

ORIGINAL RESEARCH



Ethno-botanical survey, review and informatics of medicinal plants used by indigenous people of Lekki, Ibeju-Lekki Local Government Area of Lagos State, Nigeria.

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Abstract:

The use of medicinal plants (herbal) is common among the rural populace in most countries, Nigeria inclusive.

Aims: This study focusses on a survey of ethnopharmacology of medicinal plants and preparations used to manage common ailments within the people of Lekki, Lagos, Nigeria.

Materials and Methods: Randomly selected respondents from two rural communities (Lekki Oke and Isale Lekki) were used for this study.

Results: The survey results returned 43 plants as being commonly used medicinal plants. About 28 (44%) of these had scientific data backing their medicinal usage. Nutraceuticals account for about 37 (58%) of the plants surveyed. About three quarters (74%) of the surveyed plants have multiple uses. The leaves and roots (20%) are the most commonly employed parts of the plant for medicinal treatment, while the stem and whole plant are the least used (2%). Decoction (35%), concoctions (20%) and macerations (17%) are the most common preparation modes of the plant extracts.

Conclusion Data analysis showed that with advancement in extraction, analytical and evaluation techniques, empirical data are confirming the efficacy of these herbs used by the locals. The culture and traditions of the Lekki people in the use of herbals for health management is further affirmed with this survey. The culture and traditions of the Lekki people in the use of herbals for health management is affirmed with this survey.

To Keywords: Ethno-botanical, survey, medicinal plants, herbals, Lekki Oke and Isale Lekki

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1. INTRODUCTION

Man since time immemorial had depended on the use of plants in his daily activities. Plants serve as food, building shelter components, herbs, fodder amongst other numerous uses. The use of plants as medicine is as old as time itself, and is a global phenomenon that cuts across level of development, faith, social or economic status [1-3]. In Africa, as high as 80% of the population depend on herbal medicines in one form or the other [4]. In Nigeria, a large section of the populace are still dependent on plants as medicines[5] as a result of lack of availability and cost of western medicare. The history, culture and traditions of a people also contribute to the reasons for usage of plants as medicines. The composition of the mixture of plant parts used in the treatment of various ailments using varies across peoples and cultures with similarities seen within same ethnic group spread across different geographical space.

There is a perception amongst herbal practitioners and users of herbals as medicines that such is safe and non-toxic, this may be incorrect in a number of cases [6, 7] either from dosage, reactions with other medicines of simply due to their composition. There have been surveys[8-16] conducted on different aspects of medicinal plant usage in South West Nigeria and Lagos State. The use of herbs as medicines and the history of such plants is often not well documented as written text in most rural communities. What usually happens in such communities is that herbal medical practitioners pass on the history/composition/usage of these herbal plants to their apprentices and the oral tradition continues. This imprecise mode of information dissemination/transfer in more cases than not leads to information/knowledge losses with its attendant implications in herbal health care practice/management.

This survey is aims at gathering information on medicinal plant and the ailments they are used to treat by the peoples of Lekki Oke and Isale Lekki of Lagos state in Nigeria.

2. MATERIAL AND METHODS

Study location

Two villages were used for this study, viz Lekki Oke and Isale Lekki, located in the Ibeju-Lekki Local Government area of Lagos State. The villages lie approximately between 4⁰15¹N and 4⁰17¹N and 13⁰15¹E and 13⁰2¹E. They are bounded in the East by Epe Local Government, and in the South by the Atlantic Ocean. The people of the area are mainly Ijebu speaking, with a sprinkling of other people from different parts of the country such as the Ilaje, Benin, Ondo, Egba, and Ibadan. Their socio-economic activities include mat weaving, soap making, concrete block making, goldsmithing, fishing, oil and cassava processing, etc. This indigenous people typically depend on plants for both feeding and medicinal purposes.

