HERBAL MEDICINE: A KEY DRIVER TOWARDS GREEN ECONOMY IN SOUTHWEST NIGERIA

Osunderu, O. A.

Forestry Research Institute of Nigeria (FRIN), Ibadan, Nigeria,
oaoluwakemi@gmail.com

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Abstract

In a recent study conducted amongst Traditional Medicine Practitioners (TMPs) in Ogun and Lagos States, Southwest Nigeria, it was confirmed that herbal medicines are beneficial because medicinal plants are used to address the twin challenge of promoting sustainable livelihoods and treating numerous illnesses in Nigeria. Medicinal plants also contribute positively to the attainment of a befitting primary health care for the citizenry by achieving the millennium development goals on health. The study aimed to evaluate the economic value of forest products as major key drivers towards green economy in southwest Nigeria, particularly in Ogun and Lagos States. Primary data was obtained in a cross section survey of 127 (TMPs) and 100 respondents from the general public drawn by multistage sampling technique from the study area. Interview schedule was used in collection of data on the socio-economic characteristics of the TMPs and income from their activities. Descriptive and inferential statistics were used to analyse socio-economic variables and regression to identify variables contributing to income generation in the study area. Economic tools of Gini coefficient and budgetary analysis were equally used in the analysis to show income inequality in the market and profit making by TMPs. The contribution of forest products to the economy of southwest Nigeria was evaluated through income, profit and production cost. Seven different families of plants were identified; Annonaceae Rutaceae, Anarcardiaceae, Asteraceae, Meliaceae, Guttiferaceae and Leguminaceae which topped the list of TMPs priority list. Result of economic analysis shows that the net profit realized by the TMPs was ₦650 769.98 per annum while the rate of return was 280.08%. In addition, rate of return on investment was 180.08% indicating that the TMPs were making profit.It is therefore concluded that herbal medicine is a key driver towards green economy in Southwest Nigeria and there is a need for government to recognize and formulate policies that will maximize the medicinal properties of forest products.

Keywords: South-West Nigeria, Herbal Medicine, Forest Products, Market, Traditional Medicine Practitioners

Introduction

Forest products provide the basic raw material for the production of traditional medicines (FAO, 1987, 1995, 2005). The collection, processing and trade of medicinal plants provide employment and income opportunities for a large number of people in rural areas (*Marshall et al, 2003) and urban areas* (*Marshall and Hawthorne 2012)*. The sharp rise in popularity of traditional medicine has made the economic importance of these plants to increase enormously (Olapade, 2002). While the importance of medicinal plants is widely accepted, there is a serious dearth of comprehensive information on the economically important and threatened species in the developing regions of the world (Osunderu, 2017).

The study by the World Health Organization prompted the initial identification of 20000 species of medicinal plants and a more detailed investigation of a short list of 200 (WHO, 2006). A great many of these plants have their origins in the world's tropical forests and their present use is largely rooted in traditional medicines which play a major part in maintaining the health and welfare of both rural and city dwellers in developing countries.

Plants are the source of a large proportion of medicines (WHO, 2002). It has recently been estimated that there are about 400 000 species of higher or vascular plants (FAO, 2005) with economic uses. While not all of these are equally useful, studies suggest that somewhere between a quarter and a third of all species have been used for medicinal purposes by indigenous societies. The majority of Nigerians depend directly or indirectly on traditional health care (Odugbemi, 2008). Traditional medicine is patronized because it is easy to gain access to healers, treatments are cheap and it is convenient for patients who believe in traditional religion with observation of taboos (Sofowora, 1982). According to Adodo (2004) there is a need for the scientific community to sift out the fetish and superstitious issues from our inherited deposits of knowledge of traditional medicine without throwing away the truth which our people had developed over the millennia.

Poor forest management is largely due to poor funding, land tenure factors, lack of adequate research on the biology and ecology of species, and non-application of biotechnology to improve forest plants and meet market demands (FAO, 2005).

