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An Ethnomedical and Ethnobotanical survey of Plants Herbal Therapy used for Obesity, Asthma, Diabetes and Fertility by the Badagry people of Lagos State, Nigeria

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Abstract

An ethnobotanical survey of medicinal plants used by the Badagry people of Lagos State Nigeria for the treatment of obesity, asthma, diabetes and fertility was carried out between the months of March and September 2104. Information was collected via oral interviews with traditional healers, herbals sellers and the peoples of the locale. A total of 107 species belonging to 56 families and two fungi species were identified. The part most commonly utilized are roots followed by leaves, stem bark, and fruits. Flowers and bulbs are rarely used according to this survey. Decoctions and infusions are the most popular modes of preparation while oral and to a lesser extent topical are the most common administration routes.

Keywords: ethnomedical, Badagry, asthma, obesity, diabetes, fertility.

1. Introduction

The interest in natural products for use as medicine has acted as the catalyst for exploring methodologies involved in obtaining the required plant materials for pharmacological screening and drug development [1]. Ethnobotanical studies today are recognized as the most viable method of identifying new medicinal plants or refocusing on those earlier reported for bioactive constituents [2] the method is known to show greater percentage yield of bioactive useful medicinal compounds over other methods of random selection and screening [3]. The practice of ethnomedicine has also been found to be an important vehicle for understanding indigenous societies and their relationships with nature [4]. The practice of ethnomedicine is common globally, and it is an acceptable form of medicine, even recognized and promoted by the World health Organization. The use of plant for treating diseases is as old as human species. Popular observations on the use and efficacy of medicinal plants contribute to the disclosure of their therapeutic properties, so that they are frequently prescribed, even if their chemical constituents are not completely known or analysed. All over the world, especially in African countries the use of medicinal plants has significantly supported primary health care [5]. This acceptability of herbals usage in Africa cuts across all strata of the society, though their use is more common amongst indigent peoples and those others who though not indigent, but still belief in their traditional values.

Badagry in Lagos state of Nigeria is rich in medicinal lore, the use of plants in religious ceremonies as well as for magic and for medicinal purposes is common and wide spread among the people of Badagry especially the eguus and Aworis. Based upon strong primitive roots, the art of native medicine is still widely practiced, and much of these are indigenous. Among natives of various communities, knowledge of medicine is passed by oral traditions from one generation to another by the elderly, priests, witchdoctors or medicine men, as written records in this field are almost non-existent. The method is crude and highly subjective to distortion in an area where much accuracy is needed. Despite the increased use of medicinal plants, its future seemingly is been threatened by complacency concerning their conservation. The reservoirs of herbs and stock of medicinal plants in developing countries are diminishing and in danger of extinction as a result of growing trade demands for cheaper healthcare products and new plant-based therapeutic markets in preference to more expensive target specific drugs and biopharmaceuticals [6]. The focus of this survey was to identify plants used by the indigenous people of Badagry, Lagos State Nigeria in treating and curing diabetics, asthma, obesity and human (male and female) infertility.

2. Materials and Methods

2.1. Study area

The survey was conducted in Badagry division of Lagos State (see fig. Badagry is a coastal town and is one of the Local Government Areas of Lagos State, Nigeria. It lies along Latitude: 6 ° 26' 38" N and Longitude: 2 ° 54' 23" E



Fig 1: Maps of Lagos State (Local Government Areas) showing study area (Badagry Local Government Area, arrowed)

2.2. Data gathering: This was done via oral structured interviews with traditional medicine practitioners commonly called herbalists. Their consent was sought and obtained prior to interviews. Information on plants used in the treatment (management) of obesity, asthma, diabetes and fertility and their modes of preparation and administration were gotten via oral interviews. Images of the plants so used were photographed *in-situ* using a digital camera. Samples of the plants were collected from the herbalists and taken to the botany department of Lagos State University for authentication and identification. Framework for this survey was based on ethnobotany and ethnopharmacology [7, 8].

