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Ethnobotanical study of medicinal plants used by the Laniba village people in South Western Nigeria

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An ethnobotanical survey on medicinal plants used for treating and managing different ailments by the Laniba people who live in south western Nigeria was undertaken. The study was conducted using unstructured interviews among both male and female herbalists, herb sellers and experienced village elders. Information on traditional uses and remedies were documented. Twenty-one plants belonging to fifteen families were mentioned by herbalists and villagers as being commonly used. Interview data suggested a heterogeneous use of medicinal plants. Dioscorea hirtiflora Benth., Piper guineense Schumacher and Thonn., Allium L. species, Citrus aurantifolia (Christm.) Swingle were prominent in the recipes, which suggested that they are important in the management of diseases. Most of the plants identified in this study have been previously experimentally verified as being active biologically. The family Liliaceae occurred most frequently in the list. This work includes the plant recipes, plant part used, mode of preparation and application of the remedies as specified by people of Laniba village.

Key words: Nigeria, medicinal plants, traditional knowledge, conservation.

INTRODUCTION

The use of plants as medicine to cure or prevent illness is a long standing culture in many communities of the world. Every society has a legacy of plant use in answer to many health problems. The earliest references to these medicinal plants as cure for diseases are found in the manuscript of the ‘Eber papyrus’, which contains 700 medical formulas and dating back to 16th century B.C. (Simpson and Ogorzaly, 1986). The African continent is particularly blessed with vast species of plants, which have both economic and medicinal importance. Research findings support the view that medicinal plants will probably continue to play an important role as health aid (Moermann, 1996; Hoareau and DaSilva, 1999). The use of medicinal plants constitutes an important part of traditional medicine, which is a part of African heritage. Though modern/orthodox medicine has improved the lot of many people worldwide, it is worthy of note that in many cultures, modern medicine compliments traditional practices as is obtainable in industrialized societies for example, China and India. In these societies, herbal medicines have become more popular in the treatment of minor ailments and also on account of the increasing cost of personal health maintenance. Indeed, the market and public demand has been so great that there is a great risk that many medicinal plants today face either continuous rarity or imminent extinction.

In Nigeria, the majority of citizens use medicinal plants and visit traditional medicine practitioners for their health care needs. It was reported by Cunningham (1993) that in Nigeria, the ratio of Traditional Health Practitioners to the population was 1:110, while the ratio of medical doctors to the population was 1:16,400. This gives credence to the fact that people patronise Traditional Medical Practitioners (TMPs) for their primary healthcare needs more than orthodox medical doctors. Various workers have expressed the abundant presence and utilization of many medicinal plants in Africa (Sofowora, 1982; Gbile et al., 1990; Cunningham, 1993; Kokwaro, 1993; Getachew and Shiferaw, 2002; Soladoye et al., 2005; Gidey, 2010). Nigeria with her position as one of the important countries in West Africa is tremendously blessed with vast diversity of plants most of which are medicinal. However, unsustainable harvesting of these genetic resources as a result of irrational and uncontrolled exploitation by all people, groups has

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endangered many species while some of them are left with consequent threat of imminent extinction (Soladoye and Sonibare, 2003). This has been pointed out in several ethnomedicinal studies conducted in different communities in Nigeria and other African countries (Sonibare and Gbile, 2008; Sonibare et al., 2009; Idowu et al., 2010; Mavundza et al., 2011). It is important therefore to document knowledge about medicinal properties of these plants as well as source indigenous knowledge from those that are the custodians of such for posterity sake. The present survey was carried out to document the indigenous knowledge possessed by the people in Laniba village in the use of medicinal plants for treatment of diseases and to stimulate sustainable harvesting that is necessary for their conservation.

