabracteolata	Sabani, Samaci	Papilionaceae	Herb	Whole plant	Used for treatment of infertility in women
Anchomanesdifformis	Chakara, Hantsargada	Araceae	Shrub	Leaf, Stem	Stem ad leaves used for reconditioning the health of elderly people
Borassiusaethiopium	Giginya	Arecaceae	Tree	Root, Flower	Decoction of young roots used for respiratory tract disorder (Asthma). Root decoction taken for back pain
Ficusexasperata		Moraceae	Tree	Leaf, Root	As ornamental plant and construction purposes. Root decoction used for treatment of gonorrhea and urinary ailment
Securidacalongepedunculata	UwarMdgungwa	Polygallaceae	Tree	Leaf, Root	Used for treatment of stomach ache and back pain

Kigeliaafricana		Bignoniaceae	Tree	Leaf, Bark	Bark is used for syphilitic conditions and gonorrhea
Tecomastans		Bignoniaceae	Tree	Leaf	Leaves used for the treatment of diabetes
Cussoniabarteri		Araliaceae	Tree	Stem, Root	Roots and stem decoctions used for painful menstruation
Boswelliadalzielii	Hano, Ararabi	Burseraceae	Tree	Bark	A cold infusion of the bark is used for treating snake bites
Gynandropsisgynandra		Capparidaceae	Herb	Leaf, Roots, Seeds	Used for the treatment of ear-aches and rheumatism. Root decoction used to treat fever, the seeds are antihelminthic
Azadiracthaindica	Dogonyaro	Meliaceae	Tree	Leaf, Stem, Fruit, Seeds	Decoction of leaves and stem bark is used for treatment of malaria. Fruits are used to treat pile and oil from seeds used for skin diseases
Citrullus vulgaris	Agusi, Agushi	Cucurbitaceae	Herb	Leaf, Fruits, Seeds	Fruit and leaf decoction are used as purgative. Treatment for stomach troubles. Shell used to treat fungal infection on human skin
Amarathusspinosus	Namijingasaya	Amaranthaceae	Herb	Whole plant	Seeds of mature plants chewed as antidote to poison. Roots used for treatment of STDs. Leaves are used to treat boils
Cassia occidentalis	Yawan rai, Rai-rai	Caesalpinaceae	Shrub	Leaf, Seeds, Root	Leaf used for expelling worms. Pounded seeds are used for treating prostrate related diseases. Infusion of root is used as purgative
Swenkiaamericana		Solanaceae	Shrub	Roots, Leaf	Root and aerial parts used for the treatment of sexually transmitted and venereal diseases
Luffa cylindrica	Baska	Cucurbitaceae	Herb	Leaf, Root	The root is a drastic purgative. The decoction is taken as mild tonic. leaves used in treatment of cough
Ocimumbasilicum	Daidoya, Dadoya	Lamiaceae	Shrub	Leaf	For treating respiratory disorders. Leaves used to expel worms
Momordicacharantia	Garafuni, Daddagu	Cucurbitaceae	Tree	Leaf, root, Fruits	Leaf or whole plant used to treat fever. Laxative for stomach ache and anthelmintic
Khayaseneganlensis	Madaci	Meliaceae	Tree	Leaf	Leaves used for treatment of small pox
Trianthemaportulacastrum	Dumankada, Dumanrafi	Aizoaceae	Herb	Whole plant	Whole plant is used as a purgative
Eucalyptus globulus		Myrtaceae	Tree	Leaf, Root	Leaves are used as remedy for cold. Roots are used as purgative and prevention of malaria. Ornamental
Sesamumindicum	Ridi	Pedaliaceae	Herb	Leaf	The leaves are used to prepare a remedy for respiratory troubles
Ricinuscommunis	Zurma	Euphorbiaceae	Shrub	Leaf	Leaf and potash is a cure for jaundice
Hibiscus sabdariffa	Yakuwa	Malvaceae	Shrub	Leaf, Flowers	Used to treat cough, biliousness and symptoms of plethora. Flowers are used for dressing wound
Boerrhaviadiffusa	Babanjibji	Nyctaginaceae	Shrub	Root	Used for treating asthma
Acanthospermumhispidum	Kashinyawo	Asteraceae	Shrub	Leaf	Leaves used as tonic and aid fertility
Senna alata		Caesalpiniaceae	Shrub	Root	Roots used in treating finger and foot rot
Terminalia glaucescens		Combretaceae	Tree	Root, Bark	Root, bark used for the treatment of arthritis
Bambusa vulgaris	Gora	Poaceae	Herb	Leaf	Leaves used for the treatment of fever and to expel thread worms. For industrial uses
Plumeriarubra		Apocynaceae	Tree	Latex, Bark	Latex used as purgative. Bark used as diuretic and as febrifuge
Datura stramonium	Zakami	Solanaceae	Shrub	Leaf, Fruits, Seeds, Roots	Used for knockout drops and treatment of asthma
Gossypiumbarbadens	Auduga, YarKarfi	Malvaceae	Tree	Root, Bark	Cotton root bark used to induce abortions. Used in textile industry
Spondiasmonbim		Anarcadiaceae	Tree	Bark	Medicinal, bark used for stomach ache
Delonixregia		Caesalpinaceae	Tree	Leaf, Bark	Bark used for treating schistosomiasis. Leaves used for treating typhoid fever

