

ASSESSMENT OF INDIGENOUS PLANTS FOR HEALTH CARE DELIVERY BY THE PEOPLE OF OKPARA INLAND, ETHIOPE EAST L.G.A. DELTA STATE, NIGERIA

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ABSTRACT

The Ethnobotanical survey of medicinal plants was carried out at Okpara Inland, Ethiope East Local Government Area of Delta State. The research was aimed at assessing and reviewing plant species used for the treatment of different ailments issues by the people. The information on the plants administration was gotten from, locals, farmers and traditional healers. Medicinal plants believed to be effective in treatment and management of human diseases were collected and identified. Phytochemical screening was carried out on selected species to quantitatively evaluate their composition. Twenty one (21) plants were identified into fourteen (14) plant families comprising of Asteraceae (19%), Cucurbitaceae (14.2%), Annonaceae (9.4%), Euphorbiaceae (9.4%), Anacardiaceae (4.8%), Basellaceae (4.8%), Bignoniaceae (4.8%), Convolvulaceae (4.8%), Crassulaceae (4.8%), Dioscoreaceae (4.8%), Lamiaceae (4.8%), Moringaceae (4.8%), Myrtaceae (4.8%) and Poaceae (4.8%). The life forms were observed to be herbs (42.9%), climber (28.6%), tree (23.8%) and shrub (4.7%). The plants were used to treat ailments such as malaria, cough, catarrh, dysentery, ear pain and body pains among others. The plants collected posse some essential phytochemicals in varying quantities. Quantitative analysis of *Ocimum gratissimum*, *Vernonia amygdalina* and *Psidium guajava* showed the presence of Alkaloid, saponin, steroid, tannin, flavonoid and phenol occurring at different percentage which could be responsible for the medicinal potentials of the plants.

Keywords: Indigenous, Medicinal plants, Okpara Inland

INTRODUCTION

Many people are shifting away from the conventional use of synthetic drugs or medicine to indigenous uses of traditional or ethno medicine for healthcare delivery. The shift in paradigm may not be unconnected with the side effects of synthetic drugs due to adulteration, preservatives and non-organic substances. Other factors may include lack of access to conventional health facilities, unavailability of trained medical personnel, and sometimes social status of the locals. Different cultures in the time past have explored the use of plants and their products as medicines to treat some medical problems (Kola *et al.*, 2010). The use of traditional medicine has become popular due to improved and increasing researches on plants species used for the prevention and treatment of varying diseases (Kraft, 2009).

In earlier times, man explored plants in his immediate ecosystem for food and the treatment of different ailments; this is a major part of the health system of Africa (Dawang *et al.*, 2016). Duraipandiyar *et al.* (2006) reported that the use of plants as indigenous uses for medicine and for health care among people

has risen to about 80%. The use of plant species for medicinal purposes whether the mode of the preparation is certified or certified has not deterred people for the usage especially in rural areas.

The use of tradition medicine has received tremendous attention because most of the locals are low income earners or are poor, availability of rich diversity in both fauna and flora communities, cheap to afford and easy to access for the treatment of ailments (Sawadogo *et al.*, 2012). The health care in Africa has experience continuous interest in herbal medicine because of lack of access to conventional medicine and due to the fact that some ailments like Ebola and/or HIV/AIDS, affect people more in Africa than the rest of the world (Mahomoodally, 2001).

Traditional medicine compliments conventional medicines because conventional medicines sometimes have limited success in the treatment of some ailments (Blackman, 2008).

People who rely on traditional or herbal medicine for their primary health care is estimated to be around 80% World Health Organization (2002). Ajibesin (2011) reported that about 80% percent of Nigerian population use herbal medicine for their primary health care (Ajibesin, 2011). Moquin *et al.* (2009) reported that people in the US are turning to herbal medicine due to dissatisfaction of high cost of medication prescription Nwachuku *et al.* (2010) reported on the traditional uses and identification of some herbal medicinal plants in use in Ezinihitte Mbaise Local Government Area of Imo State, Nigeria.

Phytochemicals are active ingredients in plants which confer the medical potential and helps in metabolic functions in the biological system (Edeoga and Eriata, 2001). Isolation of pure phytochemicals can be used as basic medicinal agent for their analgesic, bacteria effect and antispasmodic (Ogukwe *et al.*, 2004).

MATERIALS AND METHODS

Description of Study Area

The study was carried out at Okpara Inland in Ethiope East Local Government Area. It is within Latitude 5°42'N and 5°48'N and Longitude 5°42'E and 5°45'E. It stretches from the bank of River Ethiope to a few kilometers into the inter-land. It has heavy rainfall over eight months of the year (Okolie, 2011).