MATERIALS AND METHODS

Study area

The survey was conducted in Laniba village of Akinyele local government area of Oyo state, one of the eleven in Ibadan metropolis (Oyo State) with its headquarters in Moniya. Laniba village is one of the twelve wards in the local government area. The study area lays in the rain forest zone of Nigeria within latitude 6°15’ and 6°50’N, and longitude 3°40’ and 4°45’N. In the area, rainfall pattern is bimodal with peaks in May and August. There is a distinct period of dryness between November and February. The rainfall pattern allows for practices in humid zone, the slash and burn techniques followed by fallow period. Majority of the inhabitants grow arable crops and staple crops. The climax vegetation is semi-deciduous forest with humid to sub-humid tropical climate. Laniba village is dominated by the Yorubas among which are Christians and Muslims and Traditional Practitioners. The major occupation of the inhabitants includes: Agriculture, trading, food processing but primarily agriculture. In Laniba village, there is no primary health care sector; TMPs are the only source of providing health care to the villagers. This invariably brings medicinal plants to the focal point of daily usage, which has placed them under perpetual harvesting with consequent risk of imminent extinction. This trend would have serious damaging effect on the flora of this area if no drastic measure is taken to arrest the situation. The study was therefore undertaken to evaluate some of the medicinal plants used in the village in managing and treating various disease conditions as a means of assessing the indigenous knowledge of the inhabitants of Laniba village in the use of medicinal plants.

Data collection

After satisfying the ethics requirement for the study, several field trips were made to the study centre between March and November 2010 with the aim of collecting plants of ethnomedicinal value and documenting the indigenous practices of the people of Laniba village. Prior information was obtained from village heads on documenting the indigenous practices of the people of Laniba village. 2010 with the aim of collecting plants of ethnobota nical value and trips were made to the study centre between March and November After satisfying the ethics requirement for the study, several field

RESULTS

A total of twenty-one plant species belonging to fifteen different families were collected as parts of the plants used for the management and cure of different ailments reported in Laniba village. Nine recipes were given by herbalists. The summary of the names of the medicinal plants, their families, parts that are used, their local names and medicinal applications is given in Table 1. Number of occurrence of different species is shown in Table 2. It was observed that some families occurred more than once, while some occurred up to two to three times in the prescriptions. Major plant parts used are leaves, corms, seeds and rhizomes (Figure 1). Roots, stem bark and flowers were also found in the recipes. These were usually collected from the forest, farmlands, backyards, road side bushes, and market places. These plant parts were preserved by cutting into pieces and then sun-dried or kept in the ceiling or house sheds. They were sometimes hung in the kitchen area or fire places where they are exposed to constant heat that dries them up gradually in order to reduce moisture content. Some are sometimes ground into powder and preserved for future uses. Hygienic collection was ascertained by using well-kept machetes and knives for harvesting. From the responses of people, it was observed that medicinal preparations are made by infusion, decoctions, tinctures, macerations, concoctions, powder and pastes. Prescriptions are enumerated along with the procedure of preparation and dosage. Mode of application was mainly oral while in some cases the remedies were administered topically.

Enumeration of recipes in treatment of various ailments

Hypertension

*Allium cepa* and *Allium sativum* are cut into pieces and macerated in water for about three days. The liquid extract is to be taken three times daily.
Table 1. Medicinal plants used for common ailments in Lanib a village.

