

Ethnobotanical Survey of *Cucurbitaceae* Species in Sokoto North Local Government Area, Sokoto State

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Abstract

The study was carried out to identify and document indigenous knowledge of the people on *Cucurbitaceae* species in Sokoto North Local Government Area, Sokoto. The information was obtained through interview by the use of questionnaires distributed to the respondents identified by random sampling. The socio-economic characteristics of the inhabitant of people living in the study area revealed that out of 60 respondents that were interviewed, 20 were male while 40 were female. The respondents were of different ages, where by 32.00 respondents were aged between 31-40 years, 10.00 were between 41-50 years, while 8.00 were between 51-60 years; 20 - 30 years were 4.00 and Ages 61- 70 had the least with 4.00. The major *Cucurbitaceae* Plant species surveyed were *Cucurbita pepo*, *Cucurbita moschata*, *Cucurbita maxima*, *Cucumis sativus*, *Citrullus colocynthis*, *Lagenaria siceraria*, *Citrullus lanatus*, *Cucumeropsis manni* and *Cucurbita argyrosperma*. It was further depicted that most of the plants used for treating ailments were sourced from the wild, while some were cultivated in the gardens. Various parts of these plants were reported to be used in both household uses and in treating some ailments. The respondents revealed that all 29 inventoried trees of the area are used for various medicinal applications.

Keywords: Ethnobotanical; Indigenous knowledge; *Cucurbitaceae* species; Sokoto North local Government; Sokoto

Introduction

The plant family Cucurbitaceae is highly diverse and comprises about 118 genera and 825 species. Many of these species with its cultivars and landraces are of economic importance because they are used as vegetables and medicinal crops. Siemonsma and Piluek, (2014) and [1] reported, this family contributed 13 species that are cultivated for commercial purpose and home consumption in Vietnam. Furthermore edible wild plants and weeds belong to this family [2] and were also used as food and medicine in daily life of Vietnamese (Tanaka and Nguyen, 2017).

Cucurbitaceae is a plant family, also known as gourd family, which includes crops like cucumbers, squashes, luffas and melons. Cucurbits form an important and a big group of vegetables crops cultivated extensively in the subtropical and tropics countries. Plants of this family have many medicinal and nutritional benefits [3].

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 [4]. Much of this wealth of knowledge is totally becoming lost as traditional culture gradually disappears [5].

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. 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 (Schultes, 2002). In a particular ethnic group, information concerning certain plant varies from one ethnic group to another thus, indigenous knowledge in plants appeared when humans started and learned how to use plants [6]. Over centuries, indigenous people have developed their own locality specific knowledge on plant use, management and conservation [7].

It has now become more important than ever to record and preserve the traditional knowledge on medicinal plants, in order to aid the discovery of new drugs and possibly to find improved applications of traditional medicine [8]. In addition, documenting the results of scientific research into traditional medicine may also help conserve an important part of an indigenous people's cultural heritage for future generations. This has not been adequate predated on the ethnobotany of *Cucurbitaceae* in Nigeria generally. Thus, the research is aimed at Ethnobotanical survey of *Cucurbitaceae* in Sokoto North Local Government Area, Sokoto State.

Material and Methods

Study area

The study was conducted in Sokoto North local government area of Sokoto State. Sokoto North is located 10 kilometers west of the state capital Sokoto. It is situated between Latitude 13° 9' N and 13° 19' N, Longitude 5° 17' E and 5° 27' E. It has an area of 697 km² and a population of 179,619 at the 2006 census. As of 2010 research conducted by National Bureau of Statistics, shows that the estimated rural and urban migrants in the area is about 4,536 and it's increasing at the rate of 10% annually. Sokoto North District is mainly populated by Hausa people. The inhabitants are mostly farmers and animal rearers but the initial inhabitants were Sulubawa but now the area is dominated by Hausa [9].

Study population

The Study population consisted of people who have knowledge of the *Cucurbitaceae* plants. Age bracket was chosen because the researcher wants responses from those who have knowledge of *Cucurbitaceae* plants found in their environment.

Sampling Technique

The sampling technique employed for this survey research was snowball sampling or referral sampling. This is a sampling technique used to obtain knowledge from extended associations, through previous acquaintances.

Inclusion criteria

Recognized traditional practitioners and herbalists who were mentally stable and practice their jobs as at the time of the study.

Method of Data Selection and Collection

The ethnobotanical field survey was conducted according to the methods adopted by [10].

The data for this study were obtained by oral discussion with the respondents. In depth interviews were conducted with the villagers and herbalists. Specific and detailed questions were asked for recording the field data. During the interviews, genuine sense of warmth and atmosphere of trust was created among the informants. Sampling methods and cross-checking information provided by several individuals. Detailed information was taken on each specimen was discussed and collected in the field. Each respondent was visited two to three times in order to verify the authenticity of the information obtained, and to gather more not mentioned during a previous visit. Any discrepancy between information obtained at different visit on a particular ailment and plant used in its treatment, makes the information unreliable and hence, rejected.