The method employed in this survey is a modified version of an earlier work [17]. The modification; this study focused on the totality of plant species (for medical uses) commonly used by the people in the study area for treatment of common ailments. Plant parts such as seeds, flowers, leaves, stem, inflorescence, rhizomes and florets of 60 plants were randomly collected within and around the beach at one location, and 65 plants species collected from marshy, swampy fresh water areas at the other area, i.e. Isale Lekki. A total number of 125 plant specimens collected were identified by the Lagos State University, Botany Department's herbarium. The local names of the plants were gotten from experienced adult male and female local traditional healers. The unidentified plant species were taken to herbarium, and texts such as: [18-20], and a staff of herbarium was also solicited in identifying them. Lastly, maps showing the geographical location of Lekki, Lagos State vegetation communities and Nigeria map were obtained from Nigerian conservation foundation library in Ibeju – Lekki Local Government office and drawn to specifications.

3. RESULTS AND DISCUSSION

The survey results are presented as figures and a table

Table 1: Showing names and uses of surveyed plants.

S/n	Botanical plant	Local name	Plant part used	Major disorder (Disease used to treat)	Mode of preparation/administration	Documented literature supporting ethnomedicinal usage	Other documented medical uses	
1	<i>Bryophyllum pinnatum</i>	Abamoda	Leaf, stem	Yellow fever	Decoction		[21-28]	
2	<i>Citrus aurantifolia</i>	Osan-wewe	Fruit				[29-32]	
3	<i>Napoleona vogelii</i>	Boribori	Bark				[30, 32-35]	
4	<i>Anacardium occidentale</i>	Kaju	Leaf, bark			Soaked in water, pulverized and mixed with potash, mixed with palm-wine	[36-42]	
5	<i>Azadirachta indica</i>	Dongoyaro	Leaf, bark				[43-45]	[46-51]
6	<i>Acanthospermum hispidum</i>	Dagunrogogoro	Leaf, root				[52-54]	[55-62]
7	<i>Carica papaya</i>	Ibepe	Leaf					[63-69]
8	<i>Jatropha curcas</i>	Botuje	Leaf, root.			Decoction		[70-76]
9	<i>Enantia chlorantha</i>	Osopupa	Bark	Malaria		[77, 78]	[79-85]	
10	<i>Carrica papaya</i>	Ibepe	Old leaf			Decoction		See 6 above
11	<i>Citrus sinensis</i>	Osan – mimu	Fruit				[86-91]	[89, 92, 93]
12	<i>Sida acuta</i>	Isankotu	Root			Decoction and bath, Soak in palm-wine.	[94, 95]	[96-98]
13	<i>Alstonia boonei</i>	Awun	Bark				[99-101]	[102-106]
14	<i>Mangifera indica</i>	Mangoro	Bark & leaf			Decoction		[107-113]
15	<i>Uapaca guineensis</i>	Abo – emido	Fruit			Decoction		[114]

16	<i>Alchornea cordifolia</i>	Irenleipa	Bark	Cough	Chewed	[115]	[116-122]
17	<i>Schwenkia americana</i>	Igbale – odan	Leaf		Decoction		[123-126]
18	<i>Cylicodiscus gabunensis</i>	Olosan	Leaf, Bark		Milled, mixed with water		
19	<i>Allium cepa</i>	Alubosa	Juice		Mixed with Honey	[127-129]	[130-137]
20	<i>Allium cepa</i>	Alubosa	Bulb	Dermatological disorders	Crushed, applied to affected part	[138, 139]	
21	<i>Eleusine indica</i>	Gbegi	Whole plant		Decoction and bath Milled and dissolved in water for bath		[140]
22	<i>Anthocleista sp</i>	Akoko – edo	Root, bark				
23	<i>Cymbopogon citratus</i>	Koko – oba	Root		Milled and dissolved in water for bath		
24	<i>Jatropha curcas</i>	Ose	Root		[141]	[70, 71, 142-145]	
25	<i>Talinum fruticosum</i>	Gbure	Tuber	Premenstrual syndrome	Crushed and drunk		[146, 147]
26	<i>Enantia chlorantha</i>	Osapupa	Bark	Leprosy	Decoction		[77, 79-81, 148-153]
27	<i>Abrus precatorius</i>	Oju-ologbo	Seed		Decoction		[154-167]
28	<i>Citrus sinensis</i>	Oronbo	Bark				[168-171]
29	<i>Gossypium sp</i>	Owu/koro	Root				
30	<i>Manihot esculenta</i>	Gbaguda	Tuber		Decoction mixed with salt		[12, 172]
31	<i>Terminalia catappa</i>	Epo Akintola	Bark		Decoction	[173]	
32	<i>Chromolaena odorata</i>		Leaf		Extract is taken with palm-wine	[174]	[175]
33	<i>Lycopersicon esculentum</i>	Tomato	Leaf juice	Ear ache	Crushed, applied as drops at night		[176-181]