Mode of Collection of Ethnobotanical Information and Authentication of Plants

The plant species were collected and identified *in situ*. Information on indigenous plant species with regard to plant local names, plant part used, medicinal uses, method of preparation and

administration was obtained by the locals who at one time or other have used this plants continuously and consistently.

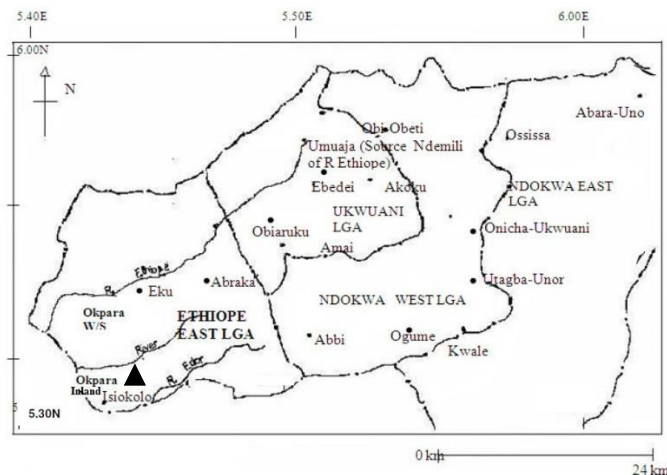


Figure 1. Map showing the study area
 Source: (Okolie, 2011)

RESULTS

A total of twenty one (21) plants were identified into fourteen (14) plant families (Table 1) with the family Asteraceae being the highest having 19% members followed by Cucurbitaceae with 14.2% members while Annonaceae and Euphorbiaceae were represented by 9.4% members respectively. The above named four families were the most frequent families reported in this study. The least families collected were Anacardiaceae, Basellaceae, Bignoniaceae, Convolvulaceae, Crassulaceae, Dioscoreaceae, Lamiaceae, Moringaceae, Myrtaceae and Poaceae with 4.8% each (Table 2).

Table 1. Scientific names, families and common names of medicinal plants collected in Okpara Inland, Ethiope East, L.G.A., Delta State

S/N	Scientific Name	Family	Common Name
1	<i>Acmella ciliata</i> Kunth	Asteraceae	Finged pod
2	<i>Anredera cordifolia</i> (Ten.) Steenis	Basellaceae	Madeira vine
3	<i>Bryophyllum pinnatum</i> (Lam.) Oken	Crassulaceae	Resurrection plant
4	<i>Chromolaena odorata</i> L.	Asteraceae	Siam weed
5	<i>Cymbopogon citratus</i> (DC) Stapf	Poaceae	Lemon grass
6	<i>Dioscorea bilbifera</i> L.	Dioscoreaceae	Air potato
7	<i>Helianthus anuus</i> L.	Asteraceae	Sunflower
8	<i>Ipomoea involucreta</i> P. Beauv.	Convolvulaceae	Morning glory
9	<i>Jatropha curcas</i> L.	Euphorbiaceae	Physic nut
10	<i>Luffa cylindrica</i> (L.)	Cucurbitaceae	Sponge
11	<i>Mangifera indica</i> L.	Anacardiaceae	Mango
12	<i>Manihot esculenta</i> Crantz.	Euphorbiaceae	Cassava
13	<i>Momordica charantia</i> L.	Cucurbitaceae	Bitter melon
14	<i>Monodora myristica</i> (Gaertn.)	Annonaceae	Calabash nutmeg
15	<i>Moringa oleifera</i> Lam	Moringaceae	Drumstick
16	<i>Newbouldia laevis</i> (P. Beauv)	Bignoniaceae	Border tree
17	<i>Ocimum gratissimum</i> L.	Lamiaceae	Scent leaf
18	<i>Psidium guajava</i> L.	Myrtaceae	Guava
19	<i>Telfairia occidentalis</i> Hook. F.	Cucurbitaceae	Fluted pumpkin
20	<i>Vernonia amygdalina</i> Del.	Asteraceae	Bitter leaf
21	<i>Xylopia aethiopica</i> (Dunal) A. Rich.	Annonaceae	Ethiopian pepper

Table 2. Percentage frequency of plant family

S/N	Family	Frequency (%)
1	Anacardiaceae	1(4.8)
2	Annonaceae	2(9.4)
3	Asteraceae	4(19.0)
4	Basellaceae	1(4.8)
5	Bignoniaceae	1(4.8)
6	Convolvulaceae	1(4.8)
7	Crassulaceae	1(4.8)
8	Cucurbitaceae	3 14.2)
9	Dioscoreaceae	1(4.8)
10	Euphorbiaceae	2(9.4)
11	Lamiaceae	1(4.8)
12	Moringaceae	1(4.8)
13	Myrtaceae	1(4.8)
14	Poaceae	1(4.8)
	TOTAL	21(100)

The local names and habits (life forms) of the plants obtained during the survey are depicted in Table 3 below. Figure 1 shows the percentage frequency of life forms (habits) of the plants encountered. Herbs were the most dominating life form with 9(42.9%), this was closely followed by climber which had 6(28.6%) and tree with 5(23.8%) while the least life form was recorded in shrub with 1(4.7%).

