A Survey of Medicinal Plants Found in Girei Local Government Area of Adamawa State

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Abstract

The study was conducted to identify the plant species commonly used as traditional medicine by the inhabitants of Girei local government area of Adamawa state, Nigeria. A semi structure questionnaire was administered for this stud. 40 questionnaires were sent out and 32 were returned, 8 questionnaires were not responded to. The most common plants parts used are stem bark from 14 plants, leaves from 8 plants and roots from 6 plants. The most common method of preparations of these medicinal plants parts was grinding to powdered form and boiling of the plant extracts. The common method of administration was oral consumption. Results showed a total of 24 medicinal plants identified with different plant parts (stems, rots and leaves) used. The most frequently represented medicinal plants are Khaya senegalensis and Ficus species The findings showed that stomach ache and cough disease had the highest number of identified medicinal plants species for their treatment while snake bite, whitlow, leprosy, pile, sc abies, swelling, toothache and wound had the least identified medicinal plants for their treatments. This survey has provided information on the medicinal plants available in Girei locality which can be harnessed as ethno medicine and conventional production of drugs by a pharmaceutical scientist once the active ingredients in the plant parts used have been identified in further studies.

Keywords: *Questionnaires, traditional medicine, Khaya senegalensis, pharmacognosist, Girei*

Introduction

The various types of plants used in herbalism which possess medicinal activities are called medicinal plants (Awuchi, 2019). These medicinal plants are considered as rich sources of ingredients which can be used in drug development and synthesis (Arvind, 2016). Lack of civilization and other factors inhibit the adequate adoption of traditional medicinal plants into modern medicine. These plants play a critical role in the development of human cultures around the whole world (Shankar *et al*., 2016). Medicinal plants represent the most ancient form of medication, used for thousands of years in traditional medicine in many countries around the world. The empirical knowledge about their beneficial effects was transmitted over the centuries within human communities (Khan, 2014). Medicinal plants constitute an effective source of both traditional and modern medicine. These plants have been shown to have genuine utility and about 80% of the rural population depends on them as primary health care (Akinyemi, 2000).

There are worldwide applications in the treatment of different types of diseases. According to the report by the World Health organization (1990), about 80% of the world's population use indigenous medicinal plants in direct and indirect ways to treat diseases. Different plants are being employed as a source of medication against various ailments due to their bio-diversity and perhaps for their rich complement of phytochemical and secondary metabolites (Zafar *et al*., 2010; Neube *et al*., 2008).

Indigenous knowledge system and practices develops within a given community through observation and reallife experiences over a period of time and are communicated orally or otherwise from one generation to the other for the purpose of ensuring survival and progress (Awuchi, 2019). One of the vital applications of indigenous knowledge system and practices is in human and animal health care. There is however a need for information with respect to traditional knowledge system and practices in Girei Local Government Area of Adamawa state due to rural-urban migration,

substitution of traditional practices with modern practices and preference for orthodox drugs. This survey was undertaken to document the medicinal plants useful in management of diseases at Girei Local Government Area of Adamawa state due to the fast decline of aged people in the community as a result of increased mortality. The survey provides information on the medicinal plants used by the people of Girei Local Government Area which lies along the Benue River and is dominated by tribes such as the Bwatiye, Mbula, the Fulbe or Fulani who are mostly farmers and cattle rearers.

Materials and Methods

The survey was carried out in Girei local government area of Adamawa state Nigeria (9°24'5]9.81"N, 12°32'02.70"E). The area has a tropical climate being marked by dry and rainy season. The rainy season starts late May and ends mid-October. August and September are the months with the most rainfall, about 25% of the total annual rainfall. The dry season begins in late October and ends in April (Binbol and Zemba, 2007)

Respondents Biodata Collection

Locals of the area were visited and interviewed on the medicinal plants used by them and a semi structured questionnaire was also employed. Traditional healers and elderly people were interviewed using semi structured questionnaire and open-ended conversation. The interviews and discussions were conducted in Hausa. Several trips were made to the sites where the traditional healers usually go to harvest the plants. Data on the local names of the plants, parts used, diseases treated by the plants, mode of usage and administration were recorded on the field.

Identification of plant species

Plants names were identified using a field key to the Savannah trees of Nigeria (Stanfield and Hopkins 1996). Herbarium press was

prepared for plants that could not be identified on the field and the press was taken to Department of Plant Science, Modibbo Adama University, Yola for proper identification by a plant taxonomist. Local names in Hausa were obtained from the traditional healers and elderly people of the community.

Herbal preparation

Herbal remedies can either be prepared from dry plants from markets or freshly collected samples around homes or home gardens. However, respondents affirmed that both forms of plant materials are efficient in herbal preparation except in some cases where freshly collected samples are more preferred.

Traditional solvent of choice

Water was the preferred solvents used in herbal preparation.

Method of preparation

The main methods of preparation are decoction (boiling) in water. The time required for boiling is variable and dependent on plant parts

Method of application

Respondents interviewed were advised to drink a cup-full and in some cases a tea spoon full of aqueous preparations 2 to 3 times daily. However, some preparations are required to be taken as much as possible till symptoms of the disease conditions disappear. Preparations in form of paste were applied mostly on the wound surface.

