

Ethnomedicinal Evaluation of Wild Edible Plants in Ile-Ife Region, Osun State Nigeria

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Received 10-04-2022	Abstract: Ethnomedicinal methods have been widely used in underdeveloped countries as a key source of curing human illnesses and disorders. Many medicinal plants are used by the Yoruba people of Ile-Ife area, Osun State, Nigeria, to address their health needs. The study recorded some ethnomedicine plants utilized by the Ile Ife people. Ife North, Ife South, Ife East, and Ife South were the focus of the ethnomedicinal survey in Ile-Ife area. One hundred key respondents were questioned utilizing a cross-sectional and purposive sample strategy in order to gather and collect information on ethnomedicinal usage of plants and different healing rivers sources. The researchers discovered 20 medicinal plants belonging to 15 different families, including Rubiaceae, Asteriaceae, Cucurbitaceae, Euphorbiaceae, Anacardiaceae, Fabaceae, Solanaceae, Amaranth, Poaceae, Moraceae, Moringaceae, Tiliceae, Meliaceae, and Meliaceae. Malvaceae and Lamiaceae are two families of plants. The ethnomedicinal uses, as well as the local names and parts employed, were noted. Wild edible plants benefit poor groups more since they are a low-cost, low-input option for improving nutrition and reducing the need to spend limited cash resources on food and medicine.	Keywords: Ethnomedicinal, Diversity, wild edible plants, conservation, region, Ile ife, Nigeria
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INTRODUCTION

Human use of natural resources is influenced by a variety of factors including history, culture, and availability (Ladio & Lozada, 2004). Despite the fact that there are over 20,000 species of wild edible plants in the globe, only about 20 species presently produce 90% of our food. There are, however, hundreds of lesser-known edible plants from all over the world that are both tasty and healthful.

Wild edible plants are those that aren't domesticated or grown and can be found in their natural settings (Magdalene *et al.*, 2019). Drought resistance, reproduction, and regeneration are all factors that determine plant distribution. Bioactive components found in wild plants are beneficial to human and animal health. Despite their diverse range of activities, wild edible plants are inexpensive to propagate, manage, and keep in excellent condition; nonetheless, they are underutilized due to a lack of knowledge about their nutritional profile. Indeed, due to a lack of awareness, vast volumes of edible plants may be fading away in the wild. Many individuals are unaware of their potential as alternative dietary sources of calories, minerals, vitamins, and medicinal characteristics.

WEPs (wild edible plants) are species that are not farmed or domesticated, but grow wild

and are edible (Beluhan and Ranogajec, 2010). Throughout human history, several wild food plants have played an important role in all geographical regions of the world (Sekeroglu *et al.*, 2006). Poor populations all around the world rely on these wild plants for food, nutrition, and subsistence, as well as for improving rural livelihoods (Badhani *et al.*, 2011). Some wild delicacies have even been reported to provide nutritional advantages over farmed ones (Burlingame, 2000).

Consumption of wild food plants has resurfaced or grown in popularity. Despite agricultural cultures' major reliance on crop plants, the custom of consuming wild plants has not fully vanished, with several surveys worldwide reporting on their nutritional value and health advantages (Pardo-de-Santayana *et al.*, 2007).

Food shortages mainly occur when expected harvests of cultivated plants fail to materialize, or when stockpiled dietary resources are drastically reduced. The supply of popular dishes may be limited due to seasonal shortage of edible plants. Some plant diets, especially when combined with vegetable proteins, can provide an excellent and balanced supply of essential proteins (amino acids). Living organisms rely on vegetable resources for their daily vitamins and minerals, either directly or indirectly (Cochart, 2011). Biodiversity is essential for humanity to achieve

their basic requirements (Uprety *et al.*, 2012). Some plants were used by humans and animals as sources of herbal medicine and sustenance (Adou *et al.*, 2016).

The traditional intake of wild edible plants (WEP) is still complemented by staple crop plants in most agrarian civilizations around the world today (Lulekal *et al.*, 2011). It is now well acknowledged that wild edible plants (WEPs) play an important role in providing food and nutritional security for rural and indigenous people. Unfortunately, information on their identity, content, and nutritional qualities, as well as their use and management, as well as user preferences, is scarce or poorly documented (Vincetti *et al.*, 2008).

