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Assessment of Medicinal Importance and Application of Wild Edible Vegetables in Ikom Ethnic Group of Cross River State

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Abstract: The assessment of Ikom people on wild edible vegetables (WEVs) was undertaken by interviews utilizing a semi-structured questionnaire matrix in the four local governments of Cross River State. Focused, conversational, and two-way interviews were conducted. Each of the detected WEVs' therapeutic value was also determined. Despite the fact that the majority of the respondents were females over the age of 25, illiterates, of low socioeconomic position, and engaged in agricultural activities, these socioeconomic classifications were not prerequisites to their awareness of the WEVs. In the study area, a total of 20 WEVs from 17 families were appreciated for medicine and nutrition, with the Asteraceae family having the most species. The leaves were the most common component in the WEVs discovered. The diseases that these WEVs controlled and/or avoided were identified. It was determined that the WEVs must be sustainable in order to enhance the dietary and health conditions of the indigenous peoples in the study area

Keywords: Discernment; Ikom Ethnic Tribe; wild edible vegetables; sustainability

1. INTRODUCTION

As a result of high nutritional and therapeutic worth, man has had a huge impact on wild edible plants since before civilization. These plants are vital to the livelihoods of rural households and forest dwellers in many underdeveloped countries (Jadihav *et al*., 2011). 60-70 percent of people in developing nations that live in agricultural and forest areas collect various plant parts and meals from forest species such roots, leaves, fruits, and nuts, which are an important component of their daily diets (Aryal *et al*., 2009). These wild edible vegetables can be used as a supplement to a nutritionally balanced diet as well as a replacement for staple foods during times of food scarcity (Narzary *et al*., 2013).

There are 45,000 species of wild plants, with 9,500 of them being ethnobotanically significant. Medicinally, 7,500 of these species are used in indigenous health traditions. Tribal people eat over 3,900 plant types, including 145 species of roots and tubers and 521 species of leafy greens (Vaishali *et al*., 2013).

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).

Vegetables that grow naturally in self-sustaining populations in natural or semi-natural settings are known as wild edible vegetables (WEVs) (Campton, 2008). They exist in the absence of direct human intervention. Some of these vegetables, according to Nnamani

et al. (2017), do not require formal cultivation because they grow well in the wild and are widely available in the field. WEVs, according to Modi et al. (2006), make a considerable contribution to the nutritional needs of rural households. Though data on their contributions to global nutrition is few (Kassim, 2009), Kalemba (2007) believes that encouraging the use and commercialization of indigenous WEVs could provide a viable option to long-term livelihood and food security.

WEVs are nutrient-dense, tasty, and inexpensive (Vaishali *et al*., 2013). They are also valued as traditional medicine (Adebooye and Opabode, 2004; Saqib *et al*., 2011) and are used to prevent the most common lifestyle disorders (Adebooye and Opabode, 2004; Saqib *et al*., 2011; KDAH 2015). WEVs have become an inseparable part of the culture of Africa's indigenous peoples. Indigenous knowledge about them is passed down through the generations (Lwoga et al., 2010). WEV usage is dropping, according to a recent study, particularly in Nigeria (Ogunrotimi *et al*., 2018). Some people still see them as low-status weeds and vegetables (Bvenura and Afolayan, 2019). All of this acted as a deterrent to their cultivation.

As a result, the importance of proper documentation of wild edible vegetables among the country's various ethnic groups, as well as the indigenous people's discernment of them, cannot be overstated, especially now that massive and diverse anthropogenic factors are prevalent and eroding the country's vegetation. As a result, WEVs continue to lose genetic variety over time, potentially depriving future generations of these valuable resources (Ogunrotimi *et al*., 2018). The current study examines the medical value and utilization of wild edible vegetables in the ikom ethnic group in Cross River State.

2. METHODOLOGY

2.1 Study Area

The research was conducted in Cross River State, Nigeria, which is located in the south-central region of the country. For this study, four local administrations in Cross River were considered. Yala-Nkum in Ikom LGA, Ekori in Yakurr LGA, Okpoma in Yala LGA, and Abochiche in Bekwarra LGA are the local governments.

