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Ethnobotanical Survey of Anti-Cancer Plants in Ogun State, Nigeria

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ABSTRACT

Ethnobotanical survey of the plants used in the management of cancer was carried out in Ogun State, Nigeria. Herbalists, herb sellers and traditionalists living within the area of study were interviewed by the administration of questionnaires. Seventy-three different species of Angiosperm were found to be used for the management of cancer. Prominent among these are the members of Liliaceae family which were found to be very important and useful in the management of the disease based on their frequency of occurrence in the recipes. Several plants parts which were said to be useful were indicated in the recipes. Some of the plants have been characterized for their active chemical components in literature but their efficacy is not yet established. A need for further scientific research based on the findings of this survey is indeed very necessary and recommended so that adequate records of indigenous methods for the management of cancer can be kept for posterity especially in the study area. A need for analytical work on the plants identified as useful for the management of cancer is also necessary in order to determine the actual dosage applicable so that the medicinal value of these plants could be made available to humanity and hence reduce pain, cost and sudden death of Nigerians.

Key words: Ethnobotany, Cancer, Medicinal plants, Herbalists, Traditional healers, Traditional medicine.

INTRODUCTION

Man since creation has depended on plants for food, drinks, shelter, clothing, equipment, dental care and medicine (Gbile, 1986). The use of plants by early man was established by trial and error. Since plants were eaten by animals and this does not result to fatality, it was adopted by man as food and sometimes as medicine. Our forefathers depended on plants, herbs for treatment of various diseases before the introduction of orthodox medicine. According to Kafaru (1999), the history of the use of herbs could be traced back to the time of the early man who had the crudest tools as his implements. The art of using herbs to enhance his health must have come to him in the most unscientific manner. In her opinion, some

people may believe that early man used his instinct to identify poisonous herbs while others will accept that there were external forces or invisible helpers who guided the early man to know what he could eat freely to keep safe. No matter which view is accepted, the truth is that the early man used herbs in their raw and cooked forms to keep him/her fit.

Herbs are generally valued for their virtues as food as well as medicine (Oliver 1960). Herbs may be prepared in different ways for use in the treatment of ailment, diseases and infections. They could be prepared as infusion, decoction, tincture, maceration, poultices and bathing remedies. Of the 265,000 species of flowering plants that have been identified on planet earth, only 0.5% of them have been studied in detail for chemical composition and medicinal value. In fact, the modern scientists only know the chemical composition of less than 5% of the flora in the rainforest (Jackson, 1989). However, indigenous people who live in the rainforest can identify species uses for 49-82% of the trees in their local environment (Weeks, 2000). In general, 75% of the world population still use plants and plant extract for their medicinal needs (Abelson, 1990).

Ethnobotany is the study that deals with traditional usage of one or more plant parts in the treatment of fungal, bacteria, viral and protozoan diseases. Traditional medicine however, is the total combination of knowledge and practice, whether explicable or not, used in diagnosing, preventing and eliminating a physical, mental or social disease and which may rely exclusively on past experience and observation handed down from generation to generation verbally or in writing. Kadans (1970) pointed out clearly that Traditional medicine otherwise known as herbalism is the most ancient method of curing disease and it has been said that plants are the very first and only true medicines ever used. Similarly, Osai (1998) opined that Herbal medicine which consists of medicinal drugs used in the treatment and cure of sickness and diseased conditions has been in existence for well over fifty centuries which until the last two and a half centuries was the main source of treatment to man and his domestic animals. This implies that man cannot do without the presence of herbs for survival. According to the National Investigative Committee on Traditional and Alternative Medicine (NICTAM) today's herbal healers are no longer the unlettered old men or women in the bush, usually associated with sorcery, witchcraft or fetishism (Adodo, 2005).

Cancer has been defined as a disease in which there is uncontrolled multiplication and spread within the body of abnormal forms of the body's own cells (Rang et al, 2001). All cancer types arise through a series of steps characterized by progressive loss of normal growth control. There are proteins in the cells that ensure this continuity (Brooks and La Thanque, 1999). Death from cancer often comes not from the primary site but from metastases. Cancer may affect people at all ages even foetus but the risk for most varieties increases with age. The disease causes about 13% of all death. Reports have shown that during 2007, about 7.6 million people died from cancer in the world. All cancers are caused by abnormalities in the genetic material of the transformed cells and these abnormalities may be due to the effect of carcinogens such as tobacco, smoke, radiation, chemicals or infectious agents.