There are still a lot of food resources and important plants to be discovered (Mohan Ram, 2000). The development of improved varieties, genetic conservation, and pre- and post-harvest management have all sparked greater interest in its research and development (Deshmukh and Waghmode, 2011; Ekka and Ekka, 2016). The available literature indicates that some systematic study has begun, however it is neither detailed nor full.

Despite the tremendous importance of wild edible plants and their numerous medical applications in humans and animals, there is little or no literature on the distribution and variety of chosen edible medicinal plants in local government in the Nigerian State of Osun. As a result, the current study was created to gather information on the areas various wild plants and medicinal plant species. This knowledge is critical for preventing food insecurity during times of scarcity, as well as developing effective strategies to improve primary health care for people and livestock, as well as promoting domestication and sustainable harvesting of wild foods and medicinal plant species among Ile Ife residents.

METHODOLOGY

Site Description

The study area lies between latitudes 7 28N and 7 46N, as well as longitudes 4 36 E and 4 56 E. Ile Ife is a Yoruba town in Nigeria's south western region. It's in the middle of Nigeria's Yoruba-speaking states. It's in the middle of Nigeria's Yoruba-speaking states. Ibadan is to her west, while Akure is to her east, serving as a

gateway to the important Yoruba cities in the east. Ile ife is roughly 200 kilometers northeast of Lagos, Nigeria's maritime capital for more than a century (Olupona, 2011). Ile ife's urbanization is thought to have begun around 500 AD (Mabogunje, 1968). Today, it is one of Osun's most important towns, encompassing sections of the Ife Central, Ife East, Ife Central, and Ife North Local Government districts, with a population of 355, 341 people in 2006 (NPC, 2006). The Yoruba ethnic group, one of Africa's largest, is the socio-cultural group (Levison, 1998; Olupona, 2011). Ile-Ife is an agricultural trade center with yam, cassava, maize, orange, kola, cocoa, and vegetables. Ile-ife, a center for learning and culture, is home to Obafemi Awolowo University (OAU), one of Nigeria's largest universities, and is around 40 kilometers from Osogbo, Osun State.

Sampling Design

The research area was chosen specifically because it has a high number of farms and a long history of ethnobotany methods. Because of their proximity to the farms and the availability of traditional medicine practitioners, four local government areas, Ife East, Ife North, Ife South, and Ife Central, were purposefully chosen.

Purposive sampling was used in order to find a sample that could effectively answer the research objectives. A stratified sampling strategy was used to obtain a sample of respondents from each hamlet. General residents were asked to collect information on the use of wild food and medicinal plants, farmers to identify botanicals used for crop protection, livestock keepers to identify botanicals used to treat livestock diseases, and tradomedical practitioners to identify medicinal plants used to treat human diseases. Stratification was also used to determine the number of required responses in each separate category or stratum as determined by the local authority. Purposive sampling was used to pick individual respondents from the tradomedical practitioners' stratum (Kitula, 2007).

To create a sampling frame, names from village and farmer register books were used to randomly select respondents from the rest strata. Following that, a random number generator was used to select responders from the sample frame. For the interview, a total of 100 sample respondents aged 18 were chosen.2.3 Data Collection

Materials used

- Questionnaire for interviewing sampled respondents
- Measuring tape of 100m length for measuring intervals between plots within a transect
- Measuring tape for measuring diameter of sampled plant at breast height
- Global positioning system (Garmin) for plot coordinates
- Data sheet form for recording data during transect survey

Source of data

Interviewing sampled respondents from the selected four local governments and conducting a field survey by transects walks in the selected four local government farmland reserves were used to collect primary data.

