

Ethnomedicinal survey of plants used by the *Kanuris* of North-eastern Nigeria

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Documentation and preservation of indigenous knowledge deserve high priority if future generations are to benefit from it, especially with the current surge of emerging problems in health, agriculture and pharmaceutical industry. To this end, a study was conducted to assess and document plant species used in ethnomedicine by the indigenous *Kanuri* tribe of North-eastern Nigeria. Based on interview conducted with traditional healers of *Kanuri* origin residing in Maiduguri, Borno state, a brief account of 29 plant species used by these people to treat various ailments is presented here. It is interesting to note that some plants can be used in treating more than one disease or ailment. The diseases and ailments whose treatments were covered by the plants identified include malaria, anemia, paralysis, impotency, diarrhea, leprosy, cough, catarrh, toothache, ulcer, hypertension, rheumatism, chest pain and general body pain. The manner in which the traditional healers make their prescriptions showed that a seventh of the prescriptions contained composite remedies. There is equally a revelation that a wide range of health problems are treated by the traditional healers using medicinal plants in various combinations and dosage forms.

Keywords: Ethnomedicinal survey, *Kanuri* tribe, Traditional medicine, Nigeria

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Ethnomedicine denotes plants, animal products and minerals used by tribal communities of a particular region or country for medicinal purposes other than those mentioned in classical streams of the respective cultures. Ethnomedicinal information/ data are playing an important role for developing new scientifically validated and standardized drugs, i.e. both herbal and modern¹.

African traditional healing system and ethnomedicine have received appreciable attention^{2,3,4}. The extensive literature on the subject indicates clearly that traditional medicine practice occupies a very prominent place in the treatment of diseases in the African culture.

Medicinal plant knowledge is like all local knowledge, a social product that is part of the specific cultural system^{5,6}. Local knowledge is not always evenly distributed, and it is not every member of the group that is necessarily with the same knowledge. This is certainly true for medicinal plant knowledge, where usually a distinction can be drawn between specialists (traditional healers) who possess more in depth knowledge and lay persons.

In Nigeria, medicinal plant knowledge is kept within the close family circle and passed on from generation to generation⁷. And in Cameroon, this knowledge of medicinal plants is considered also secretive and healers claim to have learnt it from a host of relatives⁸. However, in Zambia, the majority of people are taught by family members, while others either through ancestral spirits or from other healers. In general, however, healing knowledge tends to be a closely guarded family secret and is handed down through kinship⁹. In other countries like Malawi, many healers have assistants who are apprentices in training¹⁰, but in Tanzania, many healers reported receiving information on new, potentially useful medicinal plants during their sleep. They also communicate sometimes with other healers about the plants they use and how to administer them¹¹. The family seemed to be the most important source to acquire knowledge, followed by ancestral spirits and experienced traditional healers outside the family¹². In Latin America and other parts of the world, social transmission of medicinal plant knowledge and skills is similar to Africa^{13,14}.

In Nigeria, traditional medicine in general and herbal medicine in particular continues to be widely

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used by majority of the rural population. The administration of the native or traditional drugs has been in the hands of native herbalists, who are quite often, old people in the rural settings. According to the history of Nigeria traditional medicine¹⁵, thousands of plants species have been used for many years in the practice of herbalism for their presumed pharmacological properties. A good number of Nigerians use traditional medicines for their day to day healthcare needs. The use of traditional medicines has a strong cultural influence to the extent that, even in urban settings where many modern healthcare facilities are available, people still consult traditional healers.

There is palpable anxiety across the globe that with the passage of time, this traditional healing system will become extinct, because old people who possess this knowledge might die without transferring this vital information to future generation who are mistakenly engrossed with modernity¹⁶ and associated problems. To ensure that future generations of Nigerians have access to this indigenous knowledge system, the indigenous knowledge system for treating trypanosomiasis in Kaduna, North Central Nigeria was reported about a decade ago⁷. As a follow up to that study, the present study was undertaken to capture and document information on the plants used traditionally by the indigenous *Kanuri* people of Maiduguri, North-eastern Nigeria.

Methodology

The study area is Maiduguri, North-eastern Nigeria. Maiduguri is a city located about 800km North-east of the federal capital territory Abuja. Based on 2006 Nigerian census figures, it has an estimated population of one million people. The dominant ethnic groups are *Hausa* and *Kanuri*. As in other metropolitan cities, the pull factors of urbanization brought many people from other parts of the country to Maiduguri, resulting in ethnic diversity which among others also includes those of *Ibo* and *Yoruba* origins, the other two major ethnic groups in Nigeria. It is a border town to Cameroon and Chad republics. During the time of study, the city has one University Teaching Hospital, one School of Health Technology, one School of Nursing, three Government General Hospitals, three Health Centres, several pharmaceutical chemists and many private clinics. As in other parts of the country, communicable diseases are the major public health problems of the area.

