Ethnobotanical Survey of Edible Plants Sold in Katsina Metropolis Markets

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Abstract: Ethnobotanical survey was carried out to document food plants sold in Katsina metropolis Markets. The Three surveyed markets were: Kofar marusa market, Central Market and Tsohuwar Kasuwa market. Data were gathered through oral interviews with the food plant sellers using questionnaire especially designed for this purpose. Results obtained showed that a total of 54 plants belongs to 33 families were identified. Kofar Marusa Market has the highest plants species (40 plants species) followed by Tsohuwar Kasuwa market (39 plants species) and the least was Central Market (35 plants species) The most used plants were belonging to Fabaceae, (5 species), followed by Anacardiaceae, Solanaceae, Rutaceae, Cucurbitaceae and Poaceae (3 species each) Alliaceae, Aracaceae, Malvaceae, Sapotaceae (2 species). Other families included were Caricaceae, Zingiberaceae etc. Some of the plant species are of medicinal important amongst are Citrus limon treats deworms, Cocus nucifera treats Anti-poison/neutralizes poison, Measles, Allium sativum treats Cattarh, cold, cough and Antibiotic and other treats various diseases.

Keywords: Ethnobotanical survey, food plants, markets, medicinal plants

1. Introduction

Ethnobotany is the study of the relationship between plants and people: from "ethno" - study of people and "botany" study of plants. It is totally in virtually a new field of research, if in this field plants investigated thoroughly and systematically, it will yield result of great value of the archeologists, anthropologist, plant geographer, enthnobotanist, linguistics, botanists and phytochemists. The focus of ethnobotany is on how plants have been or are used, managed and perceived in human societies and includes plants used for food, medicine, cosmetics, dying, textiles, for building, tools, currency, clothing, rituals life and music. It also studies the relationship of a particular culture and region make of use of indigenous plants [1]. The relationship between plants and human cultures is not limited to the use of plants for food, clothing and shelter but also includes their use for religious ceremonies, ornamentation and health care [2]. In a particular ethnic group, information concerning certain plant varies from one ethnic group to another [3], [4]

In the past, ethnobotanical research was predominately a survey of the plants used by villagers. A trained botanist identified the plants and recorded their used. Sometimes an anthropologist was present to translate the disease description, but rarely was a physician available to identify the disease. The results generated a list of plants and their uses which was published in professional journal, usually in the country of the scientist. Nothing was communicated or returned to the cultural group in exchange for their participation in the survey, nor was any environmental or cultural status or concerns included in the survey. Basic quantitative and experimental ethnobotany includes basic documentation, quantitative evaluation of use and management and experimental assessment.

Today, ethnobotanical survey include applied projects that have the potential to ameliorate poverty levels of these people, allowing them to make more educated decisions about their future directions. These new approaches enhance the quality of the science, provide compensation for the cultural groups and take into account environmental concerns. This modern approach is based on an interdisciplinary team usually composed of an ethnobotanist, an anthropologist, an ecologist and a physician. Some of these team members are remote area colleagues who have arranged the details of the expedition as well as the contractual agreements for reciprocal programs of the village or community. The field of ethnobotany requires a variety of skills: botanical training for the identification and preservation of plants specimens; anthropological training to understand the cultural concept around the perception of plants; linguistic training, at least enough to transcribe local terms and understand native morphology, syntax and semantics. Native healers are often reluctant to accurately share their knowledge to outsiders [5].

The biological diversity of our world is great and we have only begun to investigate her potential. In some areas, diversity may be more valuable in its natural state that when used of pasture or timber [6]. Methods to identify medicinal plants include random screening, taxonomic collecting (sampling by botanical family) or ethnobotanical collecting. It has been shown that ethnobotanically-derived compound have greater activity that compounds derived from random screening and therefore a greater potential for product development. Plants are being used as valuable sources of food and medicine for the prevention of illness, and maintenance of human health.

The importance of plants in medicine remains even of greater relevance with the current global shift to obtain drugs from plant sources, as a result of which attention has been given to the medicinal value of herbal remedies for safety, efficacy and economy [7], [8]. The World Health Organization (WHO., 1992) emphasized the need to ensure the quality control of plant products by using modern techniques and applying suitable standards [9]

The indigenous traditional knowledge of medicinal plants of various ethnic communities, where it has been transmitted orally for centuries is fast disappearing from the face of the earth due to the advent of modern technology and transformation of traditional culture. There is an urgent need to document the ethno-biological information presently existing among the diverse communities before the traditional knowledge are completely lost [10]. Much of this wealth of knowledge is totally becoming lost as traditional culture gradually disappears [11]. Thus, there is now urgency for ethno-botanical research amongst people [12].