Plant Identification and Authentication

Plant species were identified with the aid of refer-

ence books and Floras such as Flora of West Tropical Africa [11] and Useful Plant of West Tropical Africa [12]. The plant species mentioned during the interview were collected by the respondent, so as to avoid collection of the wrong plant. Most of the plants were collected fresh, while few were preserved into Herbarium specimen. Photograph of collected plant species were also made so as to enhance their identification. Through the interviews, local names of plants, mode of application and plant parts used were recorded.

Data Analysis

A checklist of all recorded species of *Cucurbitaceae* plants value was compiled, including their common, scientific names and application or usage.

Results

Socio-economic characteristics of the respondents living in Sokoto North Local Government Area

The socio-economic characteristics of the inhabitant of people living in the study area revealed that out of 60 respondents that were interviewed, 20 were male while 40 were female (Table 1). The respondents were of different ages, where by 32.00 were ages between 31-40 years, 10.00 were between 41-50 years, while 8.00 were between 51-60 years; 20 - 30 years had 4.00 and Ages 61- 70 had the least with 4.00.

Table 1: Socio-economic characteristics of the respondents living in Sokoto North Local Government Area

Ages (Years)	No of respondents	Sex	
		Male	Female
20 - 30	6	4	4
31 - 40	32	8	2
41-50	10	4	10
51-60	8	0	20
61-70	4	4	4
Total	60	20	40

Indigenous knowledge of the people on *Curcubitaceae* in Sokoto North Local Government Area, Sokoto State

The major Cucurbitaceae Plant species surveyed

were *Cucurbita pepo*, *Cucurbita moschata*, *Cucurbita maxima*, *Cucumis sativus*, *Citrullus colocynthis*, *Lagenaria siceraria*, *Citrullus lanatus*, *Cucumeropsis manni* and *Cucurbita argyrosperma*. From the information gathered from this study, various parts of these plants were reported to be

used in both household uses and in treating some ailments.

This information validated the belief of people in the efficacy of these botanical species (Table 2).

Table 2: Indigenous knowledge of the people on Cucurbitaceae in Sokoto North Local Government Area, Sokoto State

S/N	Plant Species	Common Name	Part Used	Uses
1	Cucurbita pepo	Pumpkin	Seed	Recommended for nursing and lactating Mothers
			Leaf	Source of dietary fibre, maintenance of the digestive system
2	Cucurbita moschata	Melon Pumpkin	Leaf	serves as vegetable or potherb and is used in soups.
			Pulp	It is used to treat bladder and prostate complaint.
3	Cucurbita maxima	Butter cup Squash	Fruit	The fruit is used for snake poison.
				It's used as a poultice on burns and skin sores for a soothing effect.
4	Cucumis sativus	Cucumber	Fruit	Source of vitamins and minerals and a neutralizer of stomach acidity.
5	Citrullus colocynthis	Bitter Apple	Root	Root is useful in jaundice, ascites and urinary diseases.
6	Lagenaria siceraria	Bottle gourd	Seeds	The Seeds are used as melon seed for cooking.
			Fruit	The dry gourd is used in water storage for farm and home use.
				It serves as wine funnel and jug and as a horn in a play.
7	Citrullus lanatus	Water melon	Fruit	Some watermelons are used for livestock feed and extracted juice is fermented into an alcoholic beverage.
				Important source of water in some desert areas, during drought.
				Watermelons are grown primarily for the sweet juicy fruit pericarp tissue.
8	Cucumeropsis manni	Pota	Seed	The seeds ground for soup and stews.
				They can also be eaten raw, cooked or fried.
9	Cucurbita argyrosperma Cucumis sativus	Silver gourd	Fruit	The ripe fruit is grilled to make pies or used to feed animals.
			Seed	The seeds yield an edible oil.
				The seeds have been used with the aim of promoting lactation in nursing women, and provide pain relief.

Discussion

The ethnobotany of plants has been receiving a lot of interest in the last decade against the background of germplasm erosion (as in the emergence of synthetic alternatives) and the need for bio-conservation [13]. Such Ethnobotanical interest has also made it imperative to better identify potentially useful germplasm of Cucurbit in the Sokoto North Local Government areas with respect to the botanical applications in the wake of renewed natural resource management and environmental friendliness.

Cucurbita pepo (Pumpkin) in Sokoto North has been implied for the economic and medical utilization in both animal and humans in various part of the world, as has

been noted in Asian continent and some West African countries like Nigeria, Ghana, and Senegal [14].