This ethnobotanical study was embarked upon to identify the various plants used in the traditional preparations for the management of this deadly disease and thereafter provide more information to the growing knowledge about the effective use of these local herbs. The medicinal value of these plants lies in some chemical substances they contain that produce a definite physiological action on the human body (Edeoga *et al*., 2002).

MATERIALS AND METHODS

This survey was carried out in Ogun State. Ogun State is located in the South-Western Part of Nigeria between Latitude 7º 09' N and Longitude 3º 13' E on the World map. Herbalists, traditional healers, herb sellers, old men and women who have deep knowledge of the herbs and those that inherited the knowledge from their forefathers within the area of study were all interviewed with the aid of

questionnaires. Healing homes were not left out in this exercise. Relevant information regarding the plant species, recipes, their local names, mode of administration and dosage were also collected to enhance permanent record. Plant specimens indicated in the recipes were collected, pressed and dried, mounted and identified in accordance with taxonomic practice. Identification was done by the senior author, a plant taxonomist and thereafter authenticated at the Forest herbarium Ibadan (FHI). Voucher specimens were deposited at Elikaf Herbarium of Olabisi Onabanjo University, Ago-Iwoye, although this herbarium is yet to be listed among the internationally recognized herbaria (Holmgren & Keuken, 1974).

RESULTS

A total of 73 plant species belonging to 43 families were said to possess anti-cancer properties. Most of the recipes were given by the traditional healers while others were collected from the herbalists and herb sellers. Table 1 shows the list of the plant species with their families, botanical names, local names as well as plant parts used. The 43 families are presented in Table 2 showing the distribution according to the number of occurrence in the recipes. Each plant species has procedure of preparation to meet the needs of cancer disorder. The recipes can be in combined form with few others. The methods of preparation and the plant parts used as well as the application are also included in this work. Owing to space, only 10 of the 30 recipes obtained are detailed in this work as shown in Table 3. Graphical representations showing the percentage occurrence of the plant families and the plant parts used in the management of cancer are shown in Figures 1 and 2 respectively.

Table 1: Medicinal plants used by Traditional healers in Ogun State, Nigeria for the management of Cancer

S/NO	FAMILY NAME	BOTANICAL NAME	VERNACULAR NAME	PLANT PARK USED
1.	Amaryllidaceae	*Crinum jagus (*Thomson*)* Dandy	Lsu merin	Tuber
2.	Anacardiaceae	*Lannea egregia (Hiern)* Engl	Ekudan	Leaves
3.	Anacardiaceae	*Magnifera indica* Linn	Mongoro	Bark
4.	Annonaceae	*Xylopia aethiopica (Dunnal)* A. Rich	Eru	Seed
5	Annonaceae	*Uvaria chamae* P.Beauv	Eruju	Bark
6	Annonaceae	*Uvaria afzelii* Elliot	Gbogbonse	Root
7	Apocynaceae	*Strophonthus hispidus DC*	Sagers	Root
8	Apocynaceae	*Alstonia congensis* De wild	Awun	Bark
9	Apocynaceae	*Alafia barteri* Baker	Agbari-etu	Leaves
10	Araceae	*Pistia stratiotes* Linn	Oju oro	Leaves
11	Araceae	*Culcasia scandens* P. Beauv	Agumona	Leaves
12	Araceae	*Anchomanas difformis* (Blume) Eng	Eego	Leaves
13	Asclepiadaceae	*Secamone afzelii* K Shulfes	Arilu	Leaves
14	Asclepiadaceae	*Calotropis procera* R.B	Bomubomu	Leave
15	Asclepiadaceae	*Tylophora spp*	Olubara	Leaves
16	Bignoniaceae	*Kigelia africana* Benth	Pandoro	Leave bark
17	Bignoniaceae	*Spathodea companulata* P.beauv	Orudu	Bark
18	Bromeliadceae	*Ananas comosus* (L.) merr	Ope-oyinbo	Juice
19	Celastraceae	*Celastrus indica* L	Ponju owiwi	Root
20	Chenopodiaceae	*Chenopodium ambrosioides* Linn	Arunpale	Leave
21	Combretaceae	*Terminalia avicennioides* Gull et Perr	Idin	Bark
22	Compositae	*Vernonia amygdalina* Linn	Ewuro	Leaves
23	Connaraceae	*Brysocarpus coccineus* Schum et Thonn	Amuje	Root
24	Crassulaceae	*Bryophyllum pinnatum* (Lam) Oken	Abamoda	Root
25	Euphorbiaceae	*Securinega virosa* (Roxb) Bail.	Iranje	Leaves
26	Euphorbiaceae	*Bridelia ferruginea* (Benth)	Ira	Bark