2.3. Consultation with traditional herbalist

One of the main sources of the information that was gathered was through direct consultation with the herbalist and herb sellers. The approach was to consult an herbalist about the

usage of a specific plant or to obtain directly the traditional recipe for treating specific ailments. Information like names of plants used for particular ailment particularly the focused diseases in which the names were only given in their local names like Ogu and Yoruba, parts of plants use, mode of preparation and administration and how the plant materials are gotten and when they are to be harvested.

2.4. Enquiry from communities about the uses of growing plants near them

Another mode was visiting villages and inquire about the medicinal usage of plants growing in their locality. Some of the studied plants have been undergoing domestication because of their medicinal uses and to avoid unnecessary extinctions. Some plants are domesticated for easy access when they are urgently needed for emergencies.

2.5. Consultation with herb sellers

Another method that was used to obtain information was through herb sellers. The markets visited were Badagry market (fibre market), Ajara, both at Badagry LG of Lagos state. These markets had sections where components of traditional medicine are sold openly. Those herb-sellers were also interviewed as a source of information. Some of the herb sellers also stock dry and fresh samples of the plants parts that are in their store.

2.6. Plant authentication

Authentication was done by the chief technologist of Botany Department, Lagos state University, Ojo, Lagos. The vernacular names were gotten. Also, fresh samples of plant parts during the survey were taken to herb sellers popularly called 'elewe omo' of the Badagry market and Ojo market for authentication in local names like Yoruba and Eguu languages. Also, some plants were identified by some experienced herbal practitioners with some western educational training.

3. Results

The survey results are presented in tabular form. Each table shows the plants used for specific ailments, their local names, preparation modes and in some cases documented literature on the use of these plants.

Table 1: Table showing plants used in the treatment (or management) of asthma

Local names	Scientific names	Family name	Plant parts used	Mode of preparation	Documented literature.
Abeere/Abre*	<i>Parinari spp</i>	<i>Rosaceae</i>	Seed	Infusion	
Agbayun/ayiyere*	<i>Synsepalum dulcificum</i>	<i>Sapotaceae</i>	Leaf	Decoction	
Aidan	<i>Tetrapleura tetraptera</i>	<i>Fabaceae</i>	Fruit		
Ajeobale	<i>Croton zambesicus</i>	<i>Eupobiaceae</i>	Leaf	Decoction	
Akintola	<i>Chromolaena odorata</i>	<i>Compositae</i>	Stem	Decoction	
Anple	<i>Eugenia malaccensis</i>	<i>Myrtaceae</i>	Fruit	Chewing	
Asofeyeje/lema*	<i>Rauvolfia vomitori</i>	<i>Apocynaceae</i>	Root	Ashing	
Atare/ata*	<i>Aframomum meleguata</i>	<i>Zingiberaceae</i>	Fruit	Seed milled and use with palm oil	
Awin/ asisoyetin*	<i>Dialium guineense</i>	<i>Fabaceae</i>	Root	Infusion	
Bolobolo	<i>Clappertonia ficifolia</i>		Leaf	Burning	
Butuje/nigbapotin*	<i>Jatropha curcas</i>	<i>Eupobiaceae</i>	Root	Decoction	
Dagunro gogoro/ponomi*	<i>Acanthospermum hispidum</i>	<i>Asteraceae</i>	Whole plant	Decoction with gun powder	
Efirin oso/kesukesu*	<i>Hoslundia opposita</i>	<i>Labiatae</i>	Whole plant	Powder in palm oil	
Efirin wewe	<i>Ocimum basilicum</i>	<i>Labiaceae</i>	Whole plant	Squeeze	
Efunle	<i>Tuber borchii</i>	<i>Ascomycota</i>	Whole plant	Powder	
Eke-yinbo/kekekun*	<i>Melia azedarach</i>	<i>Meliaceae</i>	Leaf	Decoction	
Ela/ yengban*	<i>Angraecum disticum</i>	<i>Orchidaceae</i>	Whole plant	Decoction with absolute alcohol	

