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Survey and Documentation of Medicinal Plants in Wildlife Park of Federal University of Technology, Akure, Nigeria

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Abstract: **Medicinal plants have been used in traditional health care systems since prehistoric time and are still the most important health care for majority population around the world. This study surveyed and documented plants with ethnobotany values in FUTA Wildlife Park. Four transect was laid within the Park and six temporary sample plots of 30 m X 30 m were marked out using simple random sampling and detailed information of plants were recorded. Results show that a total of 412 individual medicinal plants were encountered, these were distributed into 40 species within 19 families. *Manihot esculenta* (50), *Ficus thonningii* (41), *Alchornea cordifolia* (40) were the plants with highest frequencies while *Bambusa vulgaris*, *Chrysophyllum albidum*, and *Gliricidia sepium* were the plants with least frequencies of 1 respectively. The different forms of taxonomic description of plants encountered ranges from tree (29), shrub (7), herbs (3) and Sucker (1). Some of the uses of these plants are; fever, gonorrhea, dysentery and skin rashes. These medicinal plants play very important roles in the life of the rural dwellers as well as the people that are closer to nature. Therefore, there is the need that proper attention is given for their conservation.**

Keywords: **Ethnobotany, Medicinal, Plants and Wildlife Park.**

1. INTRODUCTION

Medicinal plants have been used in traditional health care systems since prehistoric times and are still the most important health care source for the vast majority of the population around the world (Iwu 2003; Leaman 2003; Carvalho 2004; Uprety *et al*. 2010). It was reported by Farnsworth & Soejarto (1991) and WHO (2002) that about 70-80% of people all over the world rely on traditional herbal medicine to meet their primary health care needs and this shows how important these medicinal plants are to the world. Therefore, medicinal plants have been used for millennia in virtually all cultures and serve both as a source of income and a source of affordable healthcare (World Bank 1997). Hamilton (2004) documented that about 53,000 plant species are used for medicinal purposes worldwide. Also, the world market for traditional medicine in 2008 was calculated to be worth US $83 billion (WHO 2011). Traditional and folkloric medicines bequeathed through generations are rich in domestic recipes and communal practice and the use of traditional medicines and medicinal plants has been widely observed in most developing countries (Shinwari 2010). Hamilton (2004) estimated up to 15-39% of total income from the sale of medicinal plants for people living in developing countries.

Historically, plants do not only provide human with food but also with means of healing and this has made the use of plants as medicine, as was practiced by our ancestors, to be the major sources of medicine and plant secondary metabolites and have been attributed to most plants' therapeutic activities.

However, concerns are being raised about the loss of native knowledge and the possible extinction of medicinal plant resources due to disruptions in traditional ways of life induced by colonial forces (Borins 1995; Buenz 2005; Uprety *et al*.

2011) hence, proper documentation of traditional knowledge regarding plant use, along with conservation and sustainable management of key habitats could contribute to safeguarding this heritage (Bannister 2006).

Medicinal documentation and surveys are important in order to understand the social-cultural and economic factors influencing ideas and actions concerning health and illness and also to get information on type of diseases and health problems prevalent among the people of a particular locality and even in some of the urban areas. Also, identification and documentation of various medicinal plants species are sources of raw materials for both rural health care and pharmaceutical industries which are critical components of achieving environmental sustainability and primary health services. Such studies, as suggested by Lawal *et al*. (2010) may help to provide the basic health care services needed as well as improve health challenges of the rural population. Therefore, this present study aims at documenting the common medicinal plants found at the wildlife Park of Federal University of Technology, Akure, Nigeria as well as their medicinal values, local names and parts used.

2. MATERIALS AND METHODS

Study area:

Federal University of Technology Akure, Wildlife Park is situated along Akure – Ilesha road in the North-Western part of the Federal University of Technology Akure, Ondo State between longitude 05˚ 18' E and latitude 07˚ 17' N and covers a land area of 270 m by 350 m. The general topography of the area is gently undulating and the area is well drained with most of the run off draining into the stream which passes through the area. Some rock outcrops are also found in the area. Although people do not live in the park since the establishment of the institution, however human activities such sustainable farming occur around the buffer area of the park. The study was carried out for a period of 4 months (April to August), this also coincides with the peak of the raining season in the southwest Nigeria.