There is inadequate government involvement (policy and financing) in Nigeria to properly harness the nation's forest resources in promoting green economy and well being of Nigerians (Osunderu, 2008). In order to achieve the sustainable development goals; there is need for government to recognize and formulate policies that will maximize the medicinal properties of forest products. The development of herbal medicine vis-a-vis forest products will create markets and ultimately improve the lives of the people (traditional practitioners, cultivators/gatherers, hawkers, manufacturers of packaging materials) who depend on it as a source of livelihood, increase the income generated by the government and attract foreign investment. It will also contribute positively to the attainment of a befitting primary health care for the citizenry by achieving the sustainable development goals on health.

The aim of this study is to evaluate the economic value of forest products as major key drivers towards green economy in South-West Nigeria, particularly Ogun and Lagos States.

Materials and Methods

Area of Study

The study areas are Ifo, Abeokuta South and Ijebu Northeast in Ogun State. Also, Alimosho, Mushin and Lagos Island in Lagos State.

Participant Recruitment

Within the 2 study areas,127 traditional medicine practitioners (TMPs) and 100 participants from the general public were recruited using multistage sampling technique. The first stage involved purposive selection of 3local government areas (Ifo, Abeokuta South and Ijebu Northeast) given the prominence of traditional medicine practice and utilization of traditional medicine products according to the Ogun State Board of Traditional Medicine Practitioners and Ogun State Directorate of Hospital Services. Also, 3local government areas (Alimosho, Mushin and Lagos Island) were selected in Lagos state. The selection was based on the prominence given to traditional medicine practice and utilization of traditional medicine products according to the Lagos State Board of Traditional Medicine Practitioners. 30 wards were sampled in each state as the second stage employed random selection of 10 wards in each of the 3 selected local government areas using the list of wards available at the offices of the Independent National Electoral Committee in Ogun and Lagos respectively. The third stage involved random selection of TMPs in each of the 30 wards making a sample size of 127.

Data Collection

Primary data collected included among others, the socio-economic characteristics such as, age, gender, state of origin, occupation, marital status, religion, ethnicity, language understood, method of diagnosis and educational level. The questions asked were both open- and close-ended. Data that were collected were used to compute the cost and returns/profit and income from medicinal plants and the treatment of diseases.

Analytical Tools/Techniques

Data collected for this research work were analysed using the following analytical tools.

(i) **Descriptive Statistics:** Frequency and percentage as well as mean (average) were adopted to describe the socio-economic characteristics of the TMPs within the study area.

(ii) **Budgetary Analysis:** Analysis of costs and returns was used to estimate the costs and returns while gross margin and net margin as well as rate of returns to investment were used to measure the economies of traditional medicine practice in the study area. Variables cost items included: cost of treatment, cost of production. The fixed cost items were also estimated.

(iii) **Regression Analysis:** Regression analysis is a statistical tool for estimating the relationships among variables.

Results

Table 1 shows the distribution of the species in relation to the source, availability status, parts of the plant used, form of the plant used and the species regeneration in the study area. The life forms of these plants (Table 1) shows that the trees constitute the highest number (66%), followed by shrubs (20%), herb (11%) and rhizome (3%). In all, the family Leguminosae was dominant with 4 species. This was followed by Euphorbiaceae, Caesalpinioideae, Annonaceae and Anacardiaceae (3 species each). The existence of other plant families in Table 3 demonstrates the rich forest diversity in Southwest Nigeria. This also shows the dynamism in ecosystem maintenance. A number of these medicinal plant species, which include *Mangifera indica*, *Anacardium occidentalis, A*, *Citrus medica, Vernonia amygdalina*, *Musa sapientum,* etc. also serve economic purposes and are consumed as food in one way or the other (*Marshall and Hawthorne (2012*).