<table>
<thead>
<tr>
<th>Botanical name</th>
<th>Family</th>
<th>Local name</th>
<th>Plant part used</th>
<th>Medicinal application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aframomum melegueta K. Schum.</td>
<td>Zingiberaceae</td>
<td>Atare</td>
<td>Fruit</td>
<td>Problematic pregnancy</td>
</tr>
<tr>
<td>Allium ascalonicum L.</td>
<td>Liliaceae</td>
<td>Alubosa elewe</td>
<td>Whole herb</td>
<td>Gonorrhoea and low sperm count</td>
</tr>
<tr>
<td>Allium cepa L.</td>
<td>Liliaceae</td>
<td>Alubosa</td>
<td>Fruits</td>
<td>Anti-gonorrhoea and hypertensive agent</td>
</tr>
<tr>
<td>Allium sativum L.</td>
<td>Liliaceae</td>
<td>Aayu</td>
<td>Fruits</td>
<td>Anti-gonorrhoea and hypertensive agent</td>
</tr>
<tr>
<td>Borreria verticillata (L.) G. Mey.</td>
<td>Rubiaceae</td>
<td>Irawo-ile</td>
<td>Whole herb</td>
<td>Low sperm count and weak erection</td>
</tr>
<tr>
<td>Caladium bicolor (Alton) Vent.</td>
<td>Araceae</td>
<td>Ewe eleje</td>
<td>Leaves</td>
<td>Conquering enemies</td>
</tr>
<tr>
<td>Chrysophillum albidum G. Don.</td>
<td>Sapotaceae</td>
<td>Agbalumo</td>
<td>Seeds</td>
<td>Cholera</td>
</tr>
<tr>
<td>Citrus aurantifolia (Christm.) Swingle</td>
<td>Rutaceae</td>
<td>Bitter orange</td>
<td>Fruits juice</td>
<td>Cholera and Gonorrhoea</td>
</tr>
<tr>
<td>Cucumis melo L.</td>
<td>Cucurbitaceae</td>
<td>Bara</td>
<td>Fruits</td>
<td>Stomach ache and dysmenorrhoe</td>
</tr>
<tr>
<td>Dioscorea dumetorum (Kunth) Pax</td>
<td>Dioscoreaceae</td>
<td>Esuru gudugudu</td>
<td>Tubers</td>
<td>Boil, jaundice and conquering enemies</td>
</tr>
<tr>
<td>Dioscorea hirtlfora Benth.</td>
<td>Dioscoreaceae</td>
<td>Isu- ahun</td>
<td>Tubers</td>
<td>Gonorrhoea, dysmenorrhoea and antimicrobial agent</td>
</tr>
<tr>
<td>Elaeis guineensis Jacq.</td>
<td>Palmae</td>
<td>Epo eyin</td>
<td>Seeds</td>
<td>Antimicrobial agent and a coolant</td>
</tr>
<tr>
<td>Ficus sur Forssk.</td>
<td>Moraceae</td>
<td>Igi-opoto</td>
<td>Fruits</td>
<td>For wound, antimicrobial agent and tonic</td>
</tr>
<tr>
<td>Morinda lucida Benth.</td>
<td>Rubiaceae</td>
<td>Ewe oruwo</td>
<td>Leaves</td>
<td>Anti-malaria</td>
</tr>
<tr>
<td>Musa sapientum L.</td>
<td>Musaceae</td>
<td>Ogede-wewe</td>
<td>Inflorescence</td>
<td>Problematic delivery</td>
</tr>
<tr>
<td>Piper guineense Schumacher and Thonn.</td>
<td>Piperaceae</td>
<td>Iyere</td>
<td>Seeds</td>
<td>Memory enhancer, problematic delivery, low sperm count, weak erection</td>
</tr>
<tr>
<td>Sebastiana chamaelea (Linn.) Mull. Arg</td>
<td>Euphorbiaceae</td>
<td>Atikereku wu eyin</td>
<td>Leaves</td>
<td>Problematic delivery</td>
</tr>
<tr>
<td>Talinium triangulare (Jacq.) Wild.</td>
<td>Portulaceae</td>
<td>Eliqure</td>
<td>Leaves</td>
<td>Anti-microbial agent</td>
</tr>
<tr>
<td>Vitellaria paradoxa G. Don.</td>
<td>Sapotaceae</td>
<td>Ori/Shea butter</td>
<td>Seeds</td>
<td>Antimicrobial agent, coolant</td>
</tr>
<tr>
<td>Xanthosoma sagittifolium (L.) Schott</td>
<td>Araceae</td>
<td>Koko</td>
<td>Tuber</td>
<td>Conquering enemies</td>
</tr>
<tr>
<td>Zea mays L.</td>
<td>Poaceae</td>
<td>Omi Ogi</td>
<td>Fruits</td>
<td>Anti-gonorrhoea</td>
</tr>
</tbody>
</table>

**Boil**

(i) Fresh leaves of Talinium triangulare is grounded with Vitellaria paradoxa and Elaeis guineensis and applied topically to the affected part.

