

Ethnobotanical Survey of Some Medicinal Plants for Curing Pile or Hemorrhoids in Ago-Owu Forest Reserve, Osun State Nigeria

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Abstract

Ethnobotanical Survey of some medicinal plants for curing pile or hemorrhoids was conducted in selected villages around Ago-Owu forest reserve, Osun State Nigeria. A reconnaissance survey was done. Five villages were randomly selected, namely; Arinkinkin, Okodowo, Alaadura, Agbaogun and Alaguntan. Questionnaire copies were administered to a group of people namely; hunters, farmers, herbalists, civil servants and other professionals in each village. The total number of respondents in Arinkinkin, Okodowo, Alaadura, Agbaogun and Alaguntan were 30, 15, 23, 20 and 22 respectively. The result showed 20 medicinal plants for curing the ailments. Ten medicinal plants identified by the respondents were randomly collected and chemically screened for their chemical constituents including alkaloids, tannins, saponins, flavonoids and polyphenols. The medicinal plants investigated were *Ficus exasperata*, *Agerantum conyzoides*, *Paullina pinnata*, *Mormordica charantia*, *Senna alata*, *Newbouldialaavis*, *Phyllanthus amarus*, *Sphenocentrum jollyanum*, *Cassampelos owariensis* and *Ocimum gratissimum*. All the plants contain percentage yield of alkaloids (ranging from 0.0075% to 0.02%), tannins (0.02% to 0.44%), saponins (0.001% to 0.002%), flavonoids (0.02% to 0.57%) and polyphenols (0.11% to 1.85%). The nutritional values of the phytochemicals were also assessed. It revealed that the plants contained crude protein (14.57% to 29.37%), moisture content (14.40% to 58.09%), crude fibre (4.54% to 29.05%), ash (6.65% to 22.08%) and carbohydrate (2.04% to 43.60%). It showed that they are highly nutritious, anti-viral, anti-microbial, anti-bacterial, anti-parasitic, anti-inflammatory, expectorant and immune against diseases.

Keywords: Ethnobotanical, pile, hemorrhoid, ailments, medicinal plants, phytochemicals

Introduction

Plants are created by God for man's use. Plant thus created have provided man with an array of products crucial to socioeconomic life (FAO, 1990). Kafaru (1994) reported that the use of plant for medicine dates back to the time of early man, who had crudest tools as he implements and used stones to start his fire. Studies had shown that Nigeria and in fact, the tropical world is endowed with abundant forest land rich in valuable plants and raw materials (Soladoye et al, 1993). About 70-80% rural population depends on medicinal plants for health care (Ripu and Nirman, 1980). Cox and Balick (2008), Kasperek (1997) reported that when modern health care fails, the patient frequently turns to use of indigenous healthcare. Hence Nigerians, including the urban dwellers who had once rejected the efficacy of the traditional medicine, a shifting base of medicinal plants (Adodo, 2004).

However, the efficacy and potential of medicinal plants have been studied by several scientists and authors. Ugbo and Odewo (2004) identified some plants that cured about 17 ailments among which are malaria, cough, hemorrhoids, anemia and skin diseases. Sofowora (1993) listed 56 medicinal plants and their essential active constituents, while Gbile (1990) indicated some plants such as *Mangifera indica* Linn., *Newbouldialaavis* (P.Beas) Seem. ex Bureau, *Allophylus africanus* P.Beav., *Anchomanes difformis* Keay, *Waltheria indica* Linn.; *Ocimum gratissimum* Linn. among others to cure ailments like malaria, diabetes, convulsion, stomach upset, glandular disorder and fontanel in infants. However, medicinal plants with their great potential have even solved a lot of problems. One of such problems is pile.