Table 3. Scientific names, local names and life forms (habits) of medicinal plants collected in Okpara Inland, Ethiope East, L.G.A., Delta State.

S/N	Scientific Name	Local Name	Life Form
1	<i>Acmella ciliata</i> Kunth	Evwo	Herb
2	<i>Anredera cordifolia</i>	Omonuku	Climber
3	<i>Bryophyllum pinnatum</i>	Ebe Okponkpan	Herb
4	<i>Chromolaena odorata</i> L.	Ebe Ishero	Herb
5	<i>Cymbopogon citratus</i>	Ebe Itegrogo	Herb
6	<i>Dioscorea bilbifera</i>	Ameme	Climber
7	<i>Helianthus anuus</i>	Ivwritegbo	Herb
8	<i>Ipomoea involucreta</i> P. Beauv.	Orerotor	Climber
9	<i>Jatropha curcas</i> L.	Ishakpa	Herb
10	<i>Luffa cylindrica</i> (L.)	Ivie imetete	Climber
11	<i>Mangifera indica</i> L.	Imangoro	Tree
12	<i>Manihot esculenta</i> Grantz.	Imedaka	Shrub
13	<i>Momordica charantia</i> L.	Isighro	Climber
14	<i>Monodora myristica</i> (Gaertn.)	Egwhonre	Tree
15	<i>Moringa oleifera</i>	Obukoiyeke	Tree
16	<i>Newbouldia laevis</i> (P. Beauv)	Oghriki	Tree
17	<i>Ocimum gratissimum</i> L.	Eran	Herb
18	<i>Psidium guajava</i>	Ebi guarva	Tree
19	<i>Telfairia occidentalis</i> Hook. F.	Eto	Climber
20	<i>Vernonia amygdalina</i>	Origbo	Herb
21	<i>Xylopia aethiopica</i>	Urienrie	Herb

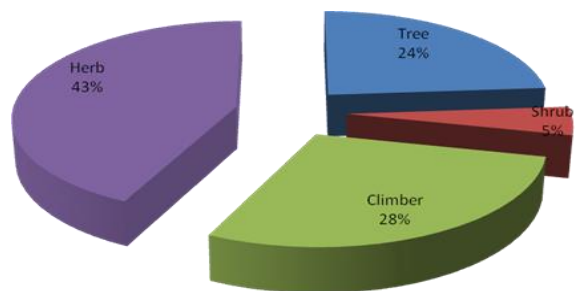


Figure 1. Distribution of plant based on life form

The ethnomedicinal uses of plant species collected during the study are presented in Table 4. It was observed that the plants were used to treat several health ailments. Parts of the plants used were mainly the leaves with few cases of the bark, seeds

and stem been used. The plants used were for the treatment of ailments such as malaria, cough, catarrh, dysentery, ear pain and body pains among others.

Table 4. Ethnomedicinal uses of medicinal plants used by the people of Okpara Inland, Ethiope East, L.G.A., Delta State