(ii) Roasted Dioscorea hirtlfora is grounded and mixed with potash and drunk with hot pap (from Zea mays).

(iii) Roasted D. hirtlfora is grounded into powder form and made into ointment by mixing with V. paradoxa. The preparation is applied topically on the affected area.

**Cholera**

Crushed seeds of Chrysophillum albidum is soaked in juice of Citrus aurantifolia and alcohol in a covered jar and left for days. A small tumbler-full of the extract is taken after fellow is instructed not to take any food until after waking up from sleep.

**Low sperm count**

(i) Tortise shell; head of male lizard and black soap are grounded together. The affected part is bath with the mixture twice daily.

(ii) Tortise shell, Borreria verticillata, Allium Aaslonicum and Piper guineense are grounded together and cooked with snail. The preparation is taken as soup.

**Problematic pregnancy and delivery**

(i) Inflorescence of Musa sapientum and seeds of P. guineense are grounded together and cooked with wholesome rat to make a soup. The woman with a hard labour is to take the rat wholly from
Table 2. Species distribution according to ethno botanical survey.

<table>
<thead>
<tr>
<th>Species</th>
<th>Number of occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. melegueta K. Schum.</td>
<td>1</td>
</tr>
<tr>
<td>A. cepa L.</td>
<td>1</td>
</tr>
<tr>
<td>A. sativum L.</td>
<td>2</td>
</tr>
<tr>
<td>B. verticillata (L.) G. Mey.</td>
<td>1</td>
</tr>
<tr>
<td>C. bicolor (Alton) Vent.</td>
<td>1</td>
</tr>
<tr>
<td>C. albidum G. Don.</td>
<td>1</td>
</tr>
<tr>
<td>C. melo L.</td>
<td>1</td>
</tr>
<tr>
<td>D. dumetorum (Kunth) Pax</td>
<td>1</td>
</tr>
<tr>
<td>D. hirtiflora Benth.</td>
<td>5</td>
</tr>
<tr>
<td>E. guineensis Jacq.</td>
<td>1</td>
</tr>
<tr>
<td>F. sur Forssk.</td>
<td>1</td>
</tr>
<tr>
<td>M. lucida Benth.</td>
<td>1</td>
</tr>
<tr>
<td>M. sapientum L.</td>
<td>1</td>
</tr>
<tr>
<td>P. guineense Schumacher and Thonn.</td>
<td>3</td>
</tr>
<tr>
<td>S. chamaelea(Linn.) Mull. Arg</td>
<td>1</td>
</tr>
<tr>
<td>T. triangulare (Jacq.) Willd.</td>
<td>1</td>
</tr>
<tr>
<td>V. paradoxa G. Don.</td>
<td>2</td>
</tr>
<tr>
<td>X. sagittifolium (L.) Schott</td>
<td>1</td>
</tr>
<tr>
<td>Z. mays L.</td>
<td>2</td>
</tr>
</tbody>
</table>

Figure 1. Percentage use of major plant parts in folk medicine in Laniba.
head to tail before sleeping in the night.
(ii) Ori-ofafa is burnt with Aframomum melegueta and kept. When a woman is in hard labour, she is given as a powder on her palm to lick. As soon as she takes it, she shall deliver.
(iii) Fresh leaves of Sebastiana chamaelea and little seeds of P. guineense are milled together and the mixture cooked into soup. When pregnancy is problematic, the woman is asked to lick the soup. It is also recommended for all pregnant women to always take it once a while for easy delivery.

Yellow fever

The fresh leaves of Morinda lucida are milled with soap. The mixture is used to wash only the head and neck region of the affected person.

Dysmenorrhoea

Peeled fruits of Cucumis melo are cut into pieces, D. hirtiflora is also peeled and cut into pieces, a handful of potash is added to it in a jar and then soaked in alcohol for some days. One small tumbler-full is taken without eating before the menstrual flow starts. If the symptoms persist, the drug is to be continued throughout the menstrual period.