Piles or hemorrhoids is varicosities of the veins of the haemorrhoidal plexus, often complicated by inflammation, thrombosis and bleeding (Bharat, 2011). It is also a vascular cushion, consisting of thick submucosa containing both venous and arterial blood vessels. The word hemorrhoid is derived from the Greek "haema" meaning blood and "rhoos" meaning flowing. The word pile is derived from Latin meaning a ball or a mass (Sofowora, 1993). Piles or hemorrhoids are a common ailment among adults. The ailment affects nearly 5% of the world population (Bharat, 2011). More than half of men and women aged 50 years and older develop hemorrhoid symptoms during their lifetime. This ailment disrupts day to day life activities. One of the symptoms showed by the pile or hemorrhoids is stool passage that will appear like a daunting task and painful when you indulge in bowel movements (Kasperek, 1997, Adodo, 2004). Apart from burns and itches, some individuals might also pass blood while excretes waste. However, according to Adodo (2004) several botanical extracts have been shown to improve microcirculation capillary flow, vascular tone and strengthen connective tissue of the perivascular amorphous substrate. Therefore this paper examined some medicinal plants that can be used in treating piles or haemorrhoids as well as their active constituents present in them.

Methodology

Study Area

Ago-owu forest reserved is one of the functional forest situated under Isokan local Government, Osun state Nigeria. Ago – Owu forest reserved is situated in the extreme south of Irewole local government area of Osun state approximately latitudes $7^{\circ} 8'$ and $7^{\circ} 11'$ North and longitudes $4^{\circ} 5'$ and $4^{\circ} 23'$ East. The land area was originally 307.25 but later approximately 35.22km was de reserved by then Government of Oyo state to the Coco Development unit, which was named Ago – Owu farm settlement. The working area now remains approximately 272.03km. The vegetation is mainly of the high forest type. The major occupation of the people in the area are farming, trading, sawmilling and civil servicing. (Agbeja, and Ladepo, 1997).