27	Euphorbiaceae	*Euphorbia unispina* (L) Pax	Oro adete	Root
28	Guttiferae	*Psorospermum febrifugum* Spach	Legun-oko	Bark
29	Guttiferae	*Garcinia kola* Heckel	Orogbo	Root
30	Hyperiaceae	*Harungana madagascarensis* Lan. ex poir	Aroje	Bark
31	Icacinaceae	*Pyrenacantha staudii* Engl	Arukuna	Leave
32	Labiatae	*Ocimum basilicum* Linn	Efinrin	Leaves
33	Lecythidaceae	*Napoleona vogelii* Bak.f	Ito	Bark
34	Leguminosae-Caesalpinioideae	*Senna fistula* Linn	Aridantoro	Leaves
35	Leguminosae-Caesalpinioideae	*Senna alata* Linn	Asunwon	Leaves
36	Leguminosae-Caesalpinioideae	*Berlinia grandiflora* (Vahl) Hutch. & Dalziel	Apado	Bark
37	Leguminosae-Caesalpinioideae	*Cynometra mannii* Oliv.	Akaaka	Bark
38	Leguminosae-Mimosoideae	*Calliandra haematocephala* (Jacq) Benth	Tude	Root
39	Leguminosae-Mimosoideae	*Tetrapleura tetraptera* Schum & Thonn	Aidan onigun	Seed
40	Liliaceae	*Aloe barteri* (Baker)	Eti erin	Leaves
41	Liliaceae	*Allium cepa* Linn	Alubosa onisu	Leave
42	Liliaceae	*Allium sativum* Linn	Alubosa ayu	Bulb
43	Liliaceae	*Allium ascalonicum* Linn	Alubosa elewe	Bulb
44	Longaniaceae	*Anthocleista djalonensis* A.cheu	Sapo	Leave
45	Meliaceae	*Khaya grandifoliola* C.D.C	Oganwo	Bark
46	Meliaceae	*Pseudocedrela kotschyi* Engl	Emigbegiri	Bark
47	Meliaceae	*Tricalysia macrophylla* K. Schum	Oloja ebano	Bark
48	Menispermaceae	*Jateorhiza palmata* (Lam.) Miers.	Wowo	Bark
49	Menispermaceae	*Sphenocentrum jollyanum* Pierre	Akerejupon	Seed
50	Moraceae	*Antiaris Africana* Engl	Oro	Bark
51	Musaceae	*Musa sapientium* Linn.	Ogede wewe	Tuber
52	Myristicaceae	*Pycnanthus angolensis* (Welw.) Warb	Akomu	Bark
53	Nympheaceae	*Nymphaea lotus* Linn	Ewe osibata	Leaves
54	Olacaceae	*Olax subscorpioidea* Oliv.	Ifon	Root
55	Palmae	*Elaeis guineensis* (Jacq)	Ope	Bark
56	Periplocaceae	*Parquetina nigrescens* (Afzel) Bullock	Oogbo	Leaves
57	Phytolacaceae	*Petiveria alliacea* Linn	awogba	Root
58	Piperaceae	*Piper guineense* Schum & Thonn	Iyere	Seed
59	Plumbaginaceae	*Plumbago zeylanicca* Linn	Inabiri	Root
60	Poaceae	*Saccharum offinarum* Linn	Ireke	Juice
61	Polygalaceae	*Securidaca longepedunculata* Frer	Cpeta	Root
62	Rubiaceae	*Nauclea latifolia* Smith	Egbesi	Root
63	Rubiaceae	*Coffea bracteolate* L.	Poropiwo	Leave
64	Rubiaceae	*Morinda lucida* Benth	Oruwo	Bark
65	Rutaceae	*Clausena alata (*Wil*)* Hook	Atapari-Obuko	Bark
66	Rutaceae	*Citrus aurantifolia* (Christm.) Swingle.	Orombo	Juice
67	Rutaceae	*Citrus aurantium* Linn	Ijaganyin	Root
68	Sapindaceae	*Paullina pinnata* Linn	Kakasela	Leaves
69	Solanaceae	*Capsicum frutescens* (Benth)	Ata ijosi	Fruit
70	Solanceae	*Nicotina tabacum* Linn	Taba juku	Leave
71	Zingiberaceae	*Zingiber officinale* Roscoe	Atale pupa	Seed/Pod
72	Zingiberaceae	*Curcuma domestica* Bull. Jard	Atale funfun	Seed/Pod
73	Zingiberaceae	*Aframomum melegueta* (Loskoe) K. Schum	Atare	Seed