Data presentation

Data on botanical, local and common names of plants used, diseases treated by the plants, mode of usage and administration, surveyedplant Species and the frequency of plant parts used was presented in Table 1-2 below

Results and Discussions

Table 1: Medicinal plant distribution according to family

SN.	Family	Species Number
1.	Arecaceae	2
2.	Anacardiaceae	1
3.	Apocynaceae	2
4.	Asteraceae	1
5.	Burseraceae	2
6.	Caricaceae	1
7.	Fabaceae	4
8.	Lamiaceae	1
9.	Meliaceae	2
10.	Moraceae	3
11.	Moringaceae	1
12.	Myrtaceae	1
13..	Rhamnaceae	1
14.	Sapotaceae	1
15.	Zygophyllaceae	1

Results and Discussion

Table 2: Plants used as Traditional medicine in Girei Local Government

S/N	PLANT NAME	FAMILY NAME	LOCAL NAME	COMMON NAME	PARTS USED	MEDICINAL USES	PREPARATION	ADMINISTRATION
1.	*Azadirachta indica*	Meliaceae	Dogon Yaro	Neem tree	Stem bark	Typhoid	Stem bark is boiled with leaves of *Acacia senea* and *Eucalyptus* spp.	Orally, three times a day for five days
2.	*Balanite aegyptiaca*	Zygophyllaceae	Aduwa	Desert date or snap berry tree	Stem bark	Swelling	Decoction of the stem bark Ground stem bark mixed with water to form paste	It is taken orally Paste is applied on the swollen surface
3.	*Borassus flabellifer*	Arecaceae	Giginya Kankangra	Toddy palm	Root	Back pain	Decoction of the root	It is taken orally, three times daily
4.	*Boswellia dalzielii*	Burseraceae	Ararabi soma	Frankicea tree	Stem bark	Cough	Stem bark is soak in water with potash infusion	Orally, morning and evening
5.	*Calotropis procera*	Apocynaceae	Tumfafiya	Apple of Sodom	Roots	Worms	Root is boiled for 30 minutes	The concoction is taken orally using a tea spoon, morning and evening

6.	*Carica papaya*	Caricaceae	Gwanda	Pawpaw	Leaves	Typhoid	The leaves are boiled with leaves of *Acacia senia, Psidium gwajava and Eucalyptus* spp.	orally, morning and evening
7.	*Commiphora Africana*	Burseraceae	Kwinlintinga	African myrrh	Stem bark	Whitlow	Stem bark is ground into powder and mixed with water to form paste	The paste is applied on the spot of whitlow
8.	*Daniellia oliveri*	Fabaceae	Maje	African copaiba balsam tree	Stem bark	Worms	Its' stem bark is boiled with those of *Mangifera indica* and *Vitellaria paradoxa*	The concoction is taken orally using tea spoon for seven days
9.	*Ficus asperifolia*	Moraceae	Baure	Sand paper tree	Stem bark	Pile	Stem bark is dried and grind into powder and mixed with roasted beef	orally, morning and evening for three days
10.	*Ficus platyphyla*	Moraceae	Gamii	Gutta percha tree	Stem bark	Cough	the stem bark and that of *Vitellaria paradoxa* are soaked in water to soften them	Orally by chewing and then swallowed
11.	*Ficus polita*	Moraceae	Durumi	Heart-leaved fig	Leaves	Yellow fever	Decoction of its' leaves and that of *Musa* spp.	It is taken orally, morning and evening

12.	*Hyphaene thebaica*	Arecaceae	Goruba	Doum palm	Stem bark	B a c k p a i n	Concoction of stem, barks and root with garlic	Orally, three times daily for five days
13.	*Khaya senegalensis*	Meliaceae	Madachi Tolla	Mahogany	Stem bark Stem bark Stem bark	Stomach ache worms scabies	Stem is ground into powder and mixed with water	orally, morning and evening
14.	*Mangifera indica*	Anacardiaceae	Mangoro	Mango	Leaves	Yellow fever	The mixture of its leaves, *Carica papaya* and *Psidium guajava* are boiled	The concoction is taken orally, morning and evening
15.	*Parkia biglobosa*	Fabaceae	Doruwa	Locust bean	Stem bark	Stomach pain	Decoction of the stem bark	It is taken orally using a tea spoon, three times daily
16.	*Tamarindus indica*	Fabaceae	Tsamiya Saba	Tamarind	Stem bark	Sore throat and cough	The stem bark is dried and ground with potash	It is taken orally, three times a day
17.	*Vitellaria paradoxa*	Sapotaceae	Kadan	Shea butter	Stem bark	Diarrhea	The stem bark is boiled and mixed with potash	It is taken orally, three times daily