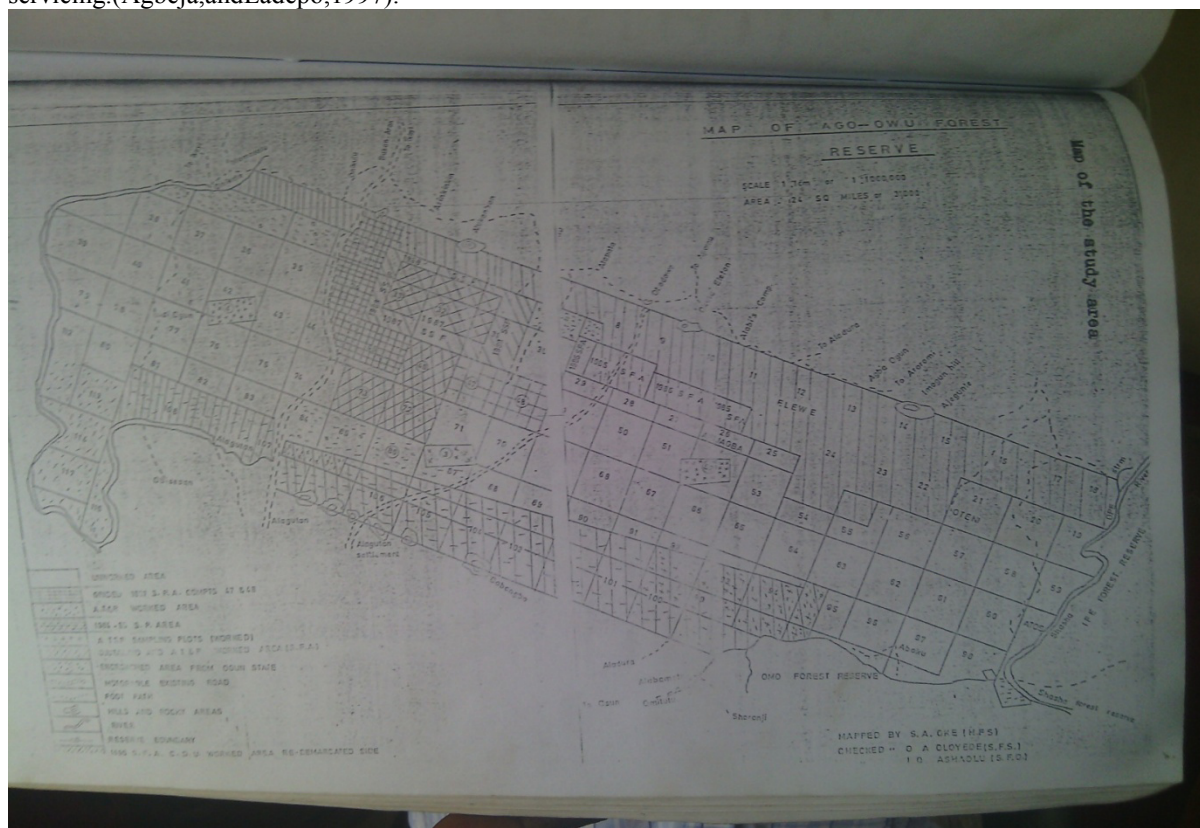


Fig. 1: Map showing Forest Reserve Ago-Owu, Osun State, Nigeria.

Materials and Method

The method involved the use of structured questionnaires. Five major villages around the reserved were randomly selected namely; Arinkinkin, Okodowo, Aladura, Agbaogun and Alaguntan. Within each selected village, the following groups of people were interviewed to ascertain the medicinal uses, parts used, local names, preparations /administrations of the plants for curing pile or hemorrhoids. The groups of the people were farmers, herbalist, hunters, civil servants and other professionals that live in the villages.

Sampling Intensity

Pre-tested structured questionnaire was administered to gather information from each village. The population size of each village was less than 500 (interpersonal communication, 2013). The number of questionnaire administered were 150. The number of respondents in Arinkinkin, Aladura, Okodowo, Agbaogun and Alaguntan were 30,15,23,20 and 22 respectively. In all, 110 respondents were available in all the villages to give information on medicinal plants for curing pile. This is concurred with Diaw et al, (2002) that a village whose population is more than 1000 people will require a sample of 2.5 percent while a population size of 500 people will require a sample of 5 percent to be adopted while those whose with a population less than 500 people, a sample of 10 percent will be selected. The data collected were analysed by using descriptive techniques. Descriptive tools used were, frequency and percentage.

Plant Materials and methods

Leaves of ten (10) plants species namely, *Cissampelosowariensis* P. Beauv ex Dc, *Newbouldialaavis* (P. Beauv.)

see the man. Ex, *Agerantumconyzoidea* Linn., *Paullina pinnata* Linn., *Ficusexasperata* Vahl, *Sennaalata* (Linn.) Roxb, *Momordicacharantia* Linn., *Phyllantusamarus* Excel. *Sphenocentrumjollyanum* Pierre and *Sesamumindicum* Thonn. were randomly collected from each village. The species were identified at FRIN Herbarium, Ibadan (FHI). The plant materials were air dried for 7 days, before milling into powder with a clean blender. 20g of powder was extracted in 100ml of distilled water for 24hrs at room temperature to obtain the aqueous extract. The aqueous mixture is filtered using whatman No1 filter paper and then lyophilised to obtain the dry solid residue.

Phytochemical analysis

The extracts were evaluated for the presence of alkaloids, tannins, saponins, polyphenol and flavonoids as earlier described by (Harbonne, 1973 ; Trease & Evans, 1989 and Sofowora, 1993). Isolation and estimation of phenolic compounds were specifically done by using 2g of each sample. The samples were defatted with 100ml of diethyl ether using the Soxhlet apparatus for 2hrs. The fat free-samples were boiled with 50ml of petroleum for the extraction of the compounds for about 15mins. 5ml of the extract was pipetted into a 50ml flask and 10ml of distilled water was added.

The complex colour developed with addition of 5ml amyl-alcohol and 20ml of aqueous NH_4OH solution. The samples were allowed to stand for 30mins for the colour development. The absorbance was then read with spectrophotometer.

Mineral elements were determined using the multiple nutrient extraction method. The procedures for the determination of the proximate composition of the samples were those of the Association of Official Analytical Chemist (AOAC, 1980).