S/No	Local Name	*Species*	Family	Floral Type	Source	Status of Availability	Parts used
1.	Eru	*Xylopiaaethiopica* (Dunal) A. Rich	Annonaceae	Tree	Free areas	Abundant	Fruit, branches
2.	Oganwo	*Khayaivorensis* A. Chev.	Meliaceae	Tree	Free areas	Rare	Stem, Branches Bark
3.	Mango	*Magniferaindica* Linn.	Anacardiaceae	Fruit Tree	Free areas, Forest, plantation	Abundant	Leaves, fruits, bark, branches, stem
4.	Kasu	*Anacardiumoccidentalis* L inn	Anacardiaceae	Fruit Tree	Free areas, Farmland, forest, plantation	Abundant	Fruits, branches, stem
5.	Iyeye	*Spondiasmombin* Linn.	Anacardiaceae	Fruit Tree	Farmland, Free areas, forest	Abundant	Fruits, bark
6.	Abo	*Annonasenegalensis* Pers	Annonaceae	Shrub	Free areas, forest	Abundant	Leaves, fruits, stem
7.	Ahun	*Alstoniaboonei* De Wild	Apocynaceae	Tree	Free areas, forest	Scarce	Leaves, bark, root
8.	Osanwewe	*Citrus medica* Linn.	Rutaceae	Shrub	Free areas, forest	Abundant	Leaves
9.	Oruwo	*Morindalucida* Benth.	Rubiaceae	Tree	Free areas, forest	Abundant	Leaves
10.	Oori-nla	*Vitexdoniana* Sweet	Verbenaceae	Tree	Free areas, forest	Abundant	Fruit, leaves
11.	Osopupa	*Enantiachlorantha* Oliv.	Annonaceae	Tree	Free areas, forest	Abundant	Bark
12.	Owu-elepa	*Piliostigmathonningi* Miln e Redhead	Leguminosae Sub: Mimosoidae	Shrub	Free areas, forest	Abundant	Leaves
13.	Putu	*Ricinodendronheudelotii* (Baill) Heckel	Euphorbiaceae	Tree	Free areas, forest	Abundant	Leaves, bark
14.	Opoto	*Ficussur* Forssk.	Moraceae	Tree	Free areas, forest	Abundant	Fruit, bark
15.	Asasa	*Margaritariadiscoidea* (Baill.) G.L.Webster	Euphorbiaceae	Tree	Free areas, forest, dry outliers	Scarce	Leaves, branches, stem, bark, roots
16.	Dongoyaro	*Azadirachtaindica* A. Juss	Meliaceae	Tree	Free areas, plantation	Abundant	Leaves, branches, stem
17.	Atare	*Afromomummeleguata* Lin dl.	Zingiberaceae	Shrub	Free areas, forest	Abundant	Fruits
18.	IgiFurutu	*Terminaliacatappa* Linn	Combretaceae	Tree	Free areas,	Abundant	Leaves, fruit,
19.	Apa	*Afzeliaafricana* (Smith) Sm.	Leguminosae Sub: Caesalpinioideae	Tree	Forest area, forest	Scarce	Branches, stem, bark, root
20.	Oboo	*Erythrophleumsuaveolens* (Gull. and Perr.)	LeguminosaeSub: Caesalpinioideae	Tree	Forest	Scarce	Leaves, branches, stem, bark, root
21.	Asofeyeje	*Rauvolfiavomitria* Afzel	Apocynaceae	Tree	Free areas, forest	Abundant	Leaves, fruit, bark, root
22.	Omo	*Cordiamillenii* Bak.	Bignoniaceae	Tree	Free areas, forest	Scarce	Leaves, branches, stem
23.	Ewuro	*Vernoniaamygdalina* (Sch reb) Del.	Asteraceae	Tree	Free areas, forest	Abundant	Leaves, branches, bark, root
24.	Ope	*Elaeisguinensis* G. Don.	Palmae	Palm Tree	Swampy areas, forest,	Abundant	Frond, exudate, bark
25.	Iya	*Daniellaoliveri* Rolfe	Leguminosae Sub: Caesalpinioideae	Tree	Savannah forest, re growth	Abundant	Branches, stem, bark, root