Plant enumeration and medicinal value documentation:

The park comprises of six transects, four of which exhibit floristic distribution pattern hence they were selected for the purpose of this study. Six temporary sample plots of 30 m x 30 m were marked out of these four transects through random sampling methods. In each plot, detailed information about the different tree species was recorded through complete enumerations of plant resources. A taxonomist resource person with knowledge of medicinal plants was involved in plant identification to identify the medicinal values of the different plant parts, such as leaves, bark, stem, and the roots. Progressively, all medicinal plants encountered were tagged, recorded and information on their medicinal values also documented. In addition to the above information, the frequency and diversity of all plant species in the six temporary plots were systematically recorded.

3. DATA ANALYSIS

After the field work, all medicinal plants that could not be immediately identified or whose identification was in doubt were taken to the laboratory for confirmation/identification. In addition Gbile (1984) and Burkill (2000) were also consulted for other taxonomic clarifications of different medicinal plants. The botanical names, families and habitats of the taxa were determined using the Flora of West Tropical Africa (Hutchinson & Dalziel 1963; Keay 1989). Moreover, field information on medicinal plants uses with the assistance of experienced ethnobotanist who understood the medicinal usage of the plants was adopted. Additional ethnobotanical information was obtained from literatures (Sofowora 1984; Anselm-Addodo 2000; Ugbogu & Odewo 2004; Oni 2010). The total number of the medicinal plant species per temporary plots, frequency of occurrence, and relative density were calculated using the formula as described by Balslev *et al*. (1987).

$$\text{Relative density} = \frac{Number\ of\ individuals\ of\ a\ species\ per\ Unit\ area \times 100\ \%}{Total\ number\ of\ individual\ of\ all\ species}$$

4. RESULTS

Result of the study revealed that 412 individual medicinal plants were encountered at Wildlife Park of Federal University of Technology, Akure; these belong to 40 different species (Table 1). *Manihot esculenta* (Cassava) had the highest occurrence (50) followed by *Ficus thonningii* with 41 level of occurrence, *Alchornea cordifolia* (40) while *Bambusa*

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vulgaris, *Chrysophyllum albidum*, *Gliricidia sepium*, *Mangifera indica* and *Mikania cordata* were the plants with least frequencies of 1 level of occurrence respectively. Different plants have different forms and this shows the taxonomic description of the plants. From the survey, difference of plant forms were also revealed in (Table 1), this ranges from tree, shrub, palm and herbs, and the result showed that most of the medicinal plant surveyed from the Wildlife Park have tree form and this accounted for 39 of the species, followed by shrubs (7) species and the least was recorded in herbs with (3) plants respectively.

From the results of the survey, the 40 individual medicinal plants encountered from the study site were distributed among 19 different families (Figure 1). The family Euphorbiaceae was most represented among all the 19 different families with 3 different species and this accounted for 30.83 % of the total species encountered at the Wildlife Park, while Malvaceae had 7 species (1.21 %). Meanwhile, Anacadiaceae, Fabaceae, Sapotaceae and Poaceae had only 1 single species each with 0.24 % (Figure 1).

Table 1. Taxonomy and frequency distribution of different medicinal plants encountered at the wildlife Park of Federal University of Technology, Akure