Table 1: Demographic information| Status of the respondents in the area

Socio – economic characteristic of the respondents	Respondents	Percentage(%)
Age (years)		
21 – 30	14	12.7
31 – 40	23	20.9
41 – 50	33	30.0
51 – 60	18	16.4
61 - 70	19	17.3
70 and above	3	2.7
Sex		
Female	16	14.5
Male	94	85.5
Educational background		
NFE	47	42.7
Primary	29	26.4
Secondary	23	20.9
Institution	11	10
Occupational Studies		
Farming	65	59.1
Farming Hunting	12	10.9
Farming Trading	14	12.7
Farming Teaching	7	6.4
Farming Herbalism	5	4.6
Farming Contractor	3	2.7
Farming Student	2	1.8
Farming Driving	2	1.8

Field Survey: 2013

Table 2: Common species found in the area of study

Local Names	Scientific Names	Family	Abundance (%)
Teak	<i>Tectonagrandis</i> Linn.	Verbanaceae	45.5
Gmelina	<i>Gmelinaarborea</i> Roxb.	Verbanaceae	33.5
Oganwo	<i>Khayaivorensis</i> A chev.	Meliaceae	1.6
Ayunre	<i>Albeziazygia</i> (Dc) Macbride.	Mimozoidae	2.4
Araba	<i>Ceibapentandra</i> Gaertn.	Bambacaceae	0.4
Ita	<i>Celtisintegrifolia</i>	Ulmaceae	0.8
Ako	<i>Brachyestegiaspps</i>	Ceasalpinoidea	0.4
Arere	<i>Triplochitonscleroxylon</i> K.schum.	Steculiaceae	2.0
Opon	<i>Tetraceraalnifolia</i> Wild.	Delineaceae	0.4
Apako	<i>Cleistopholispatens</i> Benth.	Annonaceae	0.4
Iroko	<i>Miliciaexcels</i>	Moraceae	3.6
Afon	<i>TreculiaAfricana</i> Decne var.	Moraceae	0.4
Oporopo	<i>Pterygotamacrocarpa</i> K. Schum.	Steculiaceae	0.4
Ose	<i>Adansoniadigitata</i> Linn.	Bombacaceae	0.8
Oro agogo	<i>Opuntaspp</i>	Cathaceae	0.4
Isin	<i>Blighiasapinda</i> Koenig.	Sapindaceae	0.8
Omo	<i>Cordiamillenii</i> De wild & Th. Dur) Merrill	Boraginaceae	0.4
Opepe	<i>Naucleadiderrichii</i>	Rubiaceae	0.4
Apa	<i>AfzeliaAfricana</i> Harms var.	Ceasalpinaceae	0.4
Idigbo	<i>TerminaliaAfricana</i> Eng& Diels	Combretaceae	0.4
Ayere	<i>Albiziaglaberrima</i> (L) Backer	Mimosoidae	0.4
Erinmado	<i>Ricinodendronheudelotii</i> Pierre ex pax	Euphorbiaceae	0.4
Ayan	<i>Afzeliabipindensis</i> Harms	Ceasalpinaceae	0.8
Obobo	<i>Ficusmucuso</i> Welw ex.	Moraceae	0.4
Ahun	<i>Alstoniaboonei</i> De wild	Apocynaceae	0.8
Ire	<i>Funtumiaafricana</i> Stapf	Apocynaceae	0.8
Ole	<i>Nesogordoniapapaverivera</i> Linn.	Steculiaceae	1.6
Ayinyin	<i>Tremaorientalis</i> L.B	Ulmaceae	0.4
Afara	<i>Terminaliasuperb</i> Engl&Drels	Combretaceae	1.2
Mansonia	<i>Mansoniaaltissima</i> A chev.	Sterculiaceae	0.8
			100

Table 3: Medicinal plants for treating pile orhemorrhoids.