Gonorrhoea

If acute, D. hirtiflora is peeled, sliced, dried and grounded into powder; it is then mixed with lime (Citrus aurantifolia). One table spoon is taken daily.

If the Gonorrhoea is chronic, three long syringes are injected into three tubers of D. hirtiflora, the preparation is then boiled with pap (From Zea mays) water, A. ascalonicum and A. sativum. Small tumbler-full of the infusion is to be taken daily.

Conquering enemies

Fresh tubers of Dioscorea dumetorum (non-edible), Xanthosoma sagittifolium, leaves of Caladium bicolor and black soap are milled together and bathe with in a flowing river.

DISCUSSION

The ethnobotanical survey of plants used for the treatment and management of various illnesses, which was undertaken at Laniba village of Akinaye local government area of Oyo State, revealed that the villagers of Laniba use herbal medicines as their main source of health care. The Lanibas are seen from this study as being versatile and skilful in the use of herbal medicine. The study site is noted as rich in species diversity thus, confirming the observation of Kasparek (1997) that medicinal plants constitute the largest category of biodiversity used by the people. Plants have been reported to be almost the exclusive source of drugs for the majority of the world’s population (Farnsworth and Bingel, 1997; Odetola and Bassir, 1986; Okogun, 1994); we are in a way providing another proof to this claim through the Laniba survey. The sexes and number of people that were involved confirmed a heterogenous pattern of botanical resource use, knowledge and value within the community.

The year of experience and the health standard provided support for the practice of traditional medicine in the village. Respondents disclosed that medicinal plants are either purchased from local markets or collected from nearby forest and bushes for healthcare delivery. This is in agreement with the observation of Fajinmi and Taiwo (2005) that herbal therapies are natural products, environmentally friendly and cheap. However, this attitude of plant collection from the forest and bushes if not checked may lead to irrational plant collection that may endanger some of the important medicinal plants or bring about their eventual extinction. Other risks involved in this include collection of plants from polluted sites and mis-identification of plants. To a very large extent the environment where plants are collected contributes to the types and nature of metabolites present in the plants that may render any medicinal usefulness. There should therefore be awareness on proper or sustainable plant collection in which cultivation of some of the medicinal plants is encouraged. It should be noted that prescriptions given did not include any form of incantations. Recipes were majorly herbs (38.1%), shrubs (28.6%) and trees (23.8%). The most used plant parts are leaves (47.1%), seeds (23.4%) and the least are corns (17.7%) and rhizomes (11.8%). Preparation of powders from plant materials formed the most common method of preparation while the least was decoction. The preferences in mode of preparation was said to be dependent on potency and shelf life of remedies.

Recipes collected were reported to have been used for the treatment of common ailments which include: Hypertension, low sperm count and weak erection, fevers, boils, problematic pregnancy and delivery, dysmenorrhoea and gonorrhoea. Most of the plants in these recipes have been investigated for possible bioactivity in previous studies by various workers. For instance, A. cepa is an antimicrobial agent as reported by the people of Laniba. It was reported by Oliver-Bever (1980) that extracts of A. cepa have shown bacteriostatic and hypoglycaemic activity. Externally onion is used as a rubefacient and anti-phlogistic on abscesses (Watt and Breyer-Brandwijk, 1962). The folk medicinal uses of A.
sativum are well documented. It is commonly put into
cough medicine, and as stomachic added to gruel millet
taken as a drink. It is similarly used for fevers with chills.
A cold infusion serves as a body wash for infants for
protection against chills. It is also used against
rheumatism, bronchitis, typhoid, tuberculosis and
quickens the circulation (Burkill, 1985). This is also in line
with the usage by the Lanibas as it is to them a
hypotensive agent. *P. guineense* is used in the treatment
of problematic delivery, low sperm count and weak
erection that is, associated with treatment of reproductive
system. It was also reported traditionally in Congo that
cooked leaves or decoction of *P. guineense* is taken for
menstrual troubles and is administered generally to
 cleanse the abdominal region of women. For men, these
preparations are held to be aphrodisiac and a pelvic
decongestant in chronic gonorrhoea. When taken with
food, it improves the chance of conception (Burkill, 1997).
In Nigeria, leaves are taken in soup by women to assist in
child birth. Leaves are used for their antiseptic and
revulsive properties. Cooked or in decoction for
headache, toothache and lumbar pains in Congo. The
sap is inhaled into the nose for headache or used as a
mouth wash for mouth and throat infections in Ivory
Coast. A root decoction is administered in Ivory Coast as
diuretic, aphrodisiac, anti-diarrhoeal as well as anti
bennorrhagic (Burkili, 1997).