26.	Ataile	*Zingiber officinale* Rossae.	Zingiberaceae	Herb	Free areas, forest	Abundant	Rhizome
27.	Ayan	*Distemonanthus benthamianus* Benth	LeguminosaeSub: Caesalpinioideae	Tree	Forest	Abundant	Leaves, branches, stem, bark, root
28.	Isekotu	*Sida acuta*	Malraceae	Herb	Forest\wild, cultivate	Abundant	Leaves, branches, stem, root
29.	Tana'poso	*Mirabilis nyctaginea*	Nyctaginaceae	Herb	Forest\wild, cultivate	Abundant	Leaves, bra nches, stem, root
30.	Orin Ata	*Zanthoxylum zanthoxyloides*	Rutaceae	Herb	Forest\wild, cultivate	Abundant	Branches, stem, bark, root
31.	Imiesu	*Agerantum conyzoides*	Compositae	Shrub	Wild	Abundant	Leaves, branches, stem, root
32.	Ayu	*Allium sativum Linn*	Liliaceae	Rhizome	Forest\ cultivate wild,	Abundant	Leaves
	Sun	*Helianthus*					
33.	Flower	*annuus*	Asteraceae				Leaves, stem,
				Shrub	Forest/wild,	Abundant	
34.	Ewe Akintola	*Chromolaena odorata*	Euphorbiaceae		cultivate		Leaves, stems, root
		Vitellaria paradoxa		Shrub	Forest\wild, cultivate	Abundant	Fruit
35.	Ori	*Vitellaria paradoxa*	Sapotaceae				
		Saccharum officinarum		Tree	Forest\wild, cultivate	Abundant	Leaves, stems,
36.	Ireke		Poaceae				roots
				Shrub	Forest/wild, cultivate	Abundant	
		Piper guineensis					Leaves, stems,
37.	Kanafuru	*Garcinia koli*	Piperaceae		Forest\wild,		roots, fruits
38.	Orogbo		Guttiferae	Shrub	cultivate	Abundant	Fruits, Leaves
				Tree	Forest\wild, cultivate	Abundant	

Table 1 shows that majority of the TMPs source their medicinal plants from free areas and rarely cultivate them. Some of the plants are already scarce and species regeneration is by wilding.

Table 2: Regression Analysis Result to Determine Demographic Factors that Affect the Profit of the Traditional Medicine Practitioners

Variables	Linear Model	Semi log Model	Double log Model
(Constant)	-191633.751	-6120497.800***	3.015***
	(-0.863)	(-7.560)	(7.520)
Number of Patients Received	5668.860**	1.154*	0.102**
	(2.046)	(1.671)	(2.218)
Total Cost of Production	0.781***	724844.917***	0.321***
	(3.659)	(5.356)	(4.627)
Age	12712.758***	1351390.068***	0.614***
	(2.770)	(3.144)	(2.954)
Years of Experience	17349.115**	821488.191**	1.134*
	(2.108)	(2.373)	(1.837)
State of Origin	0.989	0.976	1.052
	(-0.151)	(-0.335)	(0.689)
Occupation	1.041	1.030	1.015
	(0.559)	(0.415)	(0.219)
Gender	1.048	1.022	1.036
	(0.647)	(0.307)	(0.500)
Marital Status	1.073	1.091	1.094
	(0.969)	(1.177)	(1.268)
Religion	1.015	1.009	1.052
	(0.216)	(0.127)	(0.745)
Educational Level	0.890	0.918	0.918
	(-1.643)	(-1.227)	(-1.264)
R^2	0.404	0.394	0.437
Adjusted R^2	.385	0.379	0.423
F-statistics	20.717	26.622	31.841