18.	*Vitex doniana*	Lamiaceae	Dinya	Black plum	Stem bark Leaves	Leprosy	Decoction of the stem bark Dried leaves and stem bark are ground mixed with water to form paste	It is taken orally, three times daily The paste is applied on the leprous surface
19.	*Ziziphus mauritiana*	Rhamnaceae	Kurma Tukramara	Indian plum	Stem bark Leaves Root	Wound children cough snake bite	Stem bark is dried and ground into powder and mixed with water Leaves and roots are boiled	Applied on the wound. Concoction are taken orally for children's cough and snake bite
20.	*Carissa edulis*	Apocynaceae	Petewa	Egyptian Carissa	Root	Tooth ache	Decoction of the root	Washing of mouth, morning and evening for the treatment of tooth ache
21.	*Senna siamea*	Fabaceae	Malga	Yellow cassia	Leaves and roots	Stomach ache, fever	Decoction of fresh leaves and roots with leaves of *Tamarindus indica*, *Carica papaya* and potash	Decoction is taken three times daily

22.	*Vernonia amygdalina*	Asteraceae	Shuwaka	Bitter leaf	Leaves	Stomach ache	Fresh leaves are mixed with hot water and allowed to cool	One tea cup is taken orally for a week
23.	*Moringa oliefera*	Moringaceae	Zogale	Horseradish tree	Roots	Diarrhea	The roots are dried, ground into powder and mixed with water to form paste	The paste is licked orally, three times daily for three days
24.	*Psidium guajava*	Myrtaceae	Goba	Guava	Leaves	Typhoid	Decoction of the leaves	It is taken orally
							Concoction of the leaves with that of *Azadirachta indica*, *Eucalyptus camadulensis* and *Musa* spp.	One tea cup is taken orally, morning and evening

Twenty-four plant species of medicinal value were surveyed in Girei local government area of Adamawa state, Nigeria. From Table 1, the stem bark of *Hyphaene thebaica* and root *Borassus flabellifer* are used to treat back pain, this is in agreement with the findings of Shanmugalingam *et al*. (2021) that reported the anti-arthritic property of *Borassus flabellifer*. Stem bark of *Boswellia dalzielii, Ficus platyphyla, Tamarindus indica* and the leaves of *Ziziphus mauritiana* were reported to be used for treatment of cough and sore throat; this is similar to the findings of De Caluwe *et al*., 2010 that stated the traditional use of *Tamarindus indica*, *Parkia biglobosa* and *Adansonia digitata* in the prevention of metabolic diseases. Among the medicinal plants studied, 4 species were reported to be used for the treatment of stomach ache, the stem bark of *Khaya senegalensis* and *Parkia biglobosa,* the leaves of *Senna siamea* and *Vernonia amygdalina* this is in line with the report of Suleiman *et al*. (2013) that reported the use of *Khaya senegalensis* in the treatment of gastrointestinal ulcer and pain. The stem bark of *Khaya senegalensis, Daniella oliveri* and the root of *Calotropis procera* are notable for the treatment of worms, it was also reported that the stem bark of *Khaya senegalensis* was used in the treatment of ailments such as scabies. However, a decoction of the stem bark of *Azadirachta indica,* and the leaves of *Carica papaya* and *Psidium guajava* was reported to be used for the treatment of typhoid fever, this is similar to the findings of Arinoso and Aworinde, (2012) who reported the use of this plant species prepared by decoction for the treatment of malaria and typhoid fever.

The stem bark of *FiScus asperifolia* and *Vitex doniana* were reported to be used for the treatment of pile and leprosy respectively. In the treatment of yellow fever, the leaves of *Mangifera indica* and *Ficus polita* were used among the locals of Girei. The stem bark of *Vitellaria paradoxa* and the root of *Moringa oleifera* are notable for the treatment of diarrhea. The stem bark and the roots of *Ziziphus mauritiana* are used in the treatment of wounds and snake bites respectively. Stem bark of *Commiphora*

africana is notable for the treatment of whitlow among the people of Girei. The use of the stem bark *Balanite aegyptiaca* for the treatment of swellings and inflammation and the root of *Carissa edulis* for the treatment of tooth ache was recorded

The twenty-four (24) plant species surveyed were distributed across fifteen (15) families as shown in Table 2 above. Family Fabaceae had the highest frequency with four species of the surveyed plants belonging to this family. Family Moraceae followed closely with a frequency of three plants species. Family Arecaceae, Apocynaceae, Burseraceae and Meliaceae had two species each, others such as Anacardiaceae, Caricaceae, Lamiaceae, Sapotaceae, Rhamonaceae, Zygophyllaceae, Asteraceae, Moringaceae and Myrtaceae each had one species. Scientific studies on these plants would provide insights into their potentials and help us in understanding the pharmacological actions of the active compounds found in these plants (Ramana, 2008).

Data was also collected on the frequency of the surveyed plant parts used for the treatment of ailments. The stem bark had the highest frequency of 14, while the leaves had a frequency of 8 and the roots had the least frequency of 6 as shown in Table 3 above. This report is similar to the finding of Arinoso and Aworinde (2012) who carried out a similar survey in Abeokuta area of Ogun state, Nigeria.

Conclusion

This survey has provided information on the medicinal plants available in the Girei locality which can be harnessed in ethno medicine and conventional production of drugs by a pharmacognosist once the active ingredients in the plant parts used have been checked in further studies.

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