In recent years, traditional ethno-botanical studies have received much attention due to their wide local acceptability and clues for new or less known medicinal plants [13]. The collection of information about natural flora, classification, management and use of plants by the people holds importance among the ethno botanists.

The aim (s) of the research are as follows: -

- 1) To identify and document edible plants sold in Katsina metropolis markets
- 2) To identify and access the major ethno-medicinal plants of the study area so as to document the indigenous knowledge and use of ethno-medicinal plants in the treatment of various human ailments.

2. Methodology

2.1 Study Area

Katsina (12° 59'N, 7° 36'E); with a total area of 142 km²; is a city (formerly a city-state), and a Local Government Area in northern Nigeria, and is the capital of Katsina State. It is located some 256,50 km east of the city of Sokoto, 135,18 km northwest of Kano, close to the border with Niger. As of 2007, Katsina's estimated population was 459,022 (2006 population census). The city is the centre of an agricultural region producing groundnuts, cotton, hides, millet and guinea corn, and also has mills for producing peanut oil and steel. The city is largely Muslim and the population of the city is mainly from the Fulani and Hausa ethnic groups. The survey was carried out in three market of katsina metropolis; namely Kofar Marusa Market, Central Market and Tsohuwar kasuwa market.

2.2 Method of Data Collection

The field methodological framework chosen for this research was that used in ethnobiology [14]-[16]and based on methods given by [17], semi-structured interviewees, observation and guided field walks with informants were employed to obtain ethnobotanical data. Field research was conducted by collecting ethnobotanical information during structured and semi-structured interviews with knowledgeable people native in each site territory. For each plant recorded one questionnaire was filled. Even though, a structured questionnaire had to be filled direct questions were avoided. The basic information needed was taken during the conversation.

No special selection criteria were used in the choice of the informants because one of the aims of this work was to assess the breadth of popular heritage in the field of wild edible plants, knowledge which is widespread among locals. However, most of the interviewees were between 40-60 years old, and are not settlers of Katsina metropolis.

Plant data and their related information were entered into a data base. The data acquired for each plant comprise the common local name, its uses, the part of the plant used. Frequency (F%) of each of the collected plant species was estimated as the total number of its records in the studied markets.

The way plants were collected, preserved, stored and the most relevant processes were photographed. The data collected were derived from questionnaire administration and oral interview of the food plants sellers in Kofar marusa market, Central Market and Tsohuwar Kasuwa market. The respondents were both men and women of various ages. Data obtained were collated and arranged to give the botanical names, common names, families and the local names as well as their uses and the part(s) used.

During oral interview the questions to the respondents are their names, name of plants he/she is selling, knowledge of medicinal uses of the plants, part used and the use of the plants. The respondents cooperate in answering questions. During the survey plants that of ethnomedicinal important are also included, food plants sellers that has knowledge on ethnomedicinal plants are interviewed for local name of the plant, part used and disease cure by the plant.

Plant identification was given by Professor Monier Abd El-Ghani, consulting different available literature on ethnobotanical surveys in Nigeria.

3. Results

A total of 54 plant species belongs to 33 families were identified from the 3 studied markets (Table 1). The total number of species varied from one market to another: 35 in Central Market, 40 in Kofar Marusa Market, and 39 in Tsohuwar Kasuwa Market.

Eighteen species were constantly recorded from all the three studied markets (F=100%) including amongst others *Hibiscus esculentus, Allium sativum, Magnifera indica* and *Capsicum annum*. Twenty five species were recorded in two markets (F=66.66%), amongst others, *Brassica oleracea* var. *capitata* (Market 1 and 2), *Crysophylum albedom* (Market 2 and 3), *Vernomia amygdalina* (Market 1 and 3). Ten species were recorded only in one market (F=33.33%), of which six species were occurred in Market 1, and 4 species in Market 2 (see Table 2).