Ten traditional healers of *Kanuri* origin residing in Maiduguri as at the time of this survey were interviewed to ascertain the plants they use locally in treating diseases. The traditional healers were aged between 50-70 yrs old. Before the initiation of each interview, prior informed consent was obtained from the individuals who participated in the study as per the CBD guidelines.

To obtain a comprehensive information, a questionnaire was used in interviewing the traditional healers in order to get complete information on the local names of the plants⁷, their medicinal uses, plant parts used, ingredients or additives used in preparing the formulations if any, dosage forms, frequency and duration of treatment, solvent used in preparation of the drug, the mode of drug administration, etc. The plants' medicinal uses were cross-checked and confirmed through repeated queries.

Plant specimens were collected in the company of the local informants to ensure that correct specimens were obtained for taxonomic identification and future scientific investigations. Plants were identified by taxonomists at the Herbarium Section of the Department of Biological Sciences, Ahmadu Bello University, Zaria, Nigeria.

Enumerations

The survey shows that the under listed 29 plant species were used for various ethno medical purposes in the study area. Medicinal plants are arranged alphabetically according to their genus, species and family. The record of information on the 29 plant species including their botanical names, family names, local names, parts used, dosage forms, mode of drug administration and their purported efficacies are further enumerated.

Results and discussion

Twenty nine plant species commonly used by the *Kanuris* of North-eastern Nigeria for the treatment of common ailments have been identified and their uses were documented (Table 1). Some of the plants commonly used include *Citrus limon* for malaria, *Acacia nilotica* Del for anemia, *Adansonia digitata* for paralysis, *Feretia apodanthera* to enhance erection of the penis, *Cassia occidentalis* for swollen leg and *Chrozophora senegalensis* for diarrhea. Others include *Diospyrous mespiliformis* for leprosy, *Syzygium aromaticum* for cough, *Ficus ingens* Miq for toothache, *Securinega virosa* B. for ulcer, *Vernonia amygdalina*

Table 1-Plants used for ethnomedical purposes

Botanical name	Family	Local name (Hausa)/common name	Uses
<i>Acacia nilotica</i> Del	Mimosoideae	<i>Gabaruwa</i>	This is used to treat anemia and mouth disease. The dried parts of the stem bark, leaves or roots are pounded, and the powder mixed with local <i>pap</i> and is taken orally. The fresh parts can equally be boiled in water and the decoction taken orally for one week. It is reportedly effective.
<i>Adansonia digitata</i> Linn.	Bombacaceae	<i>Kuka</i>	Stem bark boiled in water and a cupful is taken orally for about 2 weeks to treat paralysis.
<i>Anacardium occidentale</i> Linn.	Anacardiaceae	<i>Cashu</i> , cashew	The fresh leaves, stem bark and roots together with those of <i>Magnifera indica</i> and <i>Psidium gujava</i> boiled in water and a cupful is taken orally for 5 days to treat malaria, typhoid fever and yellow fever. Honey may be added as an additive. It is reported to be very effective.
<i>Artemisia maciverae</i> Linn.	Asteraceae	<i>Tazargade</i>	The whole plant boiled in water and a cupful is taken orally for one week to treat fever, malaria, stomachache and rheumatism. Reportedly very effective.
<i>Azadirachta indica</i> A. Juss	Meliaceae	<i>Dogonyaro</i> , neem	This plant is used to treat fever, malaria, stomachache and impotency. The leaves, stem bark and leaves boiled in water and the decoction is taken orally for one week.
<i>Carica papaya</i> Linn.	Caricaceae	<i>Gwanda</i> , pawpaw	This is used to treat malaria, anemia and pile. Fresh leaves of <i>Carica papaya</i> , <i>Psidium gujava</i> and <i>Cymbopogen citratus</i> are boiled together in water and allowed to cool. A cupful is taken three times daily for one week for the treatment of malaria and anemia. In the treatment of pile, leaves of <i>Carica papaya</i> are boiled in water and the pile patient is made to sit on it for the steam to penetrate the anus.
<i>Cassia occidentalis</i> Linn.	Caesalpinaceae	<i>Majamfari</i>	The dried leaves or roots ground into powder and mixed with water, this is rubbed on the leg for two weeks, to treat leg pain and swollen feet.
<i>Centaturea perrotteti</i> Linn.	Asteraceae	<i>Dayi</i>	This is used to treat partial blindness and fever. The whole plant boiled in water and a cupful of this decoction is taken daily by oral route for one week.
<i>Chrozophora senegalensis</i> A. Juss	Eupporbiaceae	<i>Damaji</i>	The whole plant boiled in water and a cupful of the decoction is taken orally thrice daily for five days to treat diarrhea.
<i>Citrus limon</i> Linn.	Rutaceae	<i>Lemu sami</i> , lemon orange	This is used to treat malaria, fever and typhoid fever. The leaves boiled in water together with the leaves of <i>Magnifera indica</i> and <i>Psidium guajava</i> , cupful of the decoction is taken orally thrice times daily for five days.
<i>Cymbopogen citratus</i> DC	Poaceae	<i>Chiawa sami</i> , lemon grass	It is used to treat yellow fever, malaria, common cold and diarrhea. The leaves are boiled in water with honey, and the liquid is taken orally thrice daily for one week. The steam can equally be inhaled.
<i>Cyperus articulatus</i> Linn.	Cyperaceae	<i>Kajiji</i>	The fruit boiled in water and a cupful is taken orally once daily for five days to treat cough.
<i>Diospyrous mespiliformis</i> Linn.	Ebenaceae	<i>Kanya</i>	This is used to treat leprosy. The leaves, stem bark or roots ground and mixed with water, and its decoction is rubbed on the affected area of the body thrice daily until healing is effected. For early symptoms, the parts can be boiled in water and the decoction is taken orally thrice daily for two weeks. It is reportedly very effective.