Ethnobotanical Survey

The questionnaire was used to gather qualitative and quantitative information on distribution and diversity. Before beginning data collection, the questionnaire was pre-tested with a sample of two respondents from each strata at four local governments to ensure that the questions were sufficient to provide the essential information. After pre-testing the questionnaires, various changes were made, including the removal of redundant questions and the addition of new ones. In each of the four local governments, a total of 100 people were questioned. Plant species used for food and medicine were among the data obtained. Parts used, habitat sources, processing methods, application methods, and the habit of the plant used as medicine and food were all documented. The information gathered was quantitative as well as qualitative. Face-to-face interviews were conducted with respondents, with an enumerator filling up the responses.

Ethical consent

The study's goal was explained to the participants, and each of them gave their informed consent.

DATA PROCESSING AND ANALYSIS

Analysis of Ethnobotanical Survey

SPSS 20 was used to analyze the data. The data on household profile: age, size, educational attainment, and information on wild foods and medicinal plants: habit, source, methods of application and preparation, route of application, and plant parts used were described and summarized using mean, frequency, and percentage supported by table and graphic illustrations.

Plants Identification

Local botanists aided in the identification of plant species because they understand the significance of these species as evidenced by their physical characteristics or names (Mndolwa *et al.* 2001). The identification was based on the works by MNRT, (2000); Hamisy *et al.* (2000); Ruffo *et al.* (2002); MNRT, (2011) and Augustino *et al.* (2011). Seven unnamed specimens were also forwarded to a botanist for appropriate identification using actual specimens, pictures, and taxonomy keys.

RESULTS AND DISCUSSION

Demographic/personal information of respondents

A total of 100 people were questioned. The gender of respondents reveals that the majority of respondents (63%) are male, while the remaining respondents (37%) are female (Table 1). According to the age of respondents, individuals between the ages of 41 and 50 had the greatest percentage of 34 (34 percent) (Table 1). Respondents between the ages of 51 and 60 percent came in second, with 26 percent (26 percent). Twenty percent of respondents are between the ages of 31 and 40 years, 11 percent are between the ages of 61 and 70 years, and those between the ages of 21 and 30 years have the fewest respondents (Table 1). The biggest number of respondents (57%) had no formal education, while those with primary education (26%) had the highest level of education (26 percent). 11 (11%), 4 (4%), and 2 (2%), respectively, had secondary education, Nigeria Certificate in Education (NCE)/technical/vocational education, and diploma/degree education (Table 1). As shown in Table 1, the majority of respondents were

farmers/market people (56%), herb vendors (26%), herbalist/priest (Alfa or pastors) (13%), and civil servants/retirees (5%).

Identified wild edible plant species

In the research region, a total of 20 wild edible plant species from 15 families were found (Table 2). Local English names, as well as a local name, botanical name, and family name, were discovered (Table 2). Botanical names are scientific names, whereas Yoruba names are Yoruba names.

Table 1: Socio-Demographic details of the respondents

S/N	Variable	Categories	Number of respondent (n = 100)	Percentage of respondent (%)
1	Gender	Male	63	63
		Female	37	37
2	Age	21-30 years	9	9
		31-40 years	20	20
		41-50 years	34	34
		51-60 years	26	26
		61 years and above	11	11
3	Training level	No formal education	57	57
		Primary six	26	26
		Secondary school	11	11
		Nigeria Certificate in Education (NCE)/technical/vocational	4	4
		Diploma/degree	2	2
4	Respondents livelihood	Farmer/market people	56	56
		Herb seller	26	26
		Herbalist/priest (Alfa or pastors), priests	13	13
		Civil servants/retiree	5	5