S/N	Scientific names of plants species encountered	English names	Family	Frequency	Plant form
1	*Albizia ferruginea* (Guill. & Perr.)	False thorn albizia	Fabaceae	8	Tree
2	*Albizia zygia* (DC.) J.F. Macbr.	Okuro	Fabaceae	10	Tree
3	*Alchornea laxiflora* (Benth.)	Three-veined bead string	Euphorbiaceae	37	Tree
4	*Alchornea cordifolia* (Schumach. & Thonn.) Müll. Arg.	Christmas bush	Euphorbiaceae	40	Tree
5	*Antiaris africana* (Engl.)	False iroko	Moraceae	26	Tree
6	*Antiaris toxicaria* (Lesch.)	False iroko, Antiaris	Moraceae	25	Tree
7	*Bambusa vulgaris* (Schrad. ex J.C. Wendl.)	Bamboo	Poacea	1	Shrub
8	*Baphia nitida* (Lodd.)	Camwood	Fabaceae	5	Shrub
9	*Blighia sapida* (K. D. Koenig)	Akee apple	Sapindaceae	4	Tree
10	*Bombax buonopozense* (P. Beauv.)	Red silk cotton tree	Malvaceae	2	Tree
11	*Canthium glabriflorum* (Hiern)	Ajelora	Rubiaceac	3	Shrub
12	*Ceiba pentandra* (L.) Gaertn.	White silk cotton tree	Malvaceae	3	Tree
13	*Celtis mildbraedii* (Engl.)	African celtis	Cannabaceae	6	Tree
14	*Chrysophyllum albidum* (G. Don)	African star apple	Sapotaceae	1	Tree
15	*Cola acuminata* (P. Beauv.) Schott & Endl.	Abata cola	Malvaceae	2	Tree
16	*Cola gigantea* (A. Chev.)	Monkey kola	Malvaceae	4	Tree
17	*Diospyros spp* (L.)	Ebony tree	Ebenaceae	2	Tree
18	*Elaeis guineensis* (Jacq.)	Oil palm tree	Palmae	20	Tree
19	*Fagara rubescens* (Planch. ex Hook. f.) Engl.	Ata	Rutaceae	23	Tree
20	*Ficus capensis* (Thunb.)	African mustard tree	Moraceae	8	Shrub
21	*Ficus exasperata* (Vahl)	Sand paper tree	Moraceae	2	Tree
22	*Ficus thonningii* (Blume)	Wild fig tree	Moraceae	41	Tree
23	*Funtumia africana* (Benth.) Stapf	Male funtumia	Apocynacea	4	Tree
24	*Gliricidia sepium* (Jacq.) Kunth ex Walp.	Gliricidia, Mexican-lilac	Fabaceae	1	Shrub
25	*Khaya ivorensis* (A. Chev.)	African mahogany	Meliaceae	4	Tree
26	*Lecaniodiscus cupanioides* (Planch. ex Benth.)	Mexican fireplant	Sapindaceae	12	Tree
27	*Mangifera indica* (L.)	Mango tree	Anacardiaceae	1	Tree
28	*Manihot esculenta* (Crantz)	Cassava	Euphorbiaceae	50	Shrub
29	*Mansonia altissima* (A. Chev.) A. Chev.	Mansonia	Malvaceae	2	Tree

30	*Milicia excelsa* (Welw.) C.C. Berg	Iroko tree	Moraceae	5	Tree
31	*Mikania cordata* (Burm. f.) B. L. Rob.	Climbing hemp-weed	Asteraceae	1	Herb
32	*Mimosa pudica* (L.)	Sensitive plant	Fabaceae	2	Herb
33	*Mitragyna inermis* (Willd.) Kuntze	African linden	Rubiaceae	4	Herb
34	*Musa spp* (L.)	Banana	Musaceae	4	Herb
35	*Myrianthus arboreus (*P. Beauv.)	Myrainthus/ Eweade	Urticaceae	2	Tree
36	*Newbouldia laevis* (P. Beauv.) Seem. ex Bureau	Tree of life/ Fertility tree	Bignoniaceae	11	Tree
37	*Phoenix dactylifera* (L.)	Date palm	Arecaceae	7	Tree
38	*Sterculia tragacantha* (Lindl.)	Sterculia	Malvaceae	13	Tree
39	*Terminalia superba* (Engl. & Diels)	White Afara	Combretaceae	6	Tree
40	*Theobroma cacao* (L.)	Cocoa tree	Malvaceae	10	Shrub
	TOTAL			**412**	

N/A= Not available

The species distribution of medicinal plant encountered in each temporary plot during the surveyed is as shown in Figure 2. The result revealed that temporary plot 5 had the highest numbers of species which means that the numbers of medicinal plant at the Wildlife park were more at the Temporary plot 5 and this made up about 23.70 % of the entire medicinal plants that were present at the Park, while temporary plot 2 was the next to the highest with 20.73 % of the medicinal plants that were present out of 100 %, however, the least species distribution was found in temporary plots 1 having only 12.20 %.

The result of Table 2 shows the families distributions, their frequencies and the relative density. It was revealed that out of 19 families encountered during the survey, Euphorbiaceae had the highest relative density than others with 30.83 %, followed by Moraceae with 25.24 %. Family Arecaceae had 6.55%, Rutaceae 5.58 %, Sapindaceae 3.88 % while the least was recorded in families Anacardiaceae, Compositae, Poaceae, and Sapotaceae with 0.24 % each of single species respectively.