S/N	Taxas	Local names	Families	Part used	Recipes/Administration
1	<i>Desmodium ramosissium</i>	Aberodefe	Papilionoidae	Stem Bark	The stem bark is scrapped, ground, mixed with water and drunk. Take a table spoon once in 3 days.
2	<i>Paulliniapinnata</i> Linn.	Kankansela	Sapindacea	Stem Bark	Decoction of the stem bark for 24 hours and drink. Take one short 3 times daily
3	<i>Annonasenegalensis</i> Pers var.	Abo	Anonacea	Leaves	Leaves are crushed in water with limes (probably 3 limes) and drink. Two table spoons are taken daily.
4	<i>Phyllanthusamarusexcel</i>	Iyinlobe	Euphorbiaceae	Leaves	Decoction of the leaves to be drunk by the patient 1 short 3 times daily.
5	<i>Arichomanesdifformiskeay</i>	Isu ago	Araliaceae	Tuber	Cut the tuber into pieces and soak them in water for 7 hours. 3 table spoons should be taken 2 times daily.
6	<i>Byrsocarpuscoccineus</i> Schum .Thom	Orikoteni	Connaraceae	Leaves	A decoction of the leaves is drunk 2 times daily.
7	<i>Ficusexasperata</i>	Epin	Moraceae	Leaves	The leaves are crushed inside water. Take 2 glass cup twice daily.
8	<i>Sphenocentrumjollyanum</i>	Akerejupon	Menispermaceae	Stem bark	The stem is used as chewing stick or boil with water for drinking. Take 1 short thrice daily.
9	<i>Waltheriaindica</i> Linn	Korikodi	Sterculiaceae	Roots	A decoction of the plant's root together with native carbonate soda. Take 1 glass cup thrice daily.
10	<i>Newbouldialaevis</i> (P. Beauv.) s ee man. Ex	Akoko	Bignoniaceae	Whole Or leaves	The plant is pounded along with <i>Vernoniaamygdalina</i> and <i>Gmelinaarborea</i> , all are soaked in water and honey is later added for drinking. Take 1 glass cup twice daily. Leaves are crushed inside water and drink 2 times a day. Two glass cup 3 times daily.
11	<i>Cissampelosowariensis</i> P. Beau ex Dc.	Jenjoko	Menispermaceae	Leaves	Leaves are crushed in water and drunk by the patient. Put the remnant inside a dew overnight and drinking again the next day. Take 1 short twice daily.
12	<i>Ocimumgratissimum</i> Linn.	Efinrin	Labiataea		Leaves are squeezed with salt (no addition of water) and drink. 1 table spoon daily.
13	<i>Sennaalata</i> Linn.	Asunran	Cesalpineacea	Leaves	The leaves are squeezed in water for drinking. 1 glass cup twice daily.
14	<i>Agerantumconyzoidea</i> Linn.	Imiesu	Asteraceae	Leaves	Decoction of the leaves with <i>Ocimumgratissimum</i> , 1 table spoons three times daily.
15	<i>Momordicacharantia</i> Linn.	Ejinrin Aja	Curcubitaceae	Leaves	The leaves are squeezed with leaves of <i>Vernoniaamygdalina</i> , <i>Ocimumgratissimum</i> and salt. Drink 2 table spoons twice daily.
16	<i>Nicotianatabacum</i> Linn	Ewe taba	Sonanceae	Leaves	The leaves are mixed with bile (cow), garlic, lime juice and micerated in alcohol for drinking. One tea spoon twice daily.
17	<i>Terminalia superb</i> Engl. & Diels	Afara	Combretaceae	Leaves	Squeeze the leaves in water and drink. 2 table spoons daily.
18	<i>Cola nitida</i> K. Schum	Obi abata	Sterculiaceae	Stem bark	Stem barks are boiled in water for 40 minutes for drinking (for 7 days). Take 1 glass cup twice daily.
19	<i>Strychsesboonei</i> De wild	Afomo	Longaniaceae	Leaves	The leaves are ground along with dried water snail (isawiri in Yoruba) and mix with Shea butter micerated inside water. Take 1 glass cup daily.
20	<i>Gossypiumbarbadense</i>	Ewe owu	Malvaceae	Leaves	The leaves are ground with root of <i>Morindalucida</i> and salt for drinking. 1 tea spoon thrice daily.