Table 2: Species distribution according to families

FAMILIES	No of species
Amaryllidaceae	1
Anacardiaceae	2
Annonaceae	3
Apocynaceae	3
Araceae	3
Asclepiadeceae	3
Bignoniaceae	2
Bromeliaceae	1
Celastraceae	1
Chenopodiaceae	1
Combretaceae	1
Connaraceae	1
Compositae	1
Crassulaceae	1
Euphorbiaceae	3
Guttiferae	2
Hyperiaceae	1
Icacinaceae	1
Labiatae	1
Lecythidaceae	1
Leguminosae-Caesalpinioideae	4
Leguminosae-Mimosoideae	2
Liliaceae	4
Longaniaceae	1
Meliaceae	3
Menispermaceae	2
Moraceae	1
Musaceae	1
Myristicaceae	1
Nymphaeaceae	1
Olacaeae	1
Palmae/Arecaceae	1
Periplocaceae	1
Phytolacaceae	1
Piperaceae	1
Plumbaginaceae	1
Poaceae/Graminea	1
Polygalaceae	1
Rubiaceae	3
Rutaceae	3
Sapindaceae	1
Solanaceae	2
Zingiberaceae	3

Table 3 Enumeration of Recipes

RECIPE 1

PLANTS	VERNACULAR NAME	PLANT PART USED
Uvaria chamae	Eruju	Bark
Xylopia aethiopica	Eru	Seed
Khaya gradifolia	Oganwo	Bark
Other ingredient -		
Potash	Kanwun bilala	

Preeparation: - The bark and seed are ground together when dried and then added to ground potash (kanwun bilala- yoruba) in a bottle of schnap.
Application: - One small glass cup thrice daily.

RECIPE 2

PLANTS	VERNACULAR NAME	PLANT PART USED
Garcinia kola	Orogbo	Bark
Kigelia africana	Pandoro	Pod
Calotropis procera	Bomubomu	Leaves
Xylopia aethiopica	Eru	Fruit
Anchomanes difformis	Eego	Tubers

Preparation: - The bark and seed should be rinsed and boiled in 4 litres of fermented corn water for 6 hours.
Application: - It is taken as tea, 3 times daily with a glass cup

RECIPE 3

PLANTS	VERNACULAR NAME	PLANT PART USED
Calliandra haematocephala	Tude	Root
Bridellia ferruginea	Ira	Bark
Mangifera indica	Mongoro	Bark
Tricalysia macrophylla	Oloja ebano	Bark
Antiaris Africana	Oro	Bark
Trichilia monadalpha	Orudu	Bark
Allium ascalonicum	Aluboa elewe	Leaves
Citrus medica	Osan ijaganyin	Fruit juice
Nauclea latifolia	Agbesi	Bark

Preparation: - The bark seed and leaves as indicated above should be rinsed and boiled in the water for 40 minutes. *Citrus medica* fruit juice is added when cooled.
Application: - Take a glass cup as tea 3 times daily for two months

RECIPE 4

PLANTS	VERNACULAR NAME	PLANT PART USED
Citrus medica	Ijaganyin	Root
Citrus aurantifolia	Orombo	Root
Plumbago zeylanica	Inabiri	Root
Aframomum melegueta	Atare	Seed
Xylopia aethiopica	Eru	Seed

Preparation: - It should be ground together smoothly and mixed with black soap and gun powder.
Application: - Use the preparation to wash all the part of the body, once in a week.