2.2 Sampling Design

The research area was chosen specifically because it has a high number of farms and a long history of ethnobotany methods. Ikom LGA, Yakurr LGA, Yala LGA, and Bekwarra LGA were purposefully chosen because of their close proximity to the farms and the availability of traditional medicine practitioners.

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, respondents from the remaining strata were chosen at random from lists of names taken from village and farmers register books. Following that, a random number generator was used to select responders from the sample frame. For the interview, a total of 120 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

2.3.2 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 governments' farm reserves were used to collect primary data.

2.4 Ethnobotanical Survey

The questionnaire was used to collect ethnobotanical data, both qualitative and quantitative. 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 the four local governments, a total of 120 people were questioned. Vegetable 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.

2.5 Ethical consent

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

3. RESULTS AND DISCUSSION

3.1 Socio-economic classification of respondents

A total of 120 people were questioned. The gender of respondents reveals that females make up 80 percent of the total (66.67 percent), while males make up 40 percent (33.33 percent) (Table 1). According to the age of respondents, individuals over the age of 50 had the largest percentage of 65 (54.17 percent) (Table 1). Respondents in the 25-50 percent age range came in second, with 55 percent (45.83 percent). The literacy level of respondents indicates that the majority of them are illiterate, with 75 (62.5%) being illiterate and 45 (37.5%) being literate (Table 1). The majority of respondents (77, or 64.17 percent) are resource poor, whereas 43, or 35.83 percent, are resource wealthy (Table 1). The occupation of majority of the respondents is Agriculture, 84(70%) while 36 (30%) are not into agriculture.

3.2 Identified wild edible vegetables species

In the research region, a total of 20 wild edible vegetable species from 17 families were found (Table 2). Local English names, as well as a local name, botanical name, and family name, were discovered (Table 2). The botanical names given below are scientific names, whilst the names given locally are Ikom names.

Table 1: Socio-economic classification of respondents sampled in Ikom ethnic group of Cross River, Nigeria

S/N	Feature	Description	Number of respondent	Proportion (%) of Respondents
1	Sex	Male	40	33.33
		Female	80	66.67
2	Age	25-50	55	45.83
		>50yrs	65	54.17
3	Literacy	Literate	45	37.5
		Illiterate	75	62.5
4	Economic Status	Resource Rich	43	35.83

		Resource Poor	77	64.17
5	Occupation	Agriculture	84	70
		Non Agricultural	36	30

Table 2: Identified wild edible vegetables in Ikom ethnic group of Cross River, Nigeria

S/N	English Name	Local Name	Botanical Name	Family Name
1	African Jointfir	Afgan leaf	*Gnetum*	Gnetaceae
2	Apple Bush leaf	Gbano Atama	*Heinsia crinite*	Rubiaceae
3	Cubeb leaf	Uziza leaf	*Piper Guineese*	Piperaceae
4	Bush Buck	Utazi	*Congronea latifolium*	Asclepiadaceae
5	African Spinanch	Gbano Agwa	*Amaranthus spinosus*	Amaranthaceae
6	English spinach	Gbano Mani Mani	*Basella Alba*	Basellaceae
7	Lagos spinach	Shoko yokto	*Celosia Argentia*	Portulacae
8	Water leaf	Momoi-Kong	*Celosia Argentia*	Amaranthaceae
9	African Basil	Ntong	*Ocuim gratissium*	Labiatae
10	Jute leaf	Ikong-dot	*Corchorus olitoruis*	Tiliaceae
11	Bitter leaf	Etidot	*Vernonia amygdalina*	Asteraceae
12	Curry leaf	Nchanwu	*Murraya koenigii* (L.)	-
13	Dandelion Green	Efo Yarin	*Taraxacum*	Asteraceae
14	African Egg plant	Mbom	*Solanum Macrocapon*	Solanaceae
15	Yoruba Bologi	Ebolo	*Crassocephalum Rubens*	Compositae
16	Fluted Pumpkin leaf	Ikong-odot	*Telfiaria occidentalis*	Cuxubitaceae
17	African Rose Wood plant	Oha/ Ora	*Pterocarpus mildraedii*	-
18	Mint leaves	Na “nana	*Mentha*	-
19	Lasianthera	Editan	*Lasianthera*	Icacinaceae
20	African Nturupka seed powder	Nkurupka leaf	*Pterocarpus sanlinoides*	Lecuminosae Papilionnoideae.