Eluju	<i>Uvaria chamae</i>	<i>Annonaceae</i>	Root		
Epo obo			Bark	Powder	
Eruju/hujere*	<i>Xylopi aetheopica</i>	<i>Annonaceae</i>	Root	Infusion	
Ewe taba	<i>Nicotiana tabacum</i>	<i>Solanaceae</i>	Leaf	Decoction with lime water	
Ewuro/aromagbo*	<i>Vernonia amygdalina</i>	<i>Annonaceae</i>	Leaf	Leaf use as decoction	
Gbogbonse	<i>Uvaria afzelli</i>	<i>Annonaceae</i>	Root	Essential oil	
Oju orogbo/asenukun*	<i>Abrus precatoris</i>	<i>Leguminaceae</i>	Whole plant	Decoction	
Oro agogo	<i>Opuntia stricta</i>	<i>Cactaceae</i>	Whole plant	Tincture	
Oro agogo/grihanhun*	<i>Opuntia spp</i>	<i>Cactaceae</i>	Stem	Ashing	
Oro wewe/ kiki*	<i>Euphobia lateriflora</i>	<i>Euphobiaceae</i>	Whole plant	Tincture	
Pear	<i>Pyrus communis</i>	<i>Rosaceae</i>	Leaf	Leaf taking as food	
Peregun/ayanpo*	<i>Dracaena fragans</i>	<i>Dracaneaceae</i>	Bark	Decoction	
Rere abo/panhun*	<i>Cassia occidentalis</i>	<i>Caesalpinaceae</i>	Whole plant	Decoction	(9)
Rerinkomi	<i>Argreia nervsa</i>	<i>Convulvolceae</i>	Whole plant	Decoction	
Sharp sharp	<i>Annona muricata</i>	<i>Annonaceae</i>	Bark	Infusion in alcohol	

Table 2: Table showing plants used in the treatment (or management) of obesity

Local names	Scientific names	Family	Parts use	Mode of preparation	Documented literature.
Ake	<i>Euphobia hirta</i>	<i>Euphobiaceae</i>	Whole plant	Infusion in alcohol	
Akoko/ajamoklo*	<i>Newbouldia laevis</i>	<i>Bignoniaceae</i>	Root	Decoction with potash	
Arunpale/ arunkunyin*	<i>Chenopodium ambrosiodes</i>	<i>Chenopodiaceae</i>	Leaf	Leaves are macerated in alcohol	
Asunrun	<i>Senna alata</i>	<i>Fabaceae</i>	Leaf	Milled into powder	
Atapariobuko/gbosuazohen*	<i>Clausena aniseta</i>	<i>Rutaceae</i>	Root	Decoction	
Ayo/hayo*	<i>Allium sativum</i>	<i>Lilaceae</i>	Seed	Decoction	
Baka	<i>Gladiolus psittacinus</i>	<i>Iridaceae</i>	Whole plant	Infusion	
Bere fruit	<i>Artocarpus altilis</i>	<i>Moraceae</i>	Bark	Decoction	