RECIPE 5

PLANTS	VERNACULAR NAME	PLANT PART USED
Zingiber officinale	Atale funfun	Seed
Curcuma domestica	Atale pupa	Seed
Tetrapleura tetraplera	Aidan onigun	Pod
Crinum jagus	Isu meri	Tuber/bulb
Piper guineensii	Iyere	Seed
Allium sativum	Alubosa ayun	Bulb

Preparation: - All the plants should be ground together when dried and taken with honey.
Application: - One teaspoonful is taken 3 times daily.

RECIPE 6

PLANTS	VERNACULAR NAME	PLANT PART USED
Garcinia kola	Orogbo	Bark
Morinda lucida	Oruwo	Leaves
Terminalia avicennioides	Idin	Bark
Psorospermum febrifugum	Legun oko	Leaves
Antiaris welwitschis	Oro	Bark
Harungana madagascarense	Aroje	Bark

Preparation: - The bark and leaves should be rinsed in clean water and boiled in 6litres of fermented corn water for 6 hours.
Application: - Take one full glass cup as tea 3 times daily.

RECIPE 7

PLANTS	VERNACULAR NAME	PLANT PART USED
Alafia barteri	Agbari-etu	Root
Alafia barteri	Agbari-etu	Leaves
Lannea engregia	Ekundan	Leaves
Securinega virosa	Iranje	Root
Securinega virosa	Iranje	Leaves
Xylopia aethiopica	Eru	Pod

Preparation: - The leaves and root are rinsed and boiled in clay pot with fermented corn water.
Application: - One small glass cup thrice daily

RECIPE 8

PLANTS	VERNACULAR NAME	PLANT PART USED
Musa sapientum	Isu idi ogede wewe	Tuber
Senna alata	Asunwo	Root
Uvaria chamae	Eruju	Root
Olax subscorpioidea	Ifon	Root
Securidaca longepedunculata	Ipeta	Root
Xylopia aethiopica	Eru	Pod

Preparation: - The root and tuber are rinsed with water and boil with palm oil and water.
Application: - Drink when hot with a glass cup twice daily.

RECIPE 9

PLANTS	VERNACULAR NAME	PLANT PART USED
Nymphaea lotus	Osibata	Leaves
Pistia stratiotes	Oju oro	Leaves
Saccharum offinarum	Ireke	Crushed stem
Morinda lucida	Oruwo	Bark
Citrus aurantifolia	Osan wewe	Juice
Xylopia aethiopica	Eru	Seed

Preparation: - The bark leaves and seed should be rinsed and boiled in one litre of *Citrus aurantifolia* juice and palm oil for 2 hours.
Application: - Two teaspoonful morning and night.

RECIPE 10

PLANTS	VERNACULAR NAME	PLANT PART USED
Secamone afzelii	Ailu	Leaves
Petiveria alliacea	Awogba	Root
Securidaca longepedunculata	Ipeta	Root
Khaya ivorensis	Oganwo	Bark
Chenopodium ambrosioides	Arunpale	Root
Nauclea latifolia	Agbesi	Root
Elais guineensis	Ope	Root
Jateorhiza palmate	Wowo	Root
Olax subcorpiodea	Ifon	Root
Nicotiana tabacum	Taba juku	Leave
Allium ascalonicum	Alubosa elewe	Leave
Potash	Ako kanwun	
Citrus aurantifolia	Omi-osan wewe	Juice

Preparation: - Soak all the above with lime and dry gin with gun powder for 3 to 7 days.
Application: - One small glass cup thrice daily