3.3 Medicinal values of the identified wild edible vegetables

The medicinal benefits of wild edible vegetables reveal which plant components are used and how they are used (Table 3). Leaf, seeds, stems, barks, roots, and juice sap are among the wild edible portions used. Table 3 lists the numerous therapeutic properties of each of the plants. These discovered wild veggies were also used to manage and/or prevent illnesses.

Table 3: Medicinal values of the vegetables sampled in Ikom ethnic group of Cross River

S/N	English Name	Parts Used	Medicinal values
1	African Jointfir	Leaf, Seeds, Stem , Bark	Skin rashes, Dysentery, Ringworm,Eczema, Bronchitis, and Stomachache
2	Apple Bush Leaf	Seed, Leaf	Sniff in the nose to cure catarrh, migraine and nasal congestion
3	Cubeb leaf	Leaf	Treatment of infections, Antimicrobial
4	Bush Buck	Leaf	The juice is usually dropped on wound; Antimicrobial
5	African Spinanch	Leaf, Roots	Young tender shoots are used as medicine in treating kidney stones, Decoction of fresh leaves and stem are taken orally twice a day for three days for indigestion and Root paste is used for treating snake bites

6	English spinanch	Leaf	Leaf paste is applied for piles. The mucilaginous liquid obtained from the leaves and tender stalks of plants is used to treat headache
7	Lagos spinanch	Leaf, Stems	Whole plant eaten as vegetable
8	Water leaf	Leaf	Fight diseases/ protect the body, Aids bowel movement/ Aids digestion, Measles treatment
9	African Basil	Leaf	Used to treat high blood pressure, stomach crumps, antimicrobial and fibroid
10	Jute leaf	Leaf stem	Fight diseases/ protect the body
11	Bitter leaf	Leaf	Fight diseases/ protect the body , Measles treatment, Sexual transmitted disease/ venereal disease treatment, manage malaria, lower blood pressure
12	Curry leaf	Leaf	Tender leaves are eaten raw to treat dysentery Three tablespoon of leaf juice is used once daily after meals for five days to treat Gastritis
13	Dndelion Green	Leaf, Stem	Treatment of constipation, Measles treatment, Treaty diabetes, cure toothache , skin infection
14	African Egg Plant	Aerial part	Treatment of constipation , Sore eyes and Ear aches treatment , Heart complaint, troubles/ heart pain treatment,
15	Yoruba Bologi	Aerial part and leaf	Increase blood level, and cure many intestinal disorders
16	Fluted pumpkin leaf	Leaf, root	Malaria, Antipyretic and boils
17	African Rose wood plant	Leaf, Stem, Bark and Root	Malaria, Diabetes, Heart diseases, Puragative, Emetic, Diuretic, Jaundice, Flatulence and Anticancer
18	Mint leaves	Juice sap leaf and stem	Use to wash tongue, thick white sputum, Tuberculosis, Indigestion, to relieve internal cough but in a little quantity
19	Lasianthera	Leaf	Diabetic, Chemotheraphy, Malaria, Syphilitic ulcers, Diarrhea, Sore throat
20	African Nturupka seed powder	Leaf, Stems	Stomachache, Diarrhea, Dysentry

3.4 Discussion

The Ikom ethnic tribe of the south south in Cross River State, Nigeria, as well as other tribes in the country, valued wild edible vegetables in their environment, according to this study. The majority of wild edible veggies can be found in the natural habitats of the Ikom ethnic tribe in Cross River State. Table 1 shows that the respondents are not classified according to their socioeconomic status. This finding backs with the claims of Kayode *et al*., (2015) and Ayeni *et al*., (2018) that socio-economic elements were not prerequisites for indigenous peoples' awareness of the economic and ecological merits of plants in their midst.