(Contd.)

Table 1-Plants used for ethnomedical purposes (Contd.)

Botanical name	Family	Local name (Hausa)/common name	Uses
<i>Feretia apodanthera</i> Linn.	Rubiaceae	<i>Kurukuru</i>	This is used specifically to enhance erection of the penis. The stem bark or roots is ground and taken orally with tea.
<i>Ficus ingens</i> Miq.	Moraceae	<i>Kawari</i>	The leaves or stem bark ground and is rubbed on the gum to treat toothache. Duration of treatment is one week.
<i>Ficus ovata</i> Vahl.	Moraceae	<i>Cediya</i>	This is used to treat yellow fever. The leaves or stem bark boiled in water and a cupful is taken orally thrice daily for one week.
<i>Ficus foliata</i> Vahl.	Moraceae	<i>Durumi</i>	This is used to treat stomachache and chest pain. The leaves and stem bark boiled in water and the decoction is taken orally twice daily for one week.
<i>Guiera senegalensis</i> SIDA	Combretaceae	<i>Sabara</i>	This is used to treat diarrhea. The dry leaves are ground, soaked in water and sieved. This is taken orally thrice daily for five days.
<i>Mangifera indica</i> Linn.	Anacardiaceae	<i>Mangoro, mango</i>	This is used to treat yellow fever and malaria. The stem bark and leaves along with the leaves of <i>Carica papaya</i> and <i>Azadirachta indica</i> are boiled together, and the decoction is taken orally, thrice daily for five days.
<i>Mormodica balsamsina</i> Linn.	Cucurbitaceae	<i>Garahunu</i>	The whole plant boiled in water and the decoction is taken orally thrice daily for one week. This can be taken by women whose term is close for better management of post partum bleeding, and it is also used for treating diarrhea.
<i>Musa sapientum</i> Linn.	Musaceae	<i>Ayaba, banana</i>	This is used to treat anemia, yellow fever and malaria. The leaves steeped in hot water and is taken orally thrice daily for one week.
<i>Psidium guajava</i> Linn.	Myrtaceae	<i>Gwaiba, guava</i>	This plant is used to treat malaria, typhoid fever and yellow fever. Fresh leaves of the plant and <i>Carica papaya</i> leaves boiled together with water and the decoction is taken orally twice daily for one week. The liquid from the mixture can equally be used to bath the patient.
<i>Securinega virosa</i> Biss	Euphorbiaceae	<i>Tsa</i>	This is used to treat ulcer. The leaves, stem bark or roots boiled in water and the decoction is taken orally twice daily for two weeks.
<i>Sorghum spp</i> Var	Poaceae	<i>Dawa</i>	It is used to treat general body pain. The leaves and roots boiled in water and the decoction is taken orally thrice daily for five days.
<i>Syzygium aromaticum</i> Linn.	Myrtaceae	<i>Kanumfari</i>	The fruits or cloves boiled in water and milk added. The mixture is taken orally twice daily for five days to treat cough and catarrh.
<i>Thonningea sanguinea</i> Linn.	Balanophoraceae	<i>Kulla</i>	This is used to treat swollen feet. The fruits ground and mixed with oil and is rubbed on the affected feet.
<i>Vernonia amygdalina</i> Del.	Asteraceae	<i>Shuwaka, bitter leaf</i>	This plant is used to treat yellow fever, hypertension and malaria. The aqueous extract is taken orally thrice daily for one week.
<i>Xylopia aethiopica</i> Duanl	Annonaceae	<i>Kimba</i>	This is used to treat rheumatism, malaria and body itching. The fruit is used in cooking soup which is given to the patients to eat. It can also be boiled in water and taken orally once daily for one week.
<i>Zingiber officinale</i> Rosc.	Zinziberaceae	<i>Citta aho, ginger</i>	This is used to treat general body pain and cough. The tuber stem crushed into hot water and soaked for some minutes. This is filtered and the filtrate is taken orally thrice daily for one week.

for hypertension, *Xylopi aethiopica* for rheumatism, *Fictus politica* Vahl for chest pain and *Zingiber officinale* for general body pain.