Table 4 :Nutrient compositions of some selected medicinal plant for curing Pile or Hemorrhoids

Samples	Mc (%)	Cp (%)	C.F (%)	Ash (%)	Carbohydrate(%)
<i>Cissampelosowariensis</i>	58.09	19.15	26.64	12.71	16.36
<i>Newbouldialaevis</i>	13.28	20.95	29.05	6.65	30.07
<i>Agerantumconyzoides</i>	56.68	29.37	14.71	22.08	22.84
<i>Paulina pinnata</i>	54.85	24.08	4.54	7.45	9.08
<i>Ficusexasperata</i>	16.50	20.72	21.32	18.23	23.23
<i>Sennaalata</i>	31.39	14.57	20.27	8.51	25.26
<i>Momordicacharantia</i>	39.95	20.60	27.15	14.34	2.04
<i>Phyllantusamarus</i>	33.04	20.83	18.20	9.70	18.23
<i>Sphenocentrumjollyanum</i>	18.30	22.40	8.30	7.40	43.60
<i>Ocimumgratissimum</i>	14.40	17.04	19.40	8.30	40.86

Table 5:Phytochemical Constituents of some selected medicinal plants for curing pile orhemorrhoids

Samples	Polyphenol	Flavonoid	Tannin	Saponin	Alkalioid
<i>Cissampelosowariensis</i>	0.760	0.134	0.000	0.006	0.020
<i>Newbouldialeavis</i>	0.460	0.1270	0.110	0.015	0.007
<i>Agerantumconyzoidea</i>	0.110	0.030	0.021	0.001	0.030
<i>Paulinapinnata</i>	1.160	0.570	0.440	0.003	0.020
<i>Ficusexasperata</i>	0.160	0.020	0.020	0.002	0.009
<i>Sennaalata</i>	0.480	0.130	0.080	0.060	0.007
<i>Momordicacharantia</i>	0.170	0.040	0.020	0.002	0.010
<i>Phyllantusamarus</i>	1.850	0.230	0.190	0.020	0.020
<i>Sphenocentrumjollyanum</i>	0.90	0.270	0.211	0.020	0.010
<i>Ocimumgratissimum</i>	0.571	0.291	0.172	0.020	0.011

Table1 show the demographic information about the respondent living around Ago-Owu forest reserve. It reveals that people within the age range (41-50) are farmers. This indicates that the age groups are working class who have a lot of dependants they cater for. They are also experienced people who have been familiar with the uses of a plant species or the other. This is in line with WHO (1991) who defined traditional medicine as a solid amalgamation of dynamic medical know- how and ancestral experience.

The gender status of the respondents workingaround the reserve are males (85.5%) and female (14.5%). This might be due to the belief that farming activities are mostly done by men and also the nature of the work is tedious and stressful for woman to dabble in.

This is in accordance with Ozo-Eson (1997) that in most rural communities, the lands for farming produce are usually those inherited by the male (head of the family).

Educational background of the respondent shows that 42.7%of the respondents have no formal education (NFE) while 10% have advanced education (AD). It is deduced that majority of agroforestry farming participants in the area is illiterates, they engage in farming activities as profession that would provide for their house hold's needs at the same time requires no education. The occupation status of the respondents around Ago-Owu forest reserve indicated that 59.1%, 10.9%, 12.7%, 6.4% participated in farming (F)only, Farming and hunting (FH); Farming and trading (FTr); and Farming and Teaching (FT) respectively. This implies that farming is the major occupation that occurred in Ago-Owu forest reserve area. Farming activities had enabled the people of the area to identify the importance and uses of plants in their surroundings. This concurred with peter (2003) who reported that in Ghana, farmers were found to have herbal knowledge that is being passed from generation to generation via informal way.

Table 2 shows the common species and their abundances in the study area. The most available species in the area are *Tectonagrandis* (41.5%) and *Gmelinaarborea* (33.5%). It was confirmed by the respondents that the tree species have rapid growth; the leaves shed during the wet season decompose to enrich the top soil for interplanted crops. Verinumbe, (1983)concurrred that they are legumes which are presumed to fix atmospheric nitrogen and improve soil fertility. *Gmelinaarborea*and*Tectonagrandis* have been planted at cocoa farm boundaries. Other available tree species in the area are *Khayaivorensis* (1.6%), *Albiziazygia* (2.4%), *Celtisintegrifolia* (0.8%), *ceibapentandra* (0.4%) among others.