The most used plants was belonging to Fabaceae (5 species), among which are Arachis hypogeea, Tamarindus indica and Parkia biglobosa were recorded. Anacardiaceae (3 species), among which Magnifera indica and Anarcadium occidentale were recognized. Solanaceae (3 species), of which Capsicum annum and Lycopersicum esculentum can be mentioned. Rutaceae (3 species) included Citrus sinensis and Cintrus limon were recorded. Cucurbitaceae (3 species) among which Cucurbita maxima and Citrullus lanatus were recognized. Poaceae (3 species) among which are Oryza sativa, zea mays. Alliaceae which are Allium cepa and

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Allium sativum Aracaceae which are Cocus nucifera and Ealais guinensis. Malvaceae which are Hibiscus sabdariffa and Hibiscus esculentus. Sapotaceae (2 species) which included Vitalleria paradoxa and Crysophylum albedum. Similar observation can be made on the other families. Fruits of twenty four species were used, these included Magnifera indica, Anarcadium occidentale and Capsicum annum. Leaves of 9 species were used such as Amaranthus caudatus, Adansonia digitata and Crateva religiosa. Seeds of four species were used included *Arachis hypogea* and *Phaseolus vulgaris*. The least used plant parts were nuts, tuber (two species of each). Some of the plant species were used to treat various diseases amongst were *Citrus limon* treats deworms, *Cocus nucifera* treats Antipoison/neutralizes poison, Measles, *Allium sativum* treats Cattarh, cold, cough and Antibiotic, and others can be used to treat different diseases (Table 2).

Scientific Name	Common Name	Family	Local Name	Part used	1	2	3	F%
Hibiscus esculentus	Okra	Malvaceae	Kubewa	seeds,young pods	+	+	+	100
Allium sativum	Garlic	Alliaceae	Ramuza	flowers, leaves, seeds	+	+	+	100
Allium cepa	Onion	Alliaceae	Albasa	Bulb	+	+	+	100
Amaranthus caudatus	Waterleaf	Amaranthaceae	Alayyafoo	leaves, seeds	+	+	+	100
Anarcadium occidentale	Cashew	Anarcardiaceae	Yazawa	Fruit	+	+	+	100
Arachis hypogea	Groundnut	Fabaceae	Gyada	Seeds	+	+	+	100
Capsicum annum	Chili pepper	Solanaceae	Tattasai	Fruit	+	+	+	100
Citrus limon	Lime	Rutaceae	Lemun tsami	fruit,juice	+	+	+	100
Citrus paradise	Grape	Rutaceae	Lemu yamiku	Seeds	+	+	+	100
Cucurbita maxima	Pumpkin	Cucurbitacea	Kabeewaa	Fruit	+	+	+	100
Hibiscus sabdariffa	Roselle	Malvaceae	Yakuwa	leaves.flower	+	+	+	100
Lycopersicum esculentum	Tomato	Solanaceae	Tumatur	Fruit	+	+	+	100
Magnifera indica	Mango	Anarcardiaceae	Mangwaro	Fruit	+	+	+	100
Manihot esculanta	Cassava	Euphorbiaceae	Rogo	Tubers	+	+	+	100