Table 2: Identified wild edible plant species in Ile-Ife, Osun State

S/N	English Name	Local Name	Botanical Name	Family Name
1	Candle bush	Asunwon Oyinbo	<i>Cassia senna</i>	Fabaceae
2	Tobacco	Taba	<i>Nicotiana tobacum</i>	Solanaceae
3	Blood leaf	Ewe eje	<i>Justicia carne</i>	Amaranth
4	Christmas/Baby bush	Ewe Akintola	<i>Chromolaena odorata</i>	Asteraceae
5	Lemmon grass	Koriko oyinbo	<i>Cymbopogon citrates</i>	Poaceae
6	Girdlepod	Irawo Ile	<i>Mitracarpus scaber</i>	Rubiaceae
7	Bitter lemon	Ejirin	<i>Momordica charantia</i>	Cucurbitaceae
8	Bellyache bush	Lapalapa funfun	<i>Jatropha gossypifolia</i>	Euphorbiaceae
9	Sandpeper leaf	Epin	<i>Ficus exasperate</i>	Moraceae
10	Moringa	Ewe ile	<i>Moringa Olifera</i>	Moringa martinov
11	Just Mallow	Eweedu	<i>Corchorus olitorius L</i>	Tiliaceae
12	Neem	Dogoyaro	<i>Azadirachta indica A.Jass</i>	Meliaceae
13	Bitter leaf	Ewuro	<i>Vernonia amygdalina</i>	Asteraceae
14	Scent leaf	Efirin	<i>Ocium gratissimum</i>	Lamiaceae
15	Fluted pumpkin leaf	Ugu	<i>Telfaria occidentalis</i>	Curcurbitaceae
16	Wireweed	Osokotu	<i>Sida acuta Burnif</i>	Malvaceae
17	Brimstone tree	Oruwo	<i>Morinda lucida</i>	Rubiaceae
18	Coral plant	Ogege	<i>Jatropha multifida L</i>	Euphorbiaceae

19	Cashew	Kasu	<i>Anacardium</i>	Anacardiaceae
20	Yellow mombin	Igi Iyeye	<i>Spondias mombin</i> L	Anacardiaceae

Ethno medicinal values of the identified wild edible plants

In the research region, a total of 20 wild edible plant species from 15 families were found (Table 2). Local English names, as well as a local name, botanical name, and family name, were discovered (Table 2). Botanical names are scientific names, whereas Yoruba names are Yoruba names.

Methods of utilization of the identified wild edible plants

Table 4 lists the numerous strategies for exploiting the recognized wild food plants. The WEPs could be used in a variety of ways, all of which required minimal components. Various

parts of the recognized species were consumed, but the leaves were the most popular.

Frequency of occurrence of family of the identified wild edible plants

Table 5 shows the frequency of occurrence of wild food plants. Rubiaceae, Asteriaceae, Cucurbitaceae, Euphorbiaceae, and Anacardiaceae have the most species (2 with 10% prevalence), followed by Fabaceae, Solanaceae, Amaranth, Poaceae, Moraceae, Moringaceae, Tiliceae, Meliaceae. Species from the Lamiaceae and Malvaceae families each accounted for 5% of all occurrences (Table 5)

Table 3: Ethno medicinal values of the identified wild edible plants in Ile Ife, Osun State

S/N	English Name	Parts Used	Ethnomedicinal Uses
1	Candle bush	Leaf, Seeds, Stem, Bark	Skin rashes, Dysentery, Ringworm, Eczema, Bronchitis, and Stomachache
2	Tobacco	Seed, Leaf	Sniff in the nose to cure catarrh, migraine and nasal congestion
3	Blood leaf	Leaf	Treatment of infections, Antimicrobial
4	Christmas/Baby Bush	Leaf	The juice is usually dropped on wound; Antimicrobial
5	Lemon grass	Leaf, Roots	Malaria, cough, stomachache, stimulant, cold, and ringworm are all treated with this herb.
6	Girdlepod	Leaf	Treatment of Infection, Treatment of skin diseases and rashes
7	Bitter lemon	Leaf, Stems	Stomach pain, Indigestion, Diabetes, Piles, Jaundice, Sore, Antimicrobials and Ease of ejaculation from men
8	Bellyache bush	Leaf	Pile cure, Purgative, Dysentery, Stomachache, Skin Diseases
9	Sand peper leaf	Leaf	Used to treat high blood pressure, stomach cramps, antimicrobial and fibroid
10	Moringa	Leaf stem	Antimalaria, Fever
11	Just Mallow	Leaf	Fever, Worms, Diarrhoea, Anthelmintic, and Asthma
12	Neem	Leaf, Stem	To treat fever and stem could be used to wash mouth
13	Bitter leaf	Leaf, Stem	Aid digestion, Anti-diabetic, Cures stomachache, Chewing stick, Reduces pile and Antimicrobial
14	Scent leaf	Aerial part	Gonorrhoea, Catarrhal conditions, Cough, Constipation, Dysentery, Ringworms, Stimulants and hypertension
15	Fluted pumpkin	Aerial part and leaf	Increase blood level, and cure many intestinal disorders
16	Wire weed	Leaf, root	Malaria, Antipyretic and boils
17	Brimstone tree	Leaf, Stem, Bark and Root	Malaria, Diabetes, Heart diseases, Purgative, Emetic, Diuretic, Jaundice, Flatulence and Anticancer
18	Coral plant	Juice sap leaf and stem	Use to wash tongue, thick white sputum, Tuberculosis, Indigestion, to relieve internal cough but in a little quantity
19	Cashew	Leaf	Diabetic, Chemotherapy, Malaria, Syphilitic ulcers, Diarrhea, Sore throat
20	Yellow mombin	Leaf, Stems	Stomachache, Diarrhea, Dysentery