Twenty edible wild vegetable species from 17 families were identified (Table 2). Thus, among the Ikom indigenous group, a vast range of species diversity abounds in wild edible crops. A vast variety of edible vegetables has been observed elsewhere in Nigeria (Abubaker *et al*., 2012, Ajiboye *et al*., 2014, Ogunrotimi *et al*., 2018). There were the most species in the Asteraceae family. The majority of these plants are herbaceous and grow in the wild. According to Kayode (2005), the Asteraceae's ecological success can be related to its reproductive techniques. Many of them were seed-reproducing annual plants. The seeds are usually dispersed by air. Even when these seeds are spread in difficult conditions, they go into dormancy, which is easily disturbed when the conditions are suitable (Oberbaner and Strain 1985). The ability to go dormant has been characterized as a survival strategy in members of the Asteraceae family (Harper 1977).

Asteraceae is currently the largest plant family, according to a recent initiative (Quora, 2019). These plants also have a higher resistance to weather variations, according to Ojelel and Kakudidi (2015), therefore they are available for the majority of the year. The leaves were the most extensively used components of the identified wild edible plants for vegetables, confirming the findings of most prior studies in Nigeria, such as Ali *et al*. (2008) and Kebede *et al*. (2017).

Many of the detected WEVs were found to have medical potential, according to the indigenous Ekiti people. Observation in the field revealed that many of them were consumed with the intention of controlling or preventing the occurrence of ailments that these veggies were believed to cure or prevent. However, field observation demonstrated that the emphasis in the eating of these veggies was on prevention rather than cure.

In addition, field observations revealed that most of the villages studied had a severe lack of traditional medicine, and where it is provided, the expenses are expensive and out of reach for most rural residents. As a result, residents viewed wild veggies as nature's method of improving health management. This observation likely to support Coolborn et al. (2018)'s assertion that the Ikom tribe relied on the usage of herbs and believed in their efficacy with just a minor impact on the human body system.

4. CONCLUSION

Plants that are edible or medicinal might be a healthy alternative to highly processed foods and medications. According to the findings, eating wild edible plants on a regular basis can help prevent and manage a variety of diseases. As a result, documenting and safeguarding of indigenous knowledge are required, which can be accomplished with the help of local populations. Scientific researches of all of these herbal drugs are highly desirable to verify their efficacy for safe usage, as the uses are based on observation and ethno-medicinal knowledge.

Domestication will be required for several of the identified species. It is necessary to begin cultivating some of the currently uncultivated species. Controlling deforestation is essential (Neudeck et al., 2012). A severe labor shortage exists in southern Nigeria at the moment, hastening the usage of fire for vegetation clearance, particularly when establishing new farms. This has to be looked into. These will ensure the long-term viability of wild edible plants, thereby improving the food and health of the indigenous peoples of the research region. The reported medicinal plants will improve the selection of commonly used medicinal plants while looking for bioactive chemicals to treat diseases. This work lays the groundwork for a detailed research of the wild edible plants consumed by the Ikom ethnic group. The local community in the study region has a wealth of knowledge about diverse wild vegetable applications, including wild edible and medicinal plants, and the forest is becoming increasingly disturbed.

In light of dryland agrobiodiversity and agroforestry, the favored wild edible vegetables at the community level should be given development focus by supplementing local knowledge and modern practices. Traditional technology and farming techniques, when properly mobilized, can greatly contribute to the ecological balance and economic resilience of people. As a result, it is critical to exploit the documented wild edible vegetables as well as the traditional knowledge that surrounds them before they are irreparably gone. To adequately exploit and manage the present potential of wild edible plants, policy changes are necessary.

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