Balanitesaegyptiaca	Aduwa	Balanitaceae	Tree	Leaf, Root, Bark	Fruits edible. Young shoot used for wound dressing. Root bark for snake bite, yellow fever , cough and syphilis
Phyllanthusamarus	Gerontsuntsaye	Euphorbiaceae	Herb	Whole plants	Whole plant decoction used as purgative. Leaf infusion used for treating pile, haemorrhoids.
Euphorbia heterophylla		Euphorbiaceae	Herb	Whole plant	Whole plant is used as a laxative
Cucurbita maxima	Kabewa	Cucurbitaceae	Herb	Seed	Seed kernel used for the treatment of tapeworm
Synedrellanodiflora		Asteraceae	Herb	Leaf	The infusion of the leaves is a laxative. The leaf juice is used to stop bleeding in wounds or cuts. It is used to treat cardiac troubles
Terminalia superba		Combretaceae	Tree	Leaf, Stem, Root	Wood used as timber. Root decoction, roof and leaf juice used to prevent miscarriage
Anthocleistadjalonensis	Kwari	Loganiaceae	Tree	Leaf, Bark, Root	Plant used for treating sexually transmitted diseases, asthma and diabetes. Bark used to treat skin diseases

TABLE 2: SHOWING THE DEGREE OF MANAGEMENT OF MEDICINAL PLANTS

PLANT MANAGEMENT	FREQUENCY
Cultivated	11
Wild	71

TABLE 3: PLANT LIFE FORMS AND THEIR FREQUENCY

PLANT LIFE FORM	FREQUENCY
Tree	41
Herb	22
Shrub	19

TABLE 4: FREQUENCY OF PLANT PARTS USED

PLANT PART	FREQUENCY
Leaves	17
Root	2
Stem	2
Bark	3
Rhizome	1
More than one part used	50
Whole Plant	7

DISCUSSION

It appears from current literature that documented evidence on use of plants from the study area for ethnomedicinal purposes is lacking. According to available literature consulted, the use of ethno medicinal plants for treating various ailments in the study area was not documented. Most of the plants used for medicinal purposes were found growing in the wild as shown in the results, this clearly indicated that these plants used for medicinal purposes are not yet cultivated by the locals who make used of them. . This was also reported by Sani and Aliyu (2011) in a similar work conducted in another part of the country (Kano North, Nigeria) and also by Haile and Delenasaw (2007) in a similar research conducted in Ethiopia and Uganda, in which they reported that medicinal plants used for ethno medicine were mostly found in the wild. In terms of the habit of the plants, the results showed that Trees are the majority of plants used for medicinal purposes. This may be attributed to the fact that this growth form of plants is available all season due to their perennial life existence and mostly not affected by seasonal variations (Albuquerque, 2006). The results showed that majority of the plants have more than one part being used for medicinal purposes. This agrees with the findings that the active ingredients of medicinal and aromatic plants can be found in the roots, leaves, stems, flowers or barks (Okigbo *et. al.*, 2009). The leaves were found to be the most used plant part for the preparation of various recipes taken for medication. Adekunle (2008) reported that the plant leaves are important ingredient in traditional treatment of various diseases as it featured more as a component in many herbal preparations.

CONCLUSION

This study has helped in determining many plants of ethnomedicinal importance in the study area. The documentation of the indigenous knowledge of the use of these plants will go a long way in preserving the knowledge from one generation to the next. Most of the respondents in this study are in their ripe ages and the younger generation are less interested in preserving this heritage. The findings have also helped in raising attention towards the need in the conservation of these vital resources genetic resources. Further studies can be carried out on these plant species so as to find out some of their bioactive compounds so that they can be utilized in the synthesis of conventional drugs.

REFERENCES

Adekunle M.F. (2008), Indigenous uses of plants leaves to treat malaria fever at Omo Forest Reserve (OFR), Ogun State, Nigeria. *Ethiopia J. Environ. Stud. Man.*, 1 (1): 31-35

Albuquerque, U. P. (2006). Re-examining hypothesis concerning the use and Knowledge of medicinal plants: a study in the Caatinga vegetation of NE Brazil. *Journal of Ethno biology and ethno medicine (2006)*. 2:30.

Balick and Cox. (1996). *Plants ,people and culture*: The science of ethnobotany, New York:HPHLP, 1996.

Dean AG. Dean AJ, Coloumbier D (1994), Epi info: A word processing database and statistics program for epidemiology on microcomputers. Centre disease control and prevention. Atlanta, GA, USA.

Diallo D. (1999). An ethno botanical survey of herbal drugs of Gouma district of Mali. *Journal of Pharmaceutical biology* 37:80-91.

Haile Y. and Delenasaw Y. (2007). Traditional medicinal plants knowledge and uses by local Healers in Sekorou district jimma zone, *Ethiopia. Journal of ethno biology and Ethno medicine* 3:24

Moerman, Daniel E. (1997). *The anthropology of medicine*: From culture to Method Vol, 3, Pp737.

Okigbo R. N., Anuagasi C. L. and Amadi J. E. (2009). Advances in selected medicinal and aromatic plants Indigenous to Africa. *Journal of medicinal plants Research. Vol. 3(2)*: 86-95.

Sani H. D. and Aliyu B. S. (2011). Asurvey of major ethno medicinal plants of Kano North, Nigeria, their Knowledge and uses by traditional healers. *Bayero Journal of Pure and Applied Sciences, 4(2)*: 28-34.

Veeramuthu D. (2006). Antibacterial activity of some ethnomedicinal plants used by Paliya tribe from Tamil Nadu, India. *Entomology Research Institute, loyolacollege. 6*:35

www.nigerianstat.gov.ng. (2016). Annual abstract of statistics 2012. National bureau of statistics Pp 6-10.