Butuje/nigbapotin*	<i>Jatropha curcas</i>	<i>Euphobiaceae</i>	Root	Decoction	
Dagunro gogoro/ponomi*	<i>Acanthospermum hispidum</i>	<i>Asteraceae</i>	Whole plant	Decoction with gun powder	
Egun orun/wotozinzen*	<i>Creteva adansonii</i>	<i>Capparaceae</i>	Leaf	Decoction in lime juice	
Egusi bara/ gusi abara*	<i>Citrus lanatalus</i>	<i>Cucurbitaceae</i>	Fruit	Fruit is boiled and extract taken	
Epekun/	<i>Curculigo pilosa</i>	<i>Hypoxidaceae</i>	Whole plant	Decoction	
Epeta	<i>Securidaca longepedum</i>		Bark	Bark milled and powder used with hot water	
Eru	<i>Croton lobatus</i>	<i>Euphobiaceae</i>	Fruit	Decoction	
Eruju/hujere*	<i>Xylopi aetheopica</i>	<i>Annonaceae</i>	Root	Infusion	
Ewe owo	<i>Aerva lanata</i>	<i>Amaranthaceae</i>	Whole plant	Infusion	
Ewe taba	<i>Nicotiana tabacum</i>	<i>Solanaceae</i>	Leaf	Decoction with lime juice	
Guafa/kekuntin*	<i>Psidium guajava</i>	<i>Myrtaceae</i>	Leaf		
Ifon/mitin*	<i>Olox subscapoides</i>	<i>Olacaceae</i>	Root	Decoction	
Igi aro/	<i>Syzygium guinensis</i>	<i>myrtaceae</i>	Root	Decoction	
Ipin/cacrotin*	<i>Ficus exasperata</i>	<i>MoraceaeLaw</i>	Root/bark	Infusion with lime juice	
Iyerosun/sotin*	<i>Baphia nitida</i>	<i>Leguminaceae</i>	Root	Decoction	
Osan jaganyin/zingbo*	<i>Citrus aurantium</i>	<i>Rutaceae</i>	Fruit juice	Infusion	
Pandoro/ ayanpo*	<i>Kigelia africana</i>	<i>Bignoniaceae</i>	Bark	Decoction	
Peregun/ayanpo*	<i>Dracaena fragans</i>	<i>Dracaneaceae</i>	Bark	Decoction	
Sagere/dikuyintin*	<i>Strophantus hispidus</i>	<i>Apocynaceae</i>	Root	Root infusion in <i>Citrus aurantium</i> juice	
Sapo/gusuetin*	<i>Anthocleista djalonesis</i>	<i>Logariaceae</i>	Root	Decoction	
Sere	<i>Reissantia indica</i>	<i>Celastraceae</i>	Root	Ashing	
Tagiri /yebripen*	<i>Adenopus breviflorus</i>	<i>Cucurbitaceae</i>	Fruit	Ashing	
Tude/	<i>Gollindra haematocephala</i>	<i>Leguminaceae</i>	Root	milled and powder in hot water	