34	<i>Antiaris welwitschii</i>		Stem bark	Purgative	Dried, milled, mixed with hot corn gruel and orally taken morning & night		
35	<i>Phyllanthus amarus</i>	Iyin-olobe	Stem bark			[182, 183]	[184-195]
36	<i>Allium sativum</i>	Ayuu	Bulb	Asthma	Both mixed with garlic soup		[196-204]
37	<i>Ipomoea batatas</i>	Odukun	Root				[205-207]
38	<i>Gloriosa superba</i>	Ewe/aja	Root	Abdominal disorder	Decoction	[208]	[209, 210]
39	<i>Amaranthus spinosus</i>	Epotete	Root				[211-213]
40	<i>Dracaena sp</i>	Ope-kannakan	Root		Mixed with a pinch of table salt		
41	<i>Terminalia catappa</i>	Ojuologbo	Root		Both cooked with snail in pregnancy situation		[214-223]
42	<i>Abrus precatorius</i>		Leaf	Soak in water		[154, 155, 157, 161, 166, 167, 224-226]	
43	<i>Eleusine indica</i>	Gbegi	Whole plant	Rheumatism	Both, Decoction add table salt to mopped affected part		[227]
44	<i>Citrus aurantifolia</i>	Osan wewe	Fruit				[228-231]
45	<i>Bambusa vulgaris</i>	Oparun	Root	Respiratory diseases	Decoction	[232, 233]	[234-238]
46	<i>Allium sativum</i>	Ayuu	Bulb		Decoction	[239-242]	See ---- above
47	<i>Vitex doniana</i>	Oori, isigun	Stem bark	Convulsion	Decoction and mixed with cow/sheep urine		[242-249]
48	<i>Symphonia globulifera</i>	Agberigbedi	Stem bark	Anaemia	Decoction and mixed with milk		[250-253]
49	<i>Dioclea reflexa</i>	Arin	Seed		Dried, mixed with malted drink		[254-256]
50	<i>Thaumatococcus daniellii</i>	Eeran	Fruit	Diabetes	Soaked in water	[257]	[258-262]

51	<i>Carica papaya</i>	Ibepe	Unripe fruit	Jaundice	Sliced and soak in water	[263, 264]	[63-65, 67-69, 265-271]
52	<i>Citrus aurantifolia</i>	Osan wewe	Fruit	Obesity	Decoction & mixed with water	[272-275]	[273, 276]
53	<i>Lycopersicon esculentum</i>	Tomato	Fruit			[277]	
54	<i>Elaeis guineensis</i>	Ope	Fruit	Whitlow	Squeezed and applied in affected part	[278]	[279-281]
55	<i>Citrus aurantifolia</i>	Osan wewe	Fruit		Cut and fixed in affected part		[228, 282-284]
56	<i>Allium cepa</i>	Alubosa	Juice	Erectile dysfunction	Decoction and mixed with honey, or corn gruel and native egg	[285]	
57	<i>Citrus aurantifolia</i>	Osan wewe	Juice				
58	<i>Musa spp</i>	Ogede	Juice	Facial beauty	Mixed with honey		
59	<i>Corchorus olitorus</i>	Ila	Leaf	Easy parturition	Squeezed in water		[286-294]
60	<i>Citrus aurantifolia</i>	Osan wewe	Fruit	Sickle cell anaemia	Mixed with egg yolk and honey		[228, 229, 283, 284]
61	<i>Citrus sinensis</i>	Osan mumu				[295]	
62	<i>Allium cepa</i>	Alubosa	Bulb	Blurry vision	Eat raw, drink palm wine on top		
63	<i>Carica papaya</i>	Ibepe	Seed	Weight loss	Chewed and drink	[296-298]	
64	<i>Citrus sinensis</i>	Osan Mimu	Juice			[299-302]	[169, 303-307]