C. moschata (Melon pumpkin) is cultivated for both leaves and fruits. Other than its uses as a vegetable and a sauce in Sokoto North, their leaves are also used for wrapping of corn meal and winged termites, cooked and then eaten as a delicacy, mostly by women and children in eastern Nigeria. In Nigeria, it is cultivated in the Northern part of the country for the fruits, while in the Southern part, in a largely unimproved form *Ugboguru*' is cultivated for both the leaves which constitute an important vegetable and for the fruit, whose pulp is eaten when cooked, the rind been discarded [15].

Cucurbita maxima (Butter cup squash), similar to its utility in the Sokoto North areas the young leaves and shoots including the flowers are used as a potherb, while the Hausa's in Northern Nigeria eat the end-of-season leafy shoots and undeveloped fruits. Similarly the fruit flesh is generally boiled and eaten in pieces or put in stews and soup and in drier climate like in Northern Nigeria and Ghana the pulp is sliced and dried for storage [12]. It has also been known to provide spectacular material for centerpieces, displays and arrangement for autumn and thanksgiving holidays [16].

The fruit of *Cucumis sativus* (Cucumber) in addition to its utilization is eaten fresh or cooked. Its juice is mildly purgative and diuretic, and is used as vegetable in some countries, or fed to rabbits, guinea pigs and hares. The juice is known to have ethno-medicinal function as well as pesticidal and insecticidal properties in other parts of the world like Europe, India etc [12].

Citrullus colocynthis (Bitter apple) occupy a very important place in the diet of some part of the Sokoto North areas. However from such result, it has been known to have many advantages such as high fruit yield per stand, multiple utilities, disease resistance, and ease of cultivation, better seed production and preservation [17]. The fruit is eaten young as vegetable.

L. siceraria (Bottle gourd/Calabash) is cultivated chiefly for its dry hard shells of various shapes for uses ranging from container for liquid, grains, floats for fishing net, drinking cup, oat taken, garri processing, ornamental purposes and flute for music etc. on a similar note, some varieties are eaten when young, with the tender fruits serving as curries, while the young shoots and leaves as pot-herbs. A similar assertion has also been made by [15,18]. It has been reported that *L. siceraria* are used as basis for attachment of shells, bones, beads and metals to fashion out musical rattles. The use of gourds as receptacles for fish in the Argungu fishing festival in Sokoto State of Nigeria and as containers for fertilizer has also been reported. In northern Nigeria, especially in the Plateau areas, it is common to see Fulani women and young girls hawking "madara" (fresh milk), "nono" (Fermented milk) and/or "kunu" (gruel from guinea corn) in giant beautifully tattooed calabash basing. The

medium-sized calabashes, depending on their shape, are used as drinking vessels, ladles, flutes, and other musical instruments [19].

Citrullus lanatus (Water melon); though there has not been any evidence of its cultivation and wild occurrence in the Sokoto North area, except in markets where it is sold certainly for consumption. They serve as source of minerals and vitamins to consumers in Sokoto North local government areas. In other parts of Nigeria and some other countries *Citrullus lanatus* has been identified with numerous ethno-botanical and medicinal potentials [12].

The *Cucumeropsis mannii* (Proto) has been described as a new crop of immense potential for the tropics [20], a source of oil, protein, carbohydrates and minerals thus may require further investigation. In some parts of eastern Nigeria the leaves of *C. mannii* are wrapped around fresh corn meal and winged termites, cooked and then eaten as a delicacy mostly by women and children. The fruits and seeds are boiled and eaten together with yam, in some parts of eastern Nigeria [15].

The significance of *Cucurbitaceae* plants in our modern society cannot be overemphasized. It is known that most of the beneficiaries and users of those plants were people from both rural and urban areas. The indigenous knowledge among the traditional people with regard to their age shows that majority were of old age, this reveals that, knowledge transfer to the younger generation was highly encouraging, they seem to keep the knowledge with them either for the sake of secrecy or due to apathy but the younger generation to traditional knowledge. More than one plant species have been reported to be used by healers in remedy preparation for various ailments. This could be attributed to additives or synergistic effect that they could have during treatment [21].

Conclusion

The present study has revealed the ethnobotanical utility of species of Cucurbit in the area of ethnobotanical importance in the life and culture of the people of Sokoto North local government areas and the entire Nigerian nation. The data from these studies has provided further evi-

dence for the taxonomic delimitation of species of Cucurbita. From the result of the research, majority of the plants species were reported to be abundant, this will attract an urgent attention towards conserving such vital resources, so as to optimize their use in the primary health care system.

Recommendation

This study recommended that;

There is an urgent need to promote the development and conservation of these species for the sustenance and general wellbeing of the people and natural heritage-

the environment.

The documentation of the indigenous knowledge of the use of ethnobotanical plants will greatly help in preventing the erosion of such knowledge, as knowledge transfer was oral and the practitioners are at their old age, and in addition the younger generation are not interested to carry on the practice.

Various organs such as governments and NGOs, as well as community based must ensure integrated approach of tree multiplication and propagation through policies and programs and enlightenment campaigns. This is because universal education is key to diversity conservation.

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