Table 4: Methods of utilization of the identified wild edible plants in Ile Ife, Osun State

S/N	Wild Edible Plants	Methods of Utilization
1	Candle bush	The leaves are washed, squeezed, and the extract is consumed.
2	Tobacco	After a light burn, the leaves are squeezed and the extract is given to youngsters to alleviate fever.
3	Blood leaf	Squeeze the leaves and consume the extract after washing them with water.
4	Christmas/Baby bush	A decoction of the leaf is used to cure coughs and as a malaria therapy when combined with lemongrass and guava leaves..
5	Lemmon grass	Squeeze plant except root and drink extract
6	Girdlepod	Squeeze leaves and drink extract
7	Bitter lemon	Drink liquid extract / sock stem bark in alcohol after squeezing the leaves. Teas made from the leaves are used to treat fevers. For the treatment of severe jaundice, a mild decoction of the stem bark is used..
8	Bellyache bush	Bark steeped in a water or decoction of the bark
9	Sand paper leaf	The seeds are chewed; the stem and twigs are peeled and sliced into little pieces, then soaked in a bottle of local gin for a few days to "mature" before being drunk as an aphrodisiac.
10	Moringa	They are cooked.
11	Jews Mallow	Cooked and eaten as vegetable
12	Neem	In the form of an aqueous infusion, the leaves, stem bark, and root are used to treat malaria. The chosen component is normally chopped up into little pieces, placed in a suitable container with water, and left to macerate for a day to many weeks.
13	Bitter leaf	Fevers and diabetes have been treated with an aqueous infusion of the leaves. The dried leaves are chewed for the same purpose and are used to relieve nausea in pregnant women. The peeled stem is used to brush one's teeth, while the bark is used to treat venereal infections and diarrhea. The plant is used in very small amounts in numerous medicines, although it's unclear whether it's added to give the medicine a bitter flavor or for therapeutic purposes. Purgative enemas, diuretic combinations, anthelmintic preparations, and topical lotions for parasite skin illnesses all contain the leaves.
14	Scent leaf	Cooked like a vegetable, it's beneficial for stomach issues, and the juice and extract are used to cure piles..
15	Fluted pumpkin leaf	Increases blood levels and treats a variety of digestive problems.
16	Wireweeds (Hornbean leaf sida)	After proper wash, boil with water then drink
17	Brimstone tree	Squeeze the leaves with a 7-Up soft drink and consume the extract. The leaves are often used to make fever teas. For severe jaundice, a mild decoction of stem bark is used.
18	Coral plant	Sap applied on tongue
19	Cashew	Fruit is eaten raw or preserved in jam or sweetmeat, seeds are roasted and consumed, and an astringent bark decoction is used to treat severe diarrhea and thrush. Gargle with a leaf decoction if you have a sore throat.
20	Yellow mombin	As a vegetable, tender leaves are used. Roasted ripe fruits are eaten in the same way that groundnuts are..