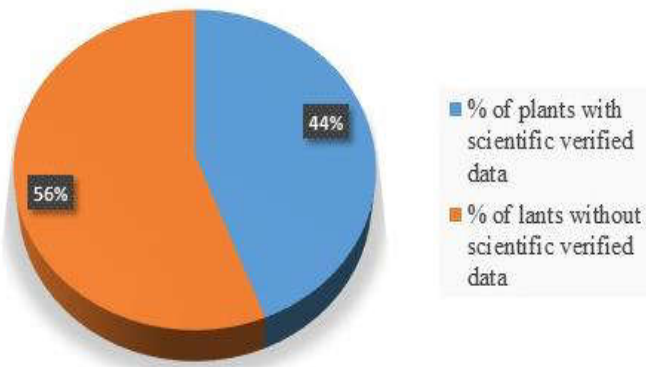


Figure 1: Pie chart depicting the percentage of plants surveyed with documented usage

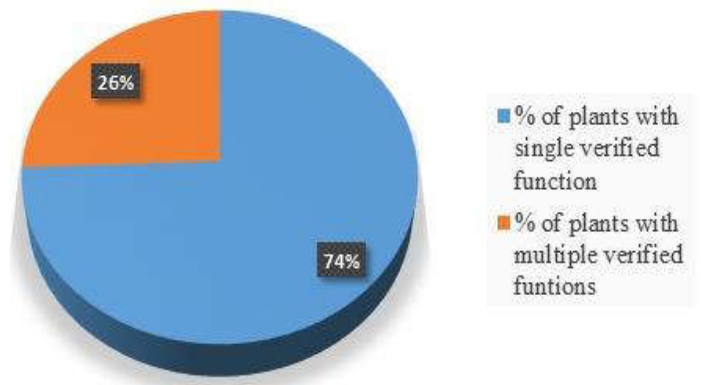


Fig 3: Pie chart showing percentages of plants surveyed with documented multiple medical uses.

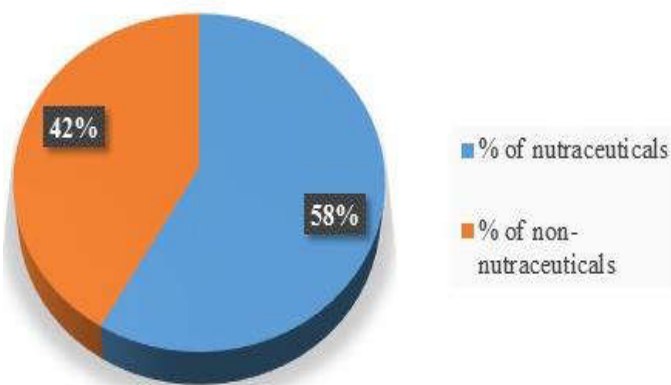


Figure 2: Pie chart depicting the percentage of plants surveyed that are nutraceuticals