Table 3 showed the medicinal values of 40 different medicinal plants encountered during the survey at the Wildlife Park of Federal University of Technology. The result revealed that the plants sampled have 54 different medicinal uses. This implies that the medicinal plants surveyed possess more than one medicinal value and benefit, and that the individual plant or in combination with others can be used to cure more than one disease. Some of the common diseases that plants are being used to cure as well as other uses of these plants are: anemia, asthma, blood tonic, Chewing stick, cough, dysentery, epilepsy, fertility regulation, fever, gonorrhea, hypertension, malaria, pain, small pox, stomach ache, toothache among others.

Table: 2. Family distribution of medicinal plants encountered at FUTA Wildlife Park

Serial /Number	Family	Relative Density (%)
1	Anacardiaceae	0.24
2	Apocynaceae	0.97
3	Arecaceae	6.55
4	Asteraceae	0.24
5	Bignoniaceae	2.67
6	Cannabaceae	1.46
7	Combretaceae	1.46
8	Ebenaceae	0.49
9	Euphorbiaceae	30.83
10	Fabaceae	0.24
11	Malvaceae	1.21
12	Moraceae	25.24

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13	Musaceae	0.97
14	Poaceae	0.24
15	Rubiaceae	1.7
16	Rutaceae	5.58
17	Sapindaceae	3.88
18	Sapotaceae	0.24
19	Urticaceae	2.18

Table 3. Ethnobotanical uses of medicinal plants at Wildlife Park of Federal University of Technology, Akure

S/N	Scientific names	Uses	Part used
1	*Albizia ferruginea* (Guill. & Perr.)	Dysentary, and constipation	Root, stem bark and Leaves
2	*Albizia zygia* (DC.) J.F. Macbr)	Arthritis, and Sprain	Bark
3	*Alchornea laxiflora* (Benth)	Chewing stick, venereal disease, and ring worm	Stem, roots, leaves
4	*Alcohornea cordifolia* (Schumach. & Thonn)	Fever, rheumatism, antimicrobial, and gonorrhea	Leaves, Stem bark, twig
5	*Antiaris africana* (Engl)	Epilepsy, Skin irritant, nervous disorder, purgative	Stem bark, root, sap
6	*Antiaris toxicaria* (Lesch.)	Dysentary, asthma and astringents	Stem bark, fruits and leaves.
7	*Bambusa vulgaris* (Schrad. ex J.C. Wendl.)	Gonorrhea, skin rashes, and malaria	Leaves and young shoots
8	*Baphia nitida* (Lodd)	Constipation, skin diseases, venereal diseases, ring worm enema, and small pox	Leaves, Stem bark and Roots
9	*Blighia sapida* (K.D. Koenig)	Malaria, migraine, and dysentary and easy labour	Leaves, Stem bark and fruits
10	*Bombax buonopozense* (P. Beauv.)	Stomachache, blood tonic, emollient, and asthma	Stem Bark, leaves, fruits and flower
11	*Canthium glabriflorum* (Hiern)	Cough, and mental disorders	Stem, rots and Leaves
12	*Ceiba pentandra* (L.) Gaertn	Diabetes, fever, gonorrhea, Syphilis; and emollient	Flowers, leaves, Stem bark and exudates
13	*Celtis mildbraedii* (Engl)	Fever, and dysmenorrhea	Roots
14	*Chrysophyllum albidum* (G. Don)	Fever, stomachaches, and antiperiodic	Stem bark, Leaves
15	*Cola acuminata* (P. Beauv.) Schott & Endl	Stimulant, fever, and malaria	Fruit nut
16	*Cola gigantea* (A. Chev.)	Whooping cough, asthma, malaria, pains, and fever	Leaves, Stem and Stem bark
17	*Diospyros spp* (L.)	Diarrhea, fertility regulation, Antibacterial, and anthelmintic	Roots, bark and stem
18	*Elaeis guineensis* (Jacq)	Malaria, mental disorder, diarrhea, asthma measles	Roots, palm oil, Stem bark and Kernel
19	*Fagara rubescens* (Planch. ex Hook. f.) Engl.)	Toothache, headache, backache, and general debility	Stem bark
20	*Ficus capensis* (Thunb)	Dysentery, oedema, leprosy, epilepsy,	Stem and Stem bark