S/N	Scientific Name	Local Name	Part Used	Mode of Administration
1	<i>Acmella ciliata</i> Kunth	Fever, wound healing	Leaves	Fresh leaves of the plant is collected, washed with clean water and boiled. A cup full is taken daily for treatment of fever. The leaves are also squeezed and the extract applied to surface injury to heal
2	<i>Anredera cordifolia</i>	(blood building	Leaves	Fresh leaves were boiled with small quantity of water. The content is taken orally
3	<i>Bryophyllum pinnatum</i>	ear treatment, navel healing	Leaves, stem	The leaves are smoked, few drops are applied into the ear and on the surface of the navel to heal for new born babies
4	<i>Chromolaena odorata</i> L.	dysentery, malaria	Leaves	Some fresh leaves were squeezed in a can of water. An adult drinks the water extract for malaria. Children take 4-5 tablespoonfuls. Mature leaves were squeezed in water, then sieved and little salt added. Ten tablespoonfuls of extract are taken for dysentery
5	<i>Cymbopogon citratus</i>	Leaves	Cough, catarrh	Fresh leaves are collected, washed with clean water and boiled with addition of few quantity of water. The decoction is taken orally for cough and inhaled to relief catarrh
6	<i>Dioscorea bilbifera</i>	Splint healing	Leaves	Some quantities of the leaves are chewed and applied to the spot of the splint
7	<i>Halianthus anuus</i>	Heart treatment	Leaves	Some quantity of the leaves were squeezed, little amount of water and salt added. Few quantity of the decoction is taken which induce vomiting to relief the heart
8	<i>Ipomoea involucrata</i> P. Beauv.	Pneumonia	Leaves	Ground the leaves of the plant with addition of little quantity of water. Add half a teaspoon of table salt and take before breakfast for pneumonia
9	<i>Jatropha curcas</i> L.	Tongue infection	Leaves	Latex from the leaf was put on cotton wool and used to clean the tongue to remove dirt and infections on the tongue. Snake bite is treated by drinking water obtained from the leaves
10	<i>Luffa cylindrica</i> (L.)	Swollen spot (boil)	Leaves	Heat some mature leaves to soften them and squeeze to obtain the water. Add some ashes, and then apply to a boil
11	<i>Mangifera indica</i> L.	Jaundice, malaria	Bark, leaves	To treat jaundice, boil some bark and seven mature fruits of <i>Xylopi aethiopica</i> for thirty minutes. Take a cup full of the extract daily for a week. The leaves form part of the requirement for the preparation of "agbo" for malaria
12	<i>Manihot esculenta</i> Grantz.	Infertility	Leaves	Leaves of the plant are used for preparation of soup eaten once daily for 7 days for the treatment of infertility
13	<i>Momordica charantia</i> L.	Blood shot eyes	Leaves	For a blood shot eye, apply the leaf juice mixed with very little quantity of salt, twice daily for 3 days
14	<i>Monodora myristica</i> (Gaertn.)	Diarrhea	Seeds	Chew about 10-25 seeds depending on the degree of stooling in diarrhea

15	<i>Moringa oleifera</i>	Fever, pain relief	Leaves	Some quantity of the leaves are place in bottle, local gin or water is added and allowed to ferment for 2 – 3 days. Shots are taking on daily basis
16	<i>Newbouldia laevis</i> (P. Beauv)	Vomiting	Leaves	To stop vomiting, gri0und ten leaves together with 7 fruits of <i>Capsicum annum</i> , add little salt and boil everything in water for 5 minutes. Adult takes 5-7 tablespoonfuls and children 1-3 tablespoonfuls depending on the age
17	<i>Ocimum gratissimum</i> L.	Cough and catarrh	Leaves	Few quantity of the leaves are collected and squeezed, water and salt are added. Few quantity is taken on daily basis. The content is also used as face wash, clear blockage and nostrils
18	<i>Psidium guajava</i>	Malaria fever	Leaves	The leaves are boiled with addition of small quantity of water and drank.
19	<i>Telfairia occidentalis</i> Hook. F.	Anaemia	Leaves	Anaemia can be treated by squeezing the leaves and drinking the extract twice daily and children half the dosage.
20	<i>Vernonia amygdalina</i>	Dysentery	Leaves	Mature leaves are squeezed in water, then sieved and salt added. Ten tablespoonfuls of extract are taken for dysentery
21	<i>Xylopi aethiopica</i>	Cough	Fruits	Mature fruits are fried into charcoal. This is ground and mixed with some palm oil. An adult takes 2 tablespoonfuls but children take only one

The plants collected possess some essential phytochemicals in varying quantities. Quantitative analysis *Ocimum gratissimum*, *Vernonia amygdalina* and *Psidium guajava* showed the presence of Alkaloid, saponin, steroid, tannin, flavonoid and phenol occurring at different percentage (Table 5). The results showed that alkaloid (10.9%) and steroid (10.30%) were higher in *V. amygdalina* while saponin (37.5%) was higher in *P. guajava* plant. Also, tannin (6.84), flavonoid (2.98%) and phenol (4.0%) recorded the highest values in *O. gratissimum* compared to *V. amygdalina* and *P. guajava*

Table 5. Quantitative phytochemical composition of selected medicinal plants.

Phytochemicals	<i>O. gratissimum</i>	<i>V. amygdalina</i>	<i>P. guajava</i>
Alkaloid (%)	7.26	10.9	4.43
Saponin (%)	3.26	17.7	37.5
Steroid (%)	1.87	10.30	9.63
Tannin (%)	6.84	3.95	4.68
Flavonoid (%)	2.98	2.48	4.56
Phenols (%)	4.0	2.83	2.69

Discussion

The results of the study clearly revealed that the locals of the surveyed community have more knowledge of traditional medicine as it serves as means and sole source of livelihood to some local dwellers such as the traditional healers and farmers who cultivate majority of the plants and also use them for personal health care and food.