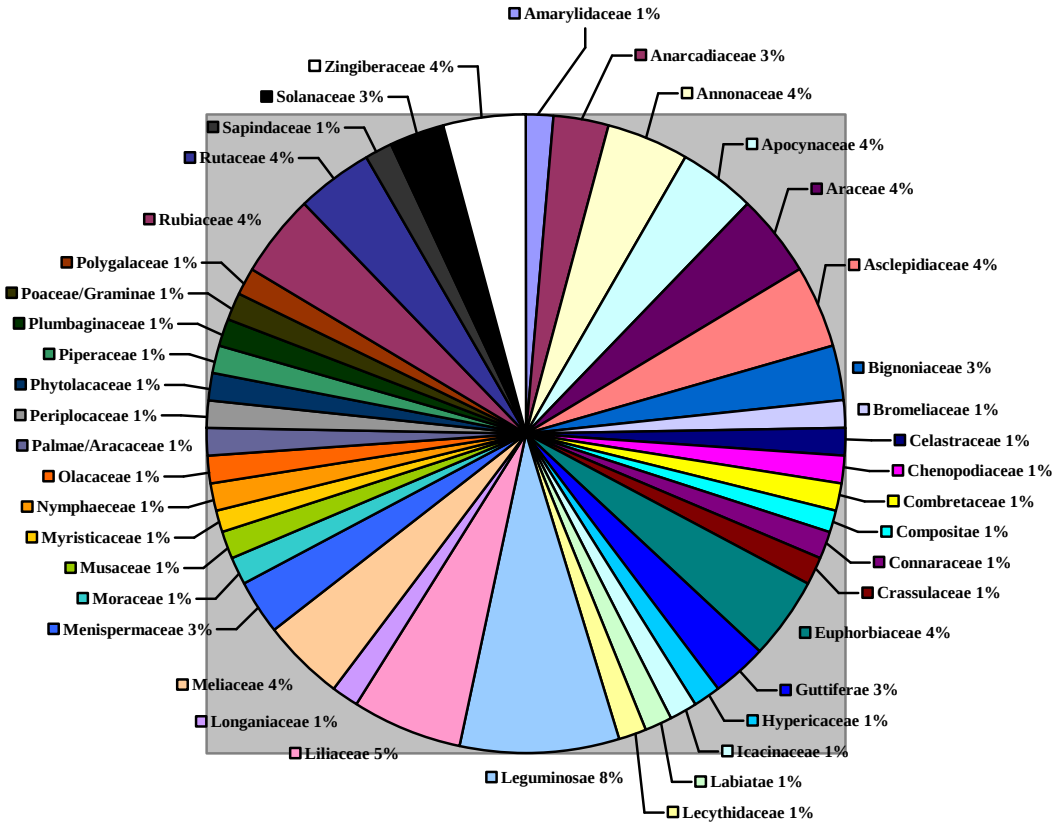

Figure 1. Pie-chart showing the percentage no. of species in each of the families