Table 5: Frequency of occurrence of family of the identified wild edible plants in Ile Ife, Osun State

S/N	Family	Number of Occurrence	Percentage of Occurrence
1	Fabaceae	1	5
2	Solanaceae	1	5
3	Amaranth	1	5

4	Asteraceae	2	10
5	Poaceae	1	5
6	Rubiaceae	2	10
7	Cucurbitaceae	2	10
8	Euphorbiaceae	2	10
9	Moraceae	1	5
10	Moringaceae	1	5
11	Tiliaceae	1	5
12	Meliaceae	1	5
13	Lamiaceae	1	5
14	Malvaceae	1	5
15	Anacardiaceae	2	10
	TOTAL	20	100%

DISCUSSION

Diverse wild edible species occur in the research region, according to the findings. The Ile Ife region is found amid western Nigeria's rainforest flora. Flora species abound throughout the greenery. According to Addis *et al.*, (2005), such vegetation allowed for the growth of a range of wild food plants. In this research, 20 edible wild plants were discovered in the study area. As a result, the occurrence of WEPs in the region is a type of food security insurance. In times of famine and other calamities, Getahun (1973) emphasized the value of WEPs. According to a study by Bharucha and Pretty (2010), wild plants and animals make up a large component of the global food basket.

Consumers increasingly prefer diverse diets, according to Petropoulos *et al.* (2018), particularly the WEPs, which performed dual objectives as diet complements as well as healthful and functional meals for certain illnesses. The demand for these species is likely to rise as a result of this. The ethno-medicinal significance of the identified wild edible plants was well-known among the respondents in this study.

According to Petropoulos *et al.* (2018), consumers are increasingly favoring various diets, notably the WEPs, which served as diet complements as well as healthy and functional meals for specific conditions. As a result, demand for these species is projected to increase. The ethno-medicinal value of the discovered wild food plants was well-known among the study participants. Results from this study revealed that the methods of utilization of the identified WEPs were simple.

Most WEP plant parts are ingested in raw form, according to Sundriyal & Sundriyal (2004)

and Seal (2011). The majority of the WEPs found in this study were not cultivated in the study area, according to the findings. As a result, they were obtained from the wild by respondents. Wildling collections, according to Tsering *et al.* (2017), make the WEPs vulnerable to free access and availability. This limits their market potential and puts a lot of strain on the people who are still available.

Some of the plants identified in the study have been described in other ethnobotanical studies (Togola *et al.*, 2005; Adekunle, 2008) for comparable ethnomedicinal purposes. Future research would be guided by their Yoruba names and sections of plants (leaves, stem bark, fruit, roots, and flowers), as local names play an important role in ethnobotanical studies of a particular tribe or region (Singh, 2008; Erinoso and Aworinde, 2012). The ethnomedicinal uses of medicinal plants have been documented, including antimicrobial, aphrodisiac activity, anti-diabetes, and potential sources of curing cough, fever, malaria, hypertension, boils, skin rashes, infertility and hormonal imbalances, rheumatism, ease of sperm ejaculation, and others. This information could serve as a data base toward scientific exploitation, tool for knowledge sharing, and documenting cultural heritage for sustainable development in the country as suggested by (Olajide, 2003)

Kayode and Ogunleye (2008) proposed that botanical gardens be established in each senatorial zone across the country, and this idea should be implemented. In these gardens, the majority of the known WEPs could be grown.

CONCLUSION

Finally, WEPs assist poor communities more because they are a low-input, low-cost

option for improving nutrition and reducing the need to spend limited cash resources on food and medicine (Shumsky *et al.*, 2014). They served as diet supplements as well as nutritious and functional foods for specific ailments. As a result, demand for them tends to rise (Petropoulos *et al.*, 2018).

These species are more common, accessible, and culturally significant in the area. According to this research, the use of wild edible plants appears to be mostly influenced by socio-cultural rather than biological aspects. Traditional knowledge (TK) about how to use and preserve these plants is still passed down through the generations, although it appears to be fading.

The need to conduct conservation measures in the regions with the purpose of protecting endangered species, which can be done by establishing protected areas, societies, and public awareness campaigns that promote plant protection and maintenance.

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