The plants species encountered during the study include species such as *M. oleifera*, *O. gratissimum*, *P. guajava*, *A. ciliate*, *H. annuus* among others. This is similar to the results of Gabriel *et al.* (2016) who reported several similar species to include *Jatropha curcas*, *Tridax procumbens*, *Citrus aurantium*, *Sida acuta*, *Aloe vera*, *Chromolena odorata*, *Cymbopogon citratus*, *Mangifera indica*, *Azadirachta indica*. Also, Nwachukwu *et al.* (2010) reported plants such as *Gongronema latifolia*, *Asmina triloba*, *Aspilia africana*, *Azadirachta indica*, *citrus aurantifolia*.

Similarly, ethnomedicinal survey of plants in some localities in Edo State by Egharevba and Ikhatua (2008) revealed the presence of plant species such as *Xylopi aethiopica* (Guinea pepper) *Plukenetia conophorum* (African walnut), *Monodora myristica*, (African nutmeg) *Aframomium melegueta* (Alligator pepper) and some semi-wild plants such as *Dacrydis edulis*, *etc.* They also include ornamental plants like *Lawsonia inermis* (Dye) and herbs.

The present study revealed the presence of fourteen families with the family Asteracea to be more dominant. This is contrary to the observation made by Dawang *et al.* (2016) who reported Maliceae to be the highest family. Also, Appidi *et al.* (2008) reported the family Fabaceae as the third family alongside Cucurbitaceae and Moringaceae while Meliaceae was the most frequent in the study area. However this finding is similar to that of Yinegar *et al.* (2007) who in an ethnoveterinary plant survey in Ethiopia.

The leaves as part of plants mostly used than other parts of the plants recorded. This confirms the report of Dawang *et al.* (2016) because leaves are sometimes used in combination with other plants parts. Secondly, indigenous people prefer the use of leaves in the preparations of herbal medicine because it easier to collect leaves than the other plant parts. Leaves are the parts actively

involved in photosynthesis in production of bioactive constituents, thus the numerous constituents seen in leaves could explain the efficacy in the treatment of diseases in both man and animals boosting their usage.

Herbal preparation is usually considered as being sustainable so long as some leaves remain on the parent plant. The herbal remedies were often prepared by boiling either the flesh or dried parts of the plants followed by either soaking or boiling them in water, the infusion or decoction administered by drenching is the common practice among the Okpara people agreeing with the observation of Ermias *et al.* (2008). Naturally, the herbal preparation administered varied according to the part of the plant used and without known dosage which sometimes lead to overdose and attended consequences.

Most often than not, traditional healers dispense the preparation once or twice a day and sometimes the sick person is asked to bath with the herbal preparation for number of days until the sick person or animal recovers. These practices are in agreement with earlier report that natural substances, usually from native plants or their extracts have been seen to successfully used to treat many infections. The sustained usage of the plants for treatment in this area could be attributed to bioactive agents they contained. The plants examined were reported to contain phytochemicals such as tannin, saponin, flavonoid, phenol as well as steroid. For instance a plant may have bitter substances that aid digestion and possess anti-inflammatory compounds that reduce swellings and pain, phenolic compounds as free radical reducers and venotonics and tannins that serve as natural antibiotics against bacteria and fungi.

A number of medicinal plants ranging from grasses to shrubs and to tall tree have been studied (Nwachukwu *et al.*, 2010). Some exist in the wild, while others are domesticated. The basic active ingredients used for treating various ailments are accumulated in the different parts of plants such as leaves, root, bark, seeds and sometimes the fruits. The extraction of these active ingredients requires different methods such as infusion, decoction, chewing of the plant part such as the seed, fruit or even the leaves.

The different methods of preparation depend on the part of the plant by which these active ingredients are found. Infusion was particularly used on leaf extracts while decoctions were used on roots, bark and certain seed extracts. Some herbs were discovered to have the ability of curing or ameliorating a number of ailments while some are specific on a particular ailment. Administration of medicinal extracts varies with the different ailments and parts of the body in which they are used for.

Conclusion

From the results obtained, it can be deduced that there is a vast knowledge of traditional medicine use in Okpara community of Delta State. Based on the results, there is need to develop a functional indigenous medicine system to include these plants on daily basis which could be efficient in alleviating several health ailments as well as extraction of their phytochemicals for drugs production.

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