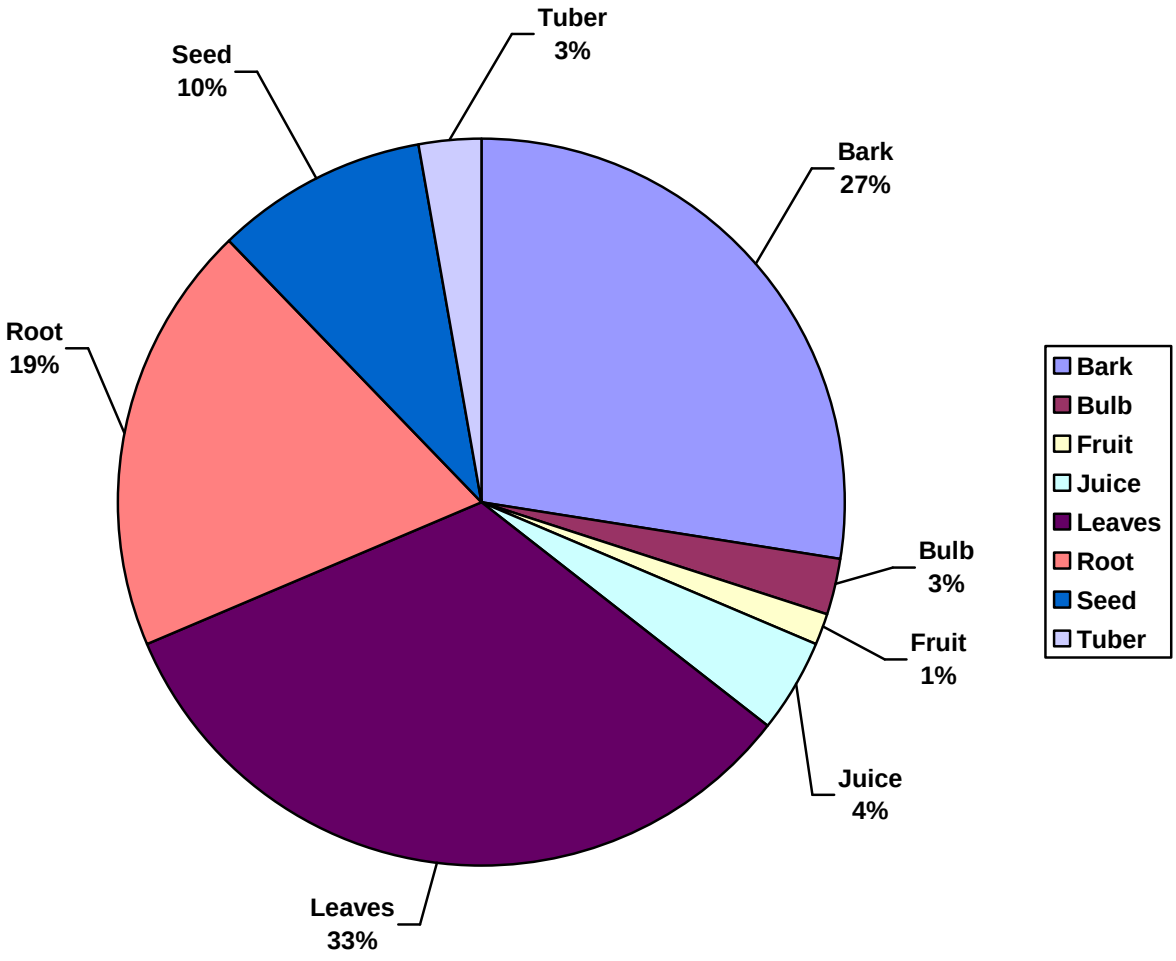

Figure 2. Graphical representation of the percentage occurrence of the plant parts used in treating cancer.

DISCUSSION AND CONCLUSION

Results from this work revealed that quite a number of plant parts from the 73 species especially the leaves, roots, barks and seeds have been found efficient in the management of cancer. However, the prominent plant species in the recipes are. *Xylopia aethopica, Garcinca kola, Kigelia africana, Anthocleista djalonensis* and *Citrus* and *Allium* genera which are indicative of their importance in the management of the disease. Similarly, Leguminosae and Liliaceae families occurred more frequently in the list of plants identified but the occurrence of other families also suggest the importance of all those families as repository of useful chemical compounds which may be explored for drugs in the management of cancer.

In orthodox medicine, cancer can be treated with drugs and radiotherapy if detected early. Otherwise surgical operation is used at some stage after which it can become very difficult and hopeless. However, nature has some remedy for cancer patients. Some substances have been found to be anti-carcinogenic, i.e they fight cancer forming cells and help to eliminate them from the body, for example cumaric acid and lycopen which are found naturally in tomatoes fruits (*Lycopersicum esculentum* L.) and the leaves of bitter leaf (*Vernonia amygdalina* Del.). Also, a lot of research has been and is still being done on the effectiveness of *Aloe* vera (L.) Burm.f., *Morinda lucida* Benth, *Nympheae lotus* L. and *Pycanthus angolensis* Welw. Warb. for managing cancer. Literature has revealed that most of the synthetic drugs that have been used in the past have negative effects that were of grave consequence in some cases, especially when taken by patients on self prescription after an initial visit to the physician (Olapade, 2002). For this reason, it is imperative for ethnobotanists and pharmacognosists to do more analysis on the 73 wonderful plants mentioned in this work. Our medical health practitioners should also focus attention on more intense research on medicinal plants which can save the life our people without side effects.