Dependent Variable: Profit
*** *- significant at 1% level*
** *- significant at 5% level*
* *- significant at 10% level*
Computed t-values in parenthesis

Inferential Statistics Results for TMPs in South-West Nigeria

Inferential Statistics is used to further achieve the objectives of the study. Table 3 is the result of the regression analysis showing the relationship between the profit of the TMPs and their demographic data. 3 functional forms of production model including linear, semi-log and Cobb-Douglas (double-log) functions were fitted for the regression analysis. This was done to select the function which gave the result with the best fit. The estimated functions were evaluated in terms of the statistical significance of the coefficient of multiple determination (R^2) as indicated by F-value, the significance of the coefficients and the magnitude of the standard errors. The F-value measures the goodness of fit of the model. Based on these statistical and economic criteria, Cobb-Douglas functional form was selected as the lead equation. The R^2 obtained for the Cobb-Douglass (0.437) shows that 43.7% of the variation in the profit of the TMPs were explained by the included explanatory variables, while the remaining 56.3% unexplained was due to the variables not included in the model which was the error term. Number of patients received, total cost of production, age of the practitioners and their years of experience are the significant factors influencing the profit of the practitioners; each of these variables has positive sign, which suggests that an increase in these variables would lead to an increase in the profit of the practitioners.

Table 3: Regression Analysis Showing Relationship between some Selected Factors and the Profits of the Traditional Medicine Practitioners

Variables	Coefficients	t – values
Constant	-15021498.169	2.526**
Number of patients treated	41022.624	1.331
Number of relatives affected	5605.058	.051
Number of people dead	-49103.012	-.354
Number of patients per year	506016.983	2.106*
Number of people referred	-531373.962	2.514**
Duration of treatment	1283050.431	2.761**
Remedy shelf-life	246731.646	2.676**
Method of production	762933.303	1.599
Daily Application	793581.374	2.018**
Time of Harvest	1369993.310	3.450***

Dependent Variable: Profit

*** - significant at 1% (p<0.01) level
** - significant at 5% (p<0.05) level
* - significant at 10% (p<0.1) level

Table 3 gives the regression analysis result showing the relationship between the profit of the TMPs and some selected variables other than the demographic data of the practitioners. Number of patients per year, duration of treatment, remedy shelf-life, daily application, and time of harvest are shown to have significant positive influence on the profit of the TMPs, which suggests that an increase in these variables would lead to an increase in the profit of the TMPs. However, number of people referred is shown to have a significant negative influence on the profit suggesting that the more that number of people referred by the TMPs the lesser their profits just as it would be expected.

Budgetary Analysis

Table 4 : Annual Average Costs and Returns Analysis

Item	Value
Total Revenue (TR)	**₦1012142.86**
Total Cost (TC)	₦361372.88
Net Profit(NP)	₦650769.98
Rate of Return (ROR)	280.08%
Rate of Return on Investment (RORI)	180.08%

Result of the economic analysis shows minimal competition in the anti-cancer forest product market and a high level of monopoly with a Gini coefficient of 0.83 (Table 8). Net profit was ₦650769.98 (Table 7).Table 7 also shows rate of return (280.08%) and the rate of return on investment (180.08%)indicating that the TMPs are making profit.

Discussion, Conclusion and Recommendation

Discussion

The identification of seven species belonging to different families; Rutaceae, Asteraceae, Anarcardiaceae, Annonaceae, Meliaceae and Guttiferaceae in this study is in consonance with the report of FAO (1987) and Odugbemi (2008) which provide detailed information on important medicinal plant species in Nigeria. Despite these large numbers, relatively few species are cultivated commercially on a large scale, as is the case, for example, with ginseng, echinacea, and ginkgo.