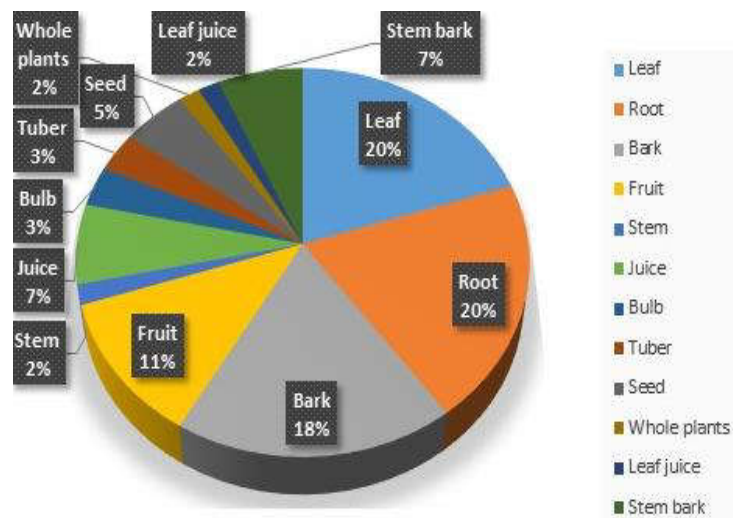


Fig 4: Pie chart showing documented plant parts utilized in herbal therapy

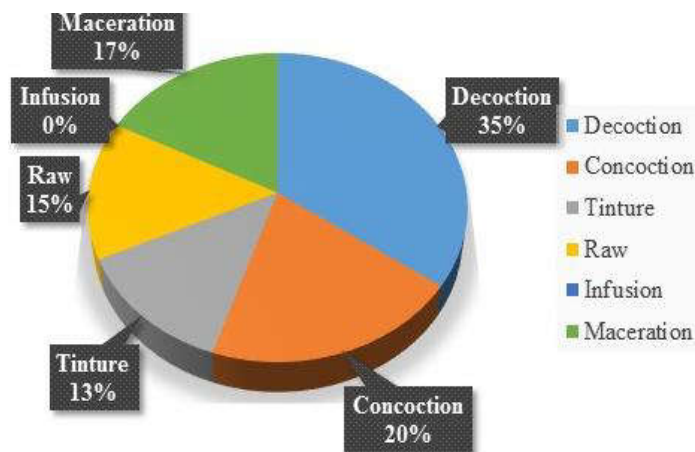


Fig 5: Pie chart showing percentages of preparation methods commonly employed

DISCUSSION

The advances in modern medicine and healthcare has not eradicated the use of plants as medicines by indigenous peoples in different parts of the world. Instead, there is a gradual shift to use of plants as alternate medicines and as candidates for drug discovery [308]. As modern cultures and technologies spread around the world, the breadth of knowledge store of native people diminishes daily as older generations pass away and younger generation slowly set aside their traditional ways and adopt new life styles. The indigenous people of Lekki and Isale Lekki are knowledgeable about their natural environment, but most of these knowledge (oral) not documented, and without adequate knowledge transfer plans to the younger ones in the society. Oral traditions more often than not are rarely documented, this is also applicable to the use of plants as herbal medicines.

The outcome of this survey showed that a plant may have more than one local name and performing different purposes within same ethnic people e.g. *Carica papaya* which serves as food, is also used as cure for malaria, dysentery, jaundice in children and weight loss (see table and figure 3). This is not unique to medicinal plants in Nigeria[309], as it is a common phenomenon among plants consequent upon the presence of secondary metabolites which in turn are implicated in the management of health issues. Some plants that serve as both food and medicine are also utilized as medicaments via the extraction of such nutraceuticals [310]. This concept of nutraceuticals accounts for 42% of the plants surveyed in these papers (Figure 2). Additionally, some plants belonging to different families may have similar uses e.g. *Gloriosa superba* [208-210] from family *Liliaceae*, and *Amaranthus spinosus* [211-213] (*Amaranthaceae*) both contain bioactive ingredients that make them effective

for management of stomach disorder. These two are part of the 44% of the plants (figure 1) surveyed in this study with verified medicinal functions.

Synergistic action of secondary metabolites in plants, and the simplicity inherent in their preparation at the domestic levels using aqueous extraction, accounts for the 20% (concoctions) and 35% (decoctions) of the preparation modes of herbals by the peoples surveyed in this study (figure 5). The leaves and roots are the most commonly used parts of plants in making herbal preparations accounting for about 20% of the plant parts surveyed (figure 4) in this study.

Previous surveys [8, 10, 13, 17, 311-315] had established the importance of herbs in the health and wellbeing of residents of Lagos state in Nigeria, with this study corroborating their importance using informatics of data in the public domain. The data from this survey suggests well structured documentation of the local information/knowledge of plants and their usage at the communal level as food and medicines.

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