The study has demonstrated the relevance of traditional medicines in the healthcare system of indigenous people. It has been found that traditional herbal medicines are still prevalent and used in the treatment of many diseases in the study area. Some of the plant species such as *Musa sapientum* are used in the treatment and management of more than one ailment (Table 1). The multiple uses of one plant species in treating diseases is equally reported in a study conducted by other workers¹⁶.

The use of most of the herbal preparations described in this study against malaria confirms the prevalence of this disease in tropical Africa. Nearly half of the total number of plants encountered in this work including *Anacardium occidentale*, *Artemisia maciverae*, *Carica papaya*, *Azadirachta indica*, *Citrus limon*, *Cymbopogon citratus*, *Magnifera indica*, *Musa sapientum*, *Psidium guajava*, *Vernonia amygdalina*, and *Xylopi aethiopica* are used in the treatment of many other diseases. The same trend was reported by other workers¹⁶, when they reported that plants like *Citrus limon*, *Cymbopogon citratus*, *Magnifera indica*, *Psidium guajava*, *Carica papaya* and *Azadirachta indica* cited in this survey being used in treating malaria. They have also noticed in their study that *Xylopi aethiopica* is used to treat eczema (skin diseases) and cough, *Vernonia amygdalina* is used to treat stomachache, itching conditions and ring worm, while *Azadirachta indica* is used to treat pile. Similarly, Ehiagbonare¹⁷ reported that *Vernonia amygdalina* and *Azadirachta indica* are also used locally in treating malaria.

In their study, Fasihuddin and Ghazally¹⁸ noted that *Carica papaya* root decoction is taken as a means of birth control and for uterine contractions after child birth, while *Cymbopogon citratus* stem decoction is taken as a blood tonic. They also noted that young leaves of *Psidium guajava* are steeped in hot water and drunk to relieve stomachache and diarrhea. Apart from the plants reported here, other workers¹⁹ reported that plants like *Carum carvi*, *Allium cepa*, *Allium sativum*, *Artemisia herbalba* and *Nigella sativa* are used in treating diabetes and hypertension, while Kohler *et al.*²⁰ reported the plant *Microglossa pyrifolia* is used in the treatment of malaria.

Similar to a report in Northern Ethiopia²¹, in this study, liquid preparations taken orally were reported

to be the predominant dosage forms. It is evident that, depending on dosage forms, herbalists use different additives and solvents in preparing their formulations. In this connection, it is important to note that some of the additives in traditional formulations may exert therapeutic activity in addition to being used as adjuvant. For example, the antibacterial and antifungal properties of honey is well documented, with the inhibition of growth of organisms such as *Staphylococcus aureus* and *Candida albicans*^{22,23}. Honey has also been shown to have a great value in treating infected surgical wounds^{24,25}. Hence, the use of honey in traditional formulations might also have direct therapeutic effect on many diseases.

The pattern of traditional prescriptions revealed that about one seventh of the prescriptions contained composite remedies. As it has been well documented^{26,27}, traditional healers claimed that the use of multiple plants may provide a synergetic effect in therapeutic efficacy²⁷.

Although traditional medicines are still in common use by the *Kanuris* of North-eastern Nigeria and other cultures in Nigeria, accurate knowledge of the plants and their medicinal properties are held by only a few individuals in the community. These traditional healers are, almost without exception, community elders of 50 yrs of age or older, and hence there is high probability that these invaluable knowledge and art of healing that have been religiously preserved for generations may not be passed on to the younger generation. To ensure that this traditional knowledge on medicinal plants is not lost with the current elderly generation of healers, documentation and preservation of this indigenous knowledge must be accorded high priority in this and other cultures, so that future generation can benefit from it in overcoming some of the emerging problems in the health, agricultural and pharmaceutical sectors.

The security of a nation is directly related to the food and health security of its people. Biodiversity rich nations like Nigeria and other countries of the world can achieve a reasonably high level of food and health security, if the people are encouraged to make the best use of the local biodiversity resources like plants in their localities with appropriate science and technology intervention. The documentation and preservation of the indigenous knowledge for treating different diseases in different cultures are therefore absolute necessities.

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