The bulk of the traditional medicine in Nigeria is prepared from plants and less than 5% of medical preparations come from soil minerals, domestic and wild animal sources. Medicinal plants are commonly traded in open markets. These plants and their products are derived from natural forests inform of tree barks, roots, leaves, flowers, fruits and exudates. Trade in medicinal plants is a huge economic activity which supports an estimated population of over 50 million Nigerians on regular basis (Odugbemi, 2008).

The list of plants used by the TMPs are in consonant with earlier reports (Adekunle, 2001; Dipe, 2004 and Olapade, 2002), who have reported the extensive use of plants by the Yorubas as a group. The supply of medicinal plants and other forest products have contributed immensely to the traditional health care and income to stakeholders in the traditional health care sector (Danesi and Adetunji (1995).

Arnold and Perez (2005) reported that availability of medicinal plants particularly of choice species in medical preparations has been a determining factor to the prices of traditional health care delivery. Forest products exploitation from the study area was mainly wild stocks where the species occur naturally in the forest. This has resulted into special investment problems with medicinal plants because most medicinal species, which might seem worth developing as new crops, are undomesticated as reported by Osunderu (2008).

The study shows that majority of the TMPs rarely cultivate medicinal plants but source them from free areas such that some of the plants are already scarce because species regeneration is by wilding. According to the reports by Amakiri (1995)and Agbede *et al*(2004) , the Nigerian ecosystems are at greater risk of extinction if urgent attention is not given to the cultivation of medicinal plants. 90 % of the TMPs use the whole plant for treatment– they make use of the fruits, stems, barks and leaves at the same time. The forest products used for the treatment of diseases are multipurpose; they are used as firewood, medicine, foods, chewing sticks and animal feeds (*Agerantumconyzoides*). This corroborate the work of Adekunle (2001).

90 % of the TMPs use the fresh and dry forms of the forest products; afterwards they use water to soak or boil them. As similarly reported by (Adodo, 2003; 2004; 2005), the TMPs make juices from plants like *Citrus medica, Morindalucida, Vernoniaamygdalina, Sidaacuta and Agerantumconyzoides.*

Conclusion:

Budgetary analysis which is the annualaverage costs and returns analysis shows a total revenue (TR) of ₦1012142.86, Total Cost (TC) of ₦361372.88, net profit (NP) of ₦650769.98, rate of return (ROR) of 280.08% and a rate of return on investment (RORI) of 180.08%. This finding is in conformity with the work of Giovanni and Paulo (2005) and the results obtained by other researchers on the profitability and efficiency of agricultural and forestry products (Agbede*et al.,* 2004; Aiyeloja and Ajewole*,* 2006). This further shows that revenue generation on herbal medicine is huge and herbal Medicine is a key driver towards green economy not only in Southwest Nigeria but the whole of sub-Saharan Africa,

Recommendations

- The study shows that biodiversity resources market in Nigeria is monopolistic. It is dominated by a very few old but well-experienced players. The regression analysis also shows that age, educational status, and years of experience all contribute to the profits of the TMPs; therefore, the government should encourage the youth to engage in the practice by providing an enabling environment such as education and incentives.

- All operators in the sector should be mandated to declare the source of purchase of medicinal plants to the relevant authorities as this will help in biodiversity conservation. It will also help legalization of the production contracts, thereby protecting the interests of primary producers.

- The forests should not be harvested beyond their annual yields in order to prevent the devastation of the resource base. The forests where medicinal plants are harvested are under traditional management regimes within the framework of common property utilization. Unfortunately, these natural forests lack planned conservation practices despite the huge quantity of medicinal plants harvested on annual basis.

References

Adekunle, A. A. (2001). Ethnobotanical studies of some medicinal plants from Lagos State, Nigeria. Nigerian Journal of Botany.

Adodo, A. (2003). The Healing Radiance of the Soul: A Guide to Holistic Healing. Agelex Publications, Nigeria.