Table 3 reveals medicinal plants that are used for curing pile or haemorrhoids in the area. It is observed that species such as *Desmodumramosissimum*, *Paullinapinnata*, *Annonasenegalensis*,*Phyllanthusamarus*, *Ficusexasperata*, *Sennaalata*, *Agerantumconyzoidea*, *Terminaliasuperba*among others are used in curing pile in the area. Vegetative parts include leaves, are mostly used in the preparation of pile or hemorrhoids while bark, stem and root are also used in herbal medicine for treating the ailments. Ugbogu and Akinyemi (2004) reported

that above 67% of vegetative parts and 8.96% of reproductive parts are used in medicinal plants. This observation is similar to some other findings by Burkill (2000) and Adodo (2004). The medicinal preparation are mostly in liquid forms. Gbile (1990) reported that medicinal plants are prepared in form of liquid, powder, decoction, bathing soap, and soup; majority of them are used in mixtures while few are used singly.

Table 4 shows nutrient compositions of some selected medicinal plants for curing pile. It is observed that crude protein, moisture content, crude fibre, ash and carbohydrate range from 14.57% to 29.37%; 14.40% to 58.09%, 4.54% to 6.65% to 22.08% and 2.04% to 43.60% respectively. The highest moisture content (58%) is present in *Cissampelosowariensis* while the lowest moisture (14.40%) is obtained in *Ocimumgratissimum*. The moisture content of the leaves agrees with definitions of vegetables which are characterised with high water content (Edeoga and Gomina, 2000). It is shown that crude protein in *Agerantumconyzoidea* contain 29.37% while the lowest percentage (14.57%) is found in *Sennaalata*. This implies that the level of protein in the plants are relatively high. This contributes to the formation of hormones which contains a variety of body functions such as growth, repair and maintenance (Mau *et al*, 1999).

Table 5 shows the phytochemical constituents of some selected medicinal plants for treating pile or hemorrhoids. It shows that polyphenol, flavonoid, tannin, saponin and alkaloid range from 0.11% to 1.85%, 0.02% to 0.57%, 0.02% to 0.44%, 0.001% to 0.002% and 0.007% to 0.020% respectively. This implies that these plants contain active constituents that makes it functioning as herbal medicine for curing pile. Most of these constituents are potent bioactive compounds found in medicinal plant parts that can be used for therapeutic purpose or which are precursors for the synthesis of useful drugs (Sofowora, 1993). Alkaloid is indicated as a starting material in the manufacture of steroidal drugs (Mau *et al*, 1999).



Phyllanthus amarus



Paullina pinnata



owariensis



Paquentina negrescence

Cissampelos



Agerantum conyzoidea

Fig 2: Selected plant species for curing pile or haemorrhoids

Conclusion

The practice of traditional medicine has been with us from time immemorial and it is upon it that the rural population mostly depends. The farming activities around the reserve contain diverse of medicinal plants and its diversity is indispensable to human well-being because it provides a number of remedies required in healthcare

and in the provision of employment. The study shows that pile or hemorrhoids can be traced to both male and female. Some medicinal plants among which are *Cissampelosowariensis*, *Newbouldialaervis*, *Agerantumconyzoides*, *Paulina pinnata*, *Ficusexspirata*, *Sennaalata*, *Phyllantusamarus*, *sphenocentrumjollyanum* are used as remedies to solve these ailments. It is apparent that with traditional medicines, there is a plant for every health disorder and they should not be neglected when such case arises. It is observed that a quite number of the local people notice some medicinal plants growing in their farms and utilize them to solve a lot of ailments including pile. The active constituents differ from plants produce a definite physiological action on human body. These active constituents such as tannins, saponins, alkaloids, flavonoids and polyphenols have been found to empower most of these plants to function very well. They act as anti-viral, anti-microbial, anti-bacterial, anti-parasitic, anti-inflammatory, expectorate and immune against diseases.

The medicinal plants in the study area are highly nutritious, composed of protein, fibre, ash, moisture content, carbohydrate and this makes them to be more comparable with vegetables.

This is evidence that they can be consumed and are not poisonous.

Therefore, further research is needed to be carried out to ascertain some other functions of these plants.

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