Formulation of the dosage of the extracts from the recipes must be strictly adhered to for maximum efficacy and also the avoidance of over dosage which may lead to other complications in patients. One major advantage of Traditional medicine is that, it is cheaper than orthodox medicine. While drugs alone are not the only means of providing health care, they do play an important role in protecting, maintaining, and restoring the health of people (Sofowora, 1993). Information gathered from the herbalists shows that increasing number of people are turning to the use of anti-cancer which shows that they are effective and efficient in the management of cancer.

According to Olapade (1995), traditional medicine has higher benefits than any other health care system as it is cheaper, readily available and could cure permanently. Apart from this, it has no side effect and is capable of saving for the nation, huge foreign exchange which can be used for other development programme.

The vulnerability of medicinal plants to over exploitation and extinction needs to be dealt with seriously. Issues relating to the conservation of these medicinal plants should be addressed by the government and non-governmental organizations. Conservation methods such as In-Situ and Ex-Situ should also be adopted to protect our natural biodiversity (Soladoye *et al.*, 2006).

REFERENCES

[1] Abelson, P. H. (**1990**). "Medicine from Plants." *Science*, 247(4942): 513.

[2] Adodo, A. (**2005**). New frontiers in African medicine. *Metropolitan publishers* Ltd. pp 79-117.

[3] Brook, G. and La Thanque, N. B. (**1999**). Drug discovery and the cell cycle: The Promise and the hope. *Drug Discovery Today* 4: 455-464.

[4] Edeoga, H. O., Okwu, E. O. and Mbaebie (**2002**). Phytochemcial constituent of some Nigerian medicinal plants. *African Journal of Biotechnology*. 4(7): 685-688.

[5] Gbile, Z. O. (**1986**). 'Ethnobotany, taxonomy and Conservation of medicinal plants.' In: "the state of medicinal plants research in Nigeria". Sofowora, A (ed) University of Ibadan Press, Nigeria, pp13-29.

[6] Holmgren, P. K. and Keuken, W. (**1974**). Index herbariorum. Part I, ed. 6. *Regnum Veg*. 92: 1– 397.

[7] Jackson, D. D. (**1989**). Searching for medicinal wealth in Amazonia *Smithsonian*, Pp. 95-103.

[8] Kadans, J. M. (**1970**). In: Encyclopedia of Medicinal Herbs, Thorsons Publishers Limited, Wallingborough, Northamptonshire , pp 9.

[9] Kafaru, E. (**1999**). Immense help from nature's workshop. Elikaf services health Ltd, Lagos. pp 69-71.

[10] Olapade, E. O. (**2002**). The herbs for Good health. NARL specialist clinic, Ibadan, Nigeria. pp 98-105.

[11] Olapade, E.O. (**1995**). Medicinal Plants: Conservation, Exploitation and Uses with special reference to Diabetes Mellitus. Paper presented at the special seminar. Forestry Research Institute of Nigeria, Ibadan. 26th April 1995. 26pp.

[12] Oliver, B. E. P. (**1960**). Medicinal Plants in Nigeria. Nigerian College of Arts Science and Technology, pp 10-89.

[13] Osai, U. (**1998**). The transition challenge from Pilot to large scale manufacturing of herbal drugs in Nigeria. *Nigerian Journal of Natural Product & Medicine*, 2: 16-19.

[14] Rang, H. P., Dale, M. M. and Ritter, J. M. (**2001**). Pharmacology, 4th edition Churchill living stone, London, 830pp.

[15] Sofowora, A. (**1993**). Medicinal Plants and Traditional medicine in Africa. 2nd Edition. Spectrum Books Limited, Ibadan, Nigeria. 289pp.

[16] Soladoye M, O., Yakubu, F. A., Kola-Oladiji, K., Alabi, D. A. & Agbomeji, Y. O. (2006). The Collection, Conservation and Cultivation of Local Medicinal Plants for Natural Medicine Production. Paper presented at the Seminar/Workshop and Exhibition of Natural Medicine Products. Organized by Nigeria Traditional Medical Association, Ijebu-North in Collaboration with Faculty of Science, Olabisi Onabanjo University Agp-Iwoye, held 19-23 September, **2006**.

[17] Weeks, J. O. (**2000**). "Costa Rica medicinal plant project'' URL: http//home.inreach.com/famdoc.