Adodo, A. (2004) Nature and Power: A Christian Approach to Herbal Medicine. Benedictine Pub. Nigeria. 289p

Adodo, A. (2005) New Frontiers in African Medicine. Pax Herbalclinic Nig. Ltd. Ewu Edo State.199p.

Agbede, O.O., Idris, M. B., Rahman, S. A., An, M. M., Ogara, I. M. and Asumugha, G.N. (2004). Mobilizing Investors for Sustainable Agricultural Research Development and Production in Nigeria: In Proceedings of the 38th Annual Conference of the Agricultural Society. Held at the College of Agriculture, Lafia, Nasarawa State, Nigeria.

Aiyeloja, A. A. and Ajewole, O. I. (2006). Non-Timber Forest Products' Marketing in Nigeria. A Case Study of Osun State.An Education Research Paper. http://www.academic journals.org/ERR].

Amakiri, M. A. (1995): Proceedings of the 24th Annual Conference of the Forestry Association of Nigeria, Kaduna.

Arnold, M.J.E. and Perez, M. R. (2005). Ecological Economics: Can Non-Timber Forest Products match tropical forest conservation and development objectives? Universidad Autonoma de Madrid and CIFOR Research Associate, 28049 Madrid, Spain.

Bellù, Lorenzo Giovanni &Liberati, Paolo, 2005 'Social Welfare Analysis of Income Distribution: Ranking Income Distributions with Generalised Lorenz Curve."MPRA Paper 30108, University Library of Munich, Germany.

Danesi M.A. andAdetunji J.B. (1994). Use of alternative medicine by patients with epilepsy: a survey of 265 epileptic patients in a developing country. *Epilepsia* 35:344–51. doi: https://doi.org/10.1111/j.1528-1157.1994.tb02442.x

Dipe, D.D. (2004). The principles and practice of Naturopathic medicine. Qualitex Print Communication Nig. Ent., Lagos.261p.

FAO (1987). Forest Products Yearbook, 1987.

FAO (1995): Report of the International Expert Consultation on NTFP. Rome.

FAO (2005): The Support Role: The Use of Forest Resources in other Production Sectors. World Bank Publication, 2004 — 2005.

Lwanga, S. and Lemeshow, S. (1991)Sample size determination in health Studies: a practical manual. World Health Organization, Geneva. pp. 23–30.

Marshall, C.A. and Hawthorne, W. (2012). Regeneration ecology of the useful flora of the Putu Range Rainforest, Liberia. Economic Botany 66:398–412.

Marshall, E., Newton, A.C.and Schreckenberg, K.(2003). Commercialisation of non-timber products: First steps in analysing the factors influencing success. International Forestry Review 5:128–137.

Odugbemi, T. (2008). A Textbook of Medicinal Plants from Nigeria. University of Lagos Press, Lagos, Nigeria, Pages: 628

Olapade, E.O. (2002). The herbs for good health.The 50thAnniversary Lecture of University of Ibadan. Nature cureseries.Vol 3.230p.

Osunderu, A.O. (2008). Sustainable Production of Traditional Medicine in Africa; Appropriate Technologies for Environmental Protection in the developing World. (Ed.) Yanful, E.K. Publisher: Springer, pp 45 – 51.

Osunderu, O. (2017). Medicinal and Economic Values of Forest Products in the Treatment of Cancer in Southwest Nigeria. Nat Prod Chem Res Vol5.Issue6. 1000288.ISSN:2329-6836

Sofowora, A. (1982): Medicinal plants and traditional medicine in Africa, *John Wiley and Sons* 266pp.

WHO (1991) Basic laboratory methods in medical parasitology. In Basic Malaria Microscopy, Part I, World Health Organization, Geneva.

World Health Organization. 2002. Traditional medicines – Growing Needs and Potential. WHO policy respective on Medicine, Geneva (WHO/EDM/2002. 4).

World Health Organization. 2006. WHO report on traditional medicine, my documents/WHO traditional medicine.htm 15/06/2006.