Orvza sativa	Rice	Poaceae	Shinkafa	Grains	+	+	+	100
Solanum melongena	Garden-egg	Solanaceae	Yalo	Fruit	+	+	+	100
Zea mays	Maize	Poaceae	Masara	silk corn	+	+	+	100
Zingiher officingle	Ginger	Zingiheraceae	Citta	Root	+	+	+	100
Adansonia digitata	Baobab	Bombaceae	Kuka	leave fruit	_	+	+	66.66
Annona senegalansis	Wild custard apple	Annonaceae	Gwandan daji	fruit leaves	+	+	<u> </u>	66.66
Brassica oloração vor capitata	Cabbage	Brassicaceae	Kaheji	leaves	+	+		66.66
Citrus sinonsis	Orange	Butaceae	Lemun Zaki	Fruit	+	_	-	66.66
Cocus nucifara	Coconut	Aracacaaa	Mosara	Nut	1	-	+	66.66
Cola vitida	Kolonut	Storouliacono	Goro	Fmit	-	-	-	66.66
Colocynthis citrullusogusi	Kolanut Malon saads	Cucurbitaceae	Agushii	Fluit	-	Т	+	66.66
Cratava raligiona	Second hormo	Cucuronaceae	Hgushin	Leaves		-	<u> </u>	66.66
Cruteva religiosa	Sacieu Dalilla	Capparaceae	Agualiha	Emait	-	T	T	66.66
Drysophylum albeaum	Star apple	Sapotaceae	Agwanba		-	T	—	00.00
Daucus carota		Aplaceae	Karas		+	+	-	00.00
Dioscorea alata	water yam	Dioscoreaceae	Dugura	Tubers, leaves	+	-	+	66.66
Ealais guinensis	Palm kernel	Arecaceae	Kwakwa	Nut	+	-	+	66.66
Euphorbia balsamifera	Spurge	Euphorbiaceae	Aliyara	Leaves		+	+	66.66
Ficus exasperate	TT 1'1	Moraceae	Baure	Fruit		+	+	66.66
Moringa oleifera	Horseradish	Moringaceae		Leaves		+	+	66.66
Parkia biglobosa	Locust bean seed	Fabaceae	Kalwa	Fruit	<u>-</u>	+	+	66.66
Phaseolus vulgaris	Grean bean	Fabaceae	Grean bean	Seeds	+	+	-	66.66
Piper guinenses	Black pepper	Piperaceae	Uda	seeds,leaves	+	-	+	66.66
Psidium guajava	Guava	Myrtaceae	Gwaba	Fruit		+	+	66.66
Saccarum officinarum	Sugar cane	Poaceae	Rake	Stem	-	+	+	66.66
Tamarindus indica	Tamarınd	Fabaceae	Tsamıya	Fruit	-	+	+	66.66
Vernomia amygdalina	Bitter leaf	Asteraceae	Shuwaka	Leaves	+		+	66.66
Vitalleria paradoxa	Shea tree	Sapotaceae	Kadanya	Fruit	-	+	+	66.66
Xanthosoma sagittifolium	Cocoyam	Araceae	Gwaza	root	-	+	+	66.66
Citrullus lanatus	Water melon	Cucurbitacea	Kankana	Fruit	+	-		66.66
Ananas comusus	Pineapple	Bromeliaceae	Abarba	Fruit	+	-	-	33.33
Carica papaya	Pawpaw	Caricaceae	Gwanda	Fruit	+	-	-	33.33
Diospyros mespiliforms	Jacka berry	Ebanaceae	Kanya	fruit,leaves	-	+	-	33.33
Lannea microcarpa	Dahomey	Anarcardiaceae	Faru	Fruit	+	-	-	33.33
Leptadenia hastate		Aslepiadaceae	Yadiya	Leaves	-	+	-	33.33
Musa paradisiacal	Plantain	Musaceae	Ayaba	Fruit	+	-	-	33.33
Musa sapientum	Banana	Musaceae	Ayaba	Fruit	+	-	-	33.33
Parinari macrophylla	Tree	Chrysobalanaceae	Gawasa	Fruit	-	+	-	33.33
Senna obtusifolia	Sickle pod	Fabaceae	Tafasa	Leaves	-	+	-	33.33
Sesanum orientale	Sesame leaves	Pedaliaceae	Karkashi	Leaves	+	-	-	33.33