		rickets, infertility, and increase lactation	
21	*Ficus exasperate* (Roxb)	Stomach disorder, scabies, gonorrhea, urinary ailments, jaundice	bark, leaves, roots and seeds
22	*Ficus thonningii* (Blume)	Wounds, fevers, and dysentery	Stem bark
23	*Funtumia africana* (Benth) Stapf	Constipation, wounds boils, weak bladder, and jaundice	Root, stem and leaves
24	*Gliricidia sepium* (Jacq.) Kunth ex Walp)	Skin itching, and scabies	Bark and Leaves
25	*Khaya ivorensis* (A. Chev.)	Malaria, jaundice, antihelmintic, skin diseases, anaemia	Stem, root and Stem bark
26	*Lecaniodiscus cupanioides* (Planch. ex Benth.)	Fever, burns, typhoid fever, jaundice and cough	Leaves, roots, seed and stem bark
27	*Mangifera indica* (L.)	Malaria, diarrhea, diabetes, skin problem, high blood pressure, asthma and cough	Leaves, stem and Stem bark
28	*Manihot esculenta* (Crantz)	Malaria, diarrhea, diabetes, skin problem, high blood pressure and cough	leaves, tuber and stem bark
29	*Mansonia altissima* (A. Chev.) A. Chev.)	Constipation, Leprosy, and aphrodisiac	Stem bark
30	*Milicia excelsa* (Welw.) C.C. Berg	antiseptic, rheumatism, insomnia, abdominal pain, and malaria	Roots, latex and Stem bark
31	*Mikania cordata* (Burm. f.) B. L. Rob.	Cough, bronchitis, rheumatic pains, urethritis, diuretic, malaria jaundice, and small pox	Leaves, sap and whole plants
32	*Mimosa pudica* (L.)	Guinea worm, pile kidney disease, and boils	Leaves
33	*Mitragyna inermis* (Willd.) Kuntze	Gonorrhea, dysentery, leprosy, and diuretic	Stem bark
34	*Musa spp* (L.)	Jaundice, mental disorder, typhoid fever, and malaria.	Leaves fruits
35	*Myrianthus arboreus* (P. Beauv)	Dysentery, anthelmintic, cough, anti-tumur	Stem bark
36	*Newbouldia laevis* (P. Beauv.) Seem. ex Bureau	Dysentary, roundworm, malaria, migraine, infertility, and convulsion	Bark, leaves and roots
37	*Phoenix dactylifera* (L.)	Genito-urinary disorders, cough asthma fever	Fruits, sap and leaves
38	*Sterculia tragacantha* (Lindl)	Malaria, snake bite, antimicrobial, fever, boils and diarrhea	Stem bark and roots
39	*Terminalia superba* (Engl. & Diels)	Hypertension, and dysentery	Stem Bark and Leaves
40	*Theobroma cacao* (L.)	Malaria, blood supply, and soap	Leaf, root, Stem bark and pod

5. DISCUSSION

This study revealed that there are 40 different medicinal plants in the study area which falls into 19 different families. The result of this present study is similar to that of (Oni 2010) who reported 48 different medicinal plants in his study and a total frequency of 104 which falls into 25 different families. The reason why the result of this study was higher in frequency may be due to the environmental differences, this study was carried out in re-growth forest ecosystems while that of Oni (2010) was on a fallow land. Also, Prayaga *et al.* (2012) identified 40 medicinal plants which are used by the tribal people of North Coastal Andhra Pradesh, which is also similar to this present study. Some of the identified species in this study were also similar to what other scientists identified during their medicinal enumerations. For example (Okigbo *et al*., 2009; Oni 2010) identified species like *Albizia ferruginea*, *Alchornea cordifolia*,, *Bombax buonopozense*, *Ficus capensis*, *Milicia excelsa* in their studies which were also identified in this study.

Therefore, the result of this study shows the importance of these plants in ethnomedicine thereby reveal there need to proper attention and their conservation.

It was noted that in almost all plant species identified, leaves, roots and bark were the most common plant parts used in curing any of the diseases. This finding is similar to the one of Giday *et al*. (2003); Wondimu *et al.* (2007) reporting the common use of leaves and roots in in traditional medicine. The use of leaves, roots, stem and barks in most herbal preparations can be attributed to the fact that these organs are known to accumulate in high concentrations and are the active components of most herbal preparations. This is due to the active ingredient of alkaloids, tannins and insulin that are present in these material and they are responsible for curing disease in human (Okoegwale & Omefezi 2001).