It was gathered from the survey that traditional
medicine practitioners remain in the business because of
cheap source of livelihood. It is evident that medicinal
plants apart from playing an important role in the health
care of developing countries as typified by the people of
Laniba in south-Western Nigeria, they are also important
economically. The easy accessibility to plant parts such as
roots, barks, leaves and flowers, which are collected
from the forest around the neighbourhood, along
roadsides and sometimes market places plays a
significant role in further sustaining the interest of the
villagers in the practice of traditional medicine. However,
a great concern is the issue of sustainability. The use of
medicinal plants in preventive and curative conditi
is not new (Joshi and Edington, 1990; Eddouk et al., 2002;
Tapsoba and Deschamps, 2006; Atherton et al., 2008)
but the fact that these plants are being over collected and
also irrationally is of major concern worthy of attention.
There are many reports of unsustainable harvesting of
various medicinal plants in different communities in
Africa and other continents of the world (Hamilton, 2004;
Soladoye et al., 2005). The experience in Laniba village
was not different. This was evidenced by the responses
of certain local users of these plants who lamented on the
problem encountered in finding some of the herbs at
localities where they previously existed. This might be an
indication of the fast disappearance of these plants,
which may lead to their eventual extinction if there is no
drastic measure in place to curb this.

In order to have a considerable long term effect on the
environment, healthcare and economy, the use of
important medicinal plants in a way and a rate that does
not threaten or endanger the plants must be ensured
(Wong et al., 2001). The utilisation and conservation of
important medicinal species must be the focus of all plant
users (Sheldon et al., 1997; Harnischfeger, 2000;
Hamilton et al., 2000). Lack of conservation will only lead
to an increase in the number of endangered species and
it will eventually result in extinction, which is the gradual
but sure elimination of taxa. In our group, our experience
in research focused on medicinal plants conservation;
points out that several plants of social economic values
as well as plants that are regarded as sacred are
associated with traditional healing. With these great
potentials of medicinal plants to alleviate major health
problems in human and the increased realization that
some wild species are being over-exploited as is the case
in Laniba, the need has arisen to pay a closer attention to
the issue of conservation. As a matter of fact, a number
of agencies are recommending that wild species be
brought into cultivation systems to forestall their eminent
extinction. Extensive cultivation of these medicinal plants
should therefore be an urgent task by all stakeholders if
we will have some of them to fall back on in the nearest
future (Sonibare et al., 2009).

Conclusion

The results of our study provide the enumeration of
twenty-one plants employed for various therapeutic uses
in Laniba village. The people living in this village possess
vast traditional knowledge about plants, which makes
them to rely on medicinal plant used to solve most of their
health problems ranging from cholera, low sperm count to
gonorrhoea. However some of these plants are being
over exploited without adequate measures on ground for
their replacement. There is therefore, need to educate
the local populace who are by far the greatest users of
medicinal plants on effective means of sustainable
harvesting and conservative measures. The collection,
identification and documentation of the medicinal plant
species encountered in our study are Parts of the primary
steps in their conservation. The present work is therefore
providing a basis for the continued effort geared at future
drug discovery from indigenous medicinal species with an
emphasis on the need for conservation policy on
indigenous medicinal plants in Laniba village.

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