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Market 1= Central Market Market 2= Kofar Marusa Market Market 3= Tsohuwar Kasuwa Market + = Present; - = Absent

Table 2: Some major ethnomedicinal plants of Katsina metropolis, their Botanical/Local names, Medicinal used and part used							
Scientific Name	Local name	Medicinal uses	Part used				
Hibiscus esculentus	Kubewa	Sperm count fever	Fruit leaves				
Allium cepa	Albasa	Hypertension, measles and cough	Bulb				
Allium sativum	Tafarnuwa	Cattarh, cold, cough and Antibiotic	Bulb				
Amaranthus caudatus	Alaiyafoo	Blood tonic	Leaves				
Ananas comusus	Abarba	Anti-hypertension/constipation	Unripe fruit				
Anarcadium occidentale	Yazawa	High cough	Bark, Fruit				
Annona senegalansis	Gwandan daji	Snake bite, yellow fever and hernia	Stem				
Anogeissus leiocarpus	Marke	Ulcer/Pile	Bark				
Azadiracta indica	Dogon yaro/Bedi	Yellow fever	Leaves				
Balanites aegyptiaca	Aduwa	Bladder stone	Fruit				
Boswelia dalzelia	Hano	Yellow fever	Bark,leaves				
Calotropis procera	Tumfafiya	Scorpion sting, finger ache (witlow)	Leaves				
Carica papaya	Gwanda	Boil purgative	Unripe fruit				
Cassia tora	Tafasa	Pile and stomach trouble	Leaves				
Citrullus lanatus	Kankana	Laxative digestion, pile	Fruit,seeds				
Citrus limon	Lemun tsami	Deworm	Fruit				
Citrus paradise	Lemu yamiku	Anti body	Fruit				
Citrus sinensis	Lemun Zaki	Scurvy	Fruit				
Cocus nucifera	Kwakwa	Anti poison/neutralizes poison, Measles	Nut				
Cola nitida	Goro	Stimulant	Fruit				
Combretum micranthum	Geza	Desyntry, Abdominal pain in nursing mother	Leaves				
Corchorus olitorius	Lalo	Blood purifier	Leaves				
Crysophylum albedum	Agwaliba	Anti nausea	Fruit				
Cucurbita maxima	Kabeewaa	Skin disease	Stem				
Daucus carota	Karas	Pile, blood tonic	Fruit				
Dialium guinenses	Tsamiyar Biri	Anti ulcer	Fruit				
Dioscorea alata	Dugura	Fever	Leaves				
Diospyros mespiliforms	Kanya	Pile, Diarrhoea	Unripe fruit				
Ealais guinensis	Kwakwan Manja	Easy flow menses	Nut				
Euphorbia balsamifera	Aliyara	Pile, stomach pain	Leaves				
Gacinia kola	Namijin Goro	Cough	Fruit				
Guiera senegalensis	Sabara/Barbarta	Ulcer, Pile	Leaves				
Hibiscus sabdariffa	Sobo	Anti hepertenstion	Flower				
Ipomoea batatas	Dankali	Pile	Leaves				
Jatropha curcas	Cinda zugu	Stomach pain	Leaves				
Lannea microcarpa	Faru	Dressing wound, swelling	Leaves				
Lenea acida	Faru	Yellow fever, pile	Leaves				
Leptadenia hastate	Yadiya	Hypertension, catarrh and skin disease	Leaves				
Magnifera indica	Mangwaro	Diarrhoea and Dysentry	Leaves				
Manihot esculanta	Rogo	Diabetics	Tuber				
Moringa oleifera	Zogala	Abdominal Disorders	Leaves				
Musa paradisiaca	Plantain	High iron potent astringent	Fruit				
Musa sapientum	Ayaba	High blood pressure	Fruit				
Parinari macrophylla	Gawasa	Stomach trouble	Fruit				
Parkia biglobosa	Kalwa	Snake Venom	Seeds				
Phoenix dactylifera	Dabino	Worms, bleeding	Fruit,seeds				
Piper guinenses	Uda	Cleanse womb	Seeds, leaves				
Psidium guajava	Gwaba	Reduce frigidity/Allergy	Fruit				
Salonum melongena	Yalo	Kidney problem, pile, lower sugar content	Fruit				
Solanum lycopersicum	Tumatur	Anti hypertension	Fruit				
Vernomia amygdalina	Shuwaka	Rheumatic pains	Leaves				
Xanthosoma sagittifolium	Gwaza	Anti hypertension	Tuber				
Zingiber officinale	Citta	Detoxify liver bronchitis, cough	corm				

4. Discussion

Result from the study shows that leaves were found to be the most used plant part for medicinal remedy. This is in consistent with the findings of other ethno-medicinal studies in Africa like Uganda, Ethiopia and Mali [18].

More than one plant species have been reported to be used by healers in remedy preparation for various ailments. This

could attributed to additive or synergistic effect that they could have during treatment [19].

Ethnobotany is very helpful in identifying and solving conservations issues, as in cases where the harvesting rate exceeds the re-growth rates. It is prosperous to conserve the medicinal plants, which were harvested [20]. This is in favor of the coming generations, so that they could benefit from this treasure of God, which is a real gift and blessing of nature for mankind. In modern times it is alarming that the knowledge of ethnobotany is disappearing rapidly. Westernization, collapse of traditional cultures and yet the destruction of entire ethnic groups are to blame [21]. A principal aim of such a study is to make sure that local natural history becomes a living tradition in communities; it is being transmitted rally from time to time. The results of this work can laterbe applied to biodiversity, conservation and community development [22], [23].

The procedure used in this study was similar to that of [24] who studied the ethnobotanical potentials of some cultivated plants in Chung region. Anti diabetic potentials of some of these plants cited in this study have been previously reported [25], [26]. The anti diabetic activity of aqueous leaves of *Magnifera indica* had been reported by [27]. But the antidiabetic effects of other plants like *Calotropis procera* and *Cassia gorantensis* have never been reported to our knowledge

5. Conclusion

The field of food plant gathering is new in Nigeria in the field of ethnobotany and food plants are neglected in ethnobiological studies especially in the study area. In this research, some plants of medicinal importance more particularly those used in ethno medicine in the study area were assessed; other uses of plant are also mentioned. There is a strong need for collection and documentation of this knowledge, sufficient study is needed

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