Virtually all trees identified in the different families are useful in one way or the other in the lives of the rural population. Most species serve more than one functions. For example, in some instances two or more plants are used jointly. According to Igoli *et al.* (2005), joint use of multiple medicinal plants could be due to historical observation of synergistic or additive effects of constituents. Results of this study revealed that *Albizia ferruginea, Antiaris toxicaria, Blighia sapida, Ficus carpensis* and *Mitragyna inermis* can serve the same purpose in curing dysentery. Moreover, amongst the most common ailments that can be managed with these plants are diabetes, hypertension, fever/malaria and fertility problems. Some of these plants have also been reported to be effective in the treatment of several other diseases (Sofowora 1984; Anselm-Addodo 2000; Ugbogu and Odewo, 2004). This is suggestive of the economic values and richness of the fallow plot in terms of potential for source of medicinal plant raw materials for the pharmaceutical industries. The advantage of this source is that plants if adequately managed are renewable (Mgeni 1991).

6. CONCLUSION

The result of this study revealed forty (40) species of medicinal plants belonging to 19 families were recorded in Federal University of Technology, Akure Wildlife Park. Among these are *Albizia ferruginea, Antiaris toxicaria, Blighia sapida, Ficus carpensis* and *Mitragyna inermis*, they are used in treatment of diseases like malaria, diabetes, dysentery and fertility issues. Since these plants are useful in ethno botanical studies, it is important to ensure their sustainable utilization. The advantage of this source is their renewability if well managed. Not only such scientific studies can lead to possible discoveries of novel pharmacologically active compounds, but also such discoveries can be an inducement for preservation of the forest region. More so, ethnomedicinal surveys or surveys of medicinal plants used by traditional medicinal practitioners can form a rich source of data for knowledge about medicinal plants and the ailments for which they are used. These data will provide the necessary background and save the potential researcher from fruitless research in modern scientific inquiries about the disease-curing properties of any particular plant particularly those that are coming to the study area. Furthermore, deliberate efforts should be made in large scale surveys with a view to identifying more of such medicinal plants in various forests and fallows ground in other to map out conservation strategies.

REFERENCES

[1] Anselm-Addodo, O.S.B. 2000. Nature Power: A Christian Approach to Herbal Medicine (3rd Edition) Don Bosco Printing Press Araromi Street Akure, Ondo State p.290

[2] Balslev, H.J., B. Lateyn., T. Oligard, & A.Y. Holm-Nielsen. 1987. Composition and structure of adjacent un-flooded and flood plain forest in Amazonian Emador. Opera. Bot. 92: 37-57

[3] Bannister, K. 2006. Prophet River Ethnobotany: A report on traditional plant knowledge and contemporary concerns of the Prophet River First Nation. British Columbia: Prophet River First Nation; 54pp.

[4] Borins, M. 1995. Native healing traditions must be protected and preserved for future generations. Canadian Medical Association Journal. 153(9):1356-1357.

[5] Buenz, E.J. 2005. Country development does not presuppose the loss of forest resources for traditional medicinal use. Journal of Ethnopharmacology 100:118-123.

[6] Burkill, A.M. 2000. The useful plants of West Tropical Africa. Fam. A-D R. Bot. Gard. Kew. 1: 960

[7] Carvalho, A.R. 2004. Popular use, chemical composition and trade of Cerrado's medicinal plants (Goias, Brazil). Environment, Development and Sustainability, 6 (3): 307-316.

[8] Farnsworth, N.R., & D.D. Soejarto. 1991. Global importance of medicinal plants. In The Conservation of Medicinal Plants. Edited by: Akerele O, Heywood V, Synge H. Cambridge: Cambridge University Press, 25-51.

[9] Gbile, Z.O. 1984. Vernacular names of Nigerian plants (Yoruba) Forestry Research Institute of Nigeria, Ibadan, p 124.

[10] Giday, M., Z. Asfaw, T. Elmqvist, & Z. Woldu, 2003. An ethnobotanical study of medicinal plants used by the Zay People in Ethiopia. Journal of Ethnopharmacology. 85: 43-52.

[11] Hamilton, A.C., 2004. Medicinal plants, conservation and livelihoods. Biodiversity and Conservation 13, 1477–1517.

[12] Hutchinson J. & J.M. Dalziel. 1963. Floral of West Africa: Africa. Vol. II, Crown Agents, London.

[13] Igoli, J.O., O.G. Ogaji. T.A. Tor-Anyiin, & N.P. Igoli. 2005. Traditional Medicine Practice amongst the Igede People of Nigeria. Part II. African Journal of Traditional, Complementary and Alternative Medicines. 2 (2): 134 – 152.

[14] Iwu, M.M. 1993. Handbook of African medicinal plants London: CRC Press 449 pp.

[15] Keay, R.W.J. 1989. Trees of Nigeria. A Revised Version of 'Nigerian Trees' (Keay et al 1964) Clarendon Press, Oxford, 476 pp.

[16] Lawal, I.O., N.E. Uzokwe., A.B. Igboanuyo., A.F. Adio., E.A. Awosan., J.O. Nwogwugwu., B. Faloye, B.P. Olatunji., & A.A. Adesoya. 2010. Ethnomedicinal information on collation and identification of some medical plants in Research Institutes of Nigeria. Journal of Pharmacy and Pharmacology 4(1): 001-007.

[17] Leaman, D.J. 2006. Sustainable wild collection of medicinal and aromatic plants. In Medicinal and Aromatic Plants. Edited by: Bogers R.J, L.E. Craker., & D. Lange. The Netherlands: Springer. 97-107.

[18] Mgeni, A.S.M. 1991. A more efficient estate: Natural forest or plantation. In Pyatt. N & T. Williams (eds). Tropical Forestry: third world priorities versus Western concern pp.43-58.

[19] Nsor, O.A., M.I. Emmanuel., I.O. Arikpo., D.E. Kimboline., & E.E. Matthew. 2012. Photochemical and Nutritional profiles of Lasianthera africana, Heinsia crinata and Gongronema latifolium. New York Science Journal 5(3): 45-48.

[20] Okigbo, R.N., C.L. Anuagasi. & J.E. Amadi. 2009. Advances in selected medicinal and aromatic plants indigenous to Africa. Journal of Medicinal Plants Research Vol. 3(2), pp. 086-095,

[21] Okoegwale, E.E., & J.U. Omefezi. 2001. Some herbal preparations among the people of Isoko Clan of Delta State, Nigeria. Journal of Applied Science 4: 2350-2371.

[22] Oni, P.I. 2010. Ethnobotanical survey of a fallow plot for medicinal plants diversity in Idena village Ijebu-Ode, South-western Nigeria. Journal of Medicinal Plants Research Vol. 4(7), pp. 509-516.

[23] Prayaga, M.P., S.R. Duvvada., & V. Malleboyina. 2012. Study of some ethnomedicinal plants for treatment of dysentery of North Coastal Andhra Pradesh, India. International Journal of Biosciences, Vol. 2, No. 1, Pp. 18-24.

[24] Shinwari, Z. K. 2010. Medicinal plants research in Pakistan. Journal of Medicinal Plants Research. 4(3): 161-176.

[25] Sofowora, A. 1984. Medicinal plants and traditional medicine in Africa. John Wiley and sons, Chichester, New York, Brisbane and Toronto and Singapore p.289.

[26] Ugbogu, O. A., P. Odewo. 2004. Some medicinal plants in the traditional medicare of Nigeria. Journal of Forestry Resources and Management. 1(1&2): 29-34.

[27] Uprety Y., R.C. Poudel., H. Asselin., & E. Boon. 2011. Plant biodiversity and ethnobotany inside the projected impact area of the Upper Seti Hydropower Project, Western Nepal. Environment, Development and Sustainability, 13:463-492.

[28] Uprety, Y., H. Asselin., E.K. Boon., S. Yadav., & K.K. Shrestha. 2010. Indigenous uses and bio-efficacy of medicinal plants in the Rasuwa district, Central Nepal. Journal of Ethnobiology and Ethnomedicine. 6(3).

[29] WHO (World Health Organization), 2011. The world medicines situation 2011. Traditional Medicines: Global situation, issues and challenges. WHO press, Geneva, Switzerland. http://www.who.int/medicines/areas/policy/world_ medicines_ situation/WMS_ch18_wTraditionalMed.pdf; accessed on 22 July 2011.

[30] WHO, 2002. WHO Traditional Medicine Strategy 2002- 2005. World Health Organization, Geneva, Switzerland.

[31] Wondimu, T., Z. Asfaw., & E. Kelbessa. 2007. Ethnobotanical study of medicinal plants around 'Dheera' town, Arsi zone, Ethiopia. Journal of Ethnopharmacology. 112: 152-161.

[32] World Bank, 1997. Medicinal plants; rescuing a global heritage. Washington, D. C. 20433, USA.