Table 3: Table showing plants used in the treatment (or management) of diabetes

Local names	Scientific names	Family	Parts use	Mode of preparation	Documented literature.
Abeere/Abre*	<i>Parinari spp</i>	<i>Rosaceae</i>	Seed	Infusion ⁶	[10, 11]
Afiyainso	<i>Phyllanthus amarus</i>	<i>Euphobiaceae</i>	Whole plant	Decoction with <i>Jatropha multifida</i>	[12-16]
Aidan	<i>Tetrapleura tetraptera</i>	<i>Fabaceae</i>	Fruit		[17, 18]
Ako gun	<i>Aristolonchia repens</i>	<i>Aristoloniaceae</i>	Root	Alcoholic infusion	
Alubosa elewe/Ruvasa*	<i>Allium ascalonicum</i>	<i>Lilaceae</i>	Whole plant	Infusion	
Alubosa oloko/ruva*	<i>Pancreatium</i>	<i>Lilaceae</i>	Whole plant	Infusion	

	<i>trianthum</i>				
Arigho/ario*	<i>Monodora myristica</i>	<i>Annonaceae</i>	Seed	Infusion	
Atale/ thote*	<i>Zingiber officinale</i>	<i>Zingiberaceae</i>	Bulb	Infusion	
Baka	<i>Gladiolus psittacinus</i>	<i>Iridaceae</i>	Whole plant	Infusion	
Ejinrn/sosikan*	<i>Momordica charantia</i>	<i>Cucurbitaceae</i>	Whole plant	Macerate colourless carbonated soda.	
Ewuro/aromagbo*	<i>Vernonia amygdalina</i>	<i>Annonaceae</i>	Leaf	Leaf use as decoction	
Igba/afitin*	<i>Parkia biglobosa</i>	<i>Leguminaceae</i>	Bark	Infusion	
Iroko	<i>Chlorophora excels</i>	<i>moraceae</i>	Bark and leaf	Decoction	
Isirigun	<i>Mondia whitei</i>	<i>Periplocaceae</i>	Root	milled as powder	
Iyere/nekun*	<i>Piper guinensis</i>	<i>Piperaceae</i>	Seed	Decoction	
Iyeye/ jogbe*	<i>Spondias mombin</i>	<i>Anacardiaceae</i>	Bark and leaf	Decoction	
Kaju/kanjutin*	<i>Anarcadium occidentale</i>	<i>Anacardiaceae</i>	Bark	Decoction	
Kanafuru/wovonekun*	<i>Eugenia gangeticum</i>	<i>Myrtaceae</i>	Seed	Infusion	
Oganwo	<i>Khaya Seneganiensis</i>	<i>Meliaceae</i>	Bark	Infusion	
Ogege	<i>Jatropha multifida</i>	<i>Euphobiaceae</i>	Leaf	Decoction	
Oka baba	<i>Sorghum caudatum</i>	<i>leguminosaeae</i>	Seeds and leaf	Tincture	
Opoto	<i>Alchornea laxiflora</i>	<i>Euphorbiaceae</i>	Leaf	Decoction	
Osan wewe/kretin*	<i>Cistrus media vas acida</i>	<i>Rutaceae</i>	Fruit juice	Juice with powdered <i>Morinda lucida</i> root	

Table 4: Table showing plants used in the treatment (or management) of male infertility

Local names	Scientific names	Family	Parts use	Mode of preparation	Documented literature.
Abo/ayakekere*	<i>Anona senegalensis</i>	<i>Annonaceae</i>	Leaf	Infusion in lime juice	[19]
Agbayun/ayiyere*	<i>Synsepalum dulcificum</i>	<i>Sapotaceae</i>	Leaf	Decoction	
Aidan toro	<i>Senna fistula</i>	<i>Poaceae</i>	Stem bark	Infusion	
Aidan toro	<i>Senna tora</i>	<i>Caesalpiniaceae</i>	Bark, leaf	Tincture	
Akika/ganhotin*	<i>Lecaniodiscus cupanioides</i>	<i>Sapinadaceae</i>	Root	Infusion	[20]
Alloviatan	<i>Allophyllus africanus</i>	<i>Sapindaceae</i>	Leaf	Infusion in corn starch broth (pap broth)	
Amunututu/zinvru*	<i>Basella alba</i>	<i>Basellaceae</i>	Whole plant	Decoction	[21-26]
Apata	<i>Microdesmis puberula</i>	<i>Euphobiaceae</i>	Root	Infusion	
Ata/hetin*	<i>Zanthoxylum zanthoxyloides</i>	<i>Rutaceae</i>	Root	Infusion	
Awin/ asisoyetin*	<i>Dialium guineense</i>	<i>Fabaceae</i>	Root	Infusion	[27]
Ewe ogbo	<i>Parquetina nigrescens</i>	<i>Periplocaceae</i>	Leaf	Leaf squeeze with potash	
Gbegbe/agbegbe*	<i>Icacina tricantha</i>	<i>Icacinaceae</i>	Stem	Decoction	
Gbeloriakuku/kokrothen*	<i>Heliotrpium indicum</i>	<i>Boraginaceae</i>	Fruit	Fruit taking raw	
Ibepe/gbepetin*	<i>Carica papaya</i>	<i>Caricaceae</i>	Root /leaf	Root and	[28-31]
Obi abata/avitin*	<i>Cola acuminata</i>	<i>Sterculiaceae</i>	Leaf	Infusion	[32]
Obi gbanja/gbanja*	<i>Cola nitida</i>	<i>Sterculiaceae</i>	Leaf	Decoction Infusion in alcohol	[33]
Ogbo/thretin*	<i>Cissus aralioides</i>	<i>Vitaceae</i>	Stem	Infusion in alcohol	
Ogede agbagba/kokoeavra*	<i>Musa sapientum</i>	<i>Musaceae</i>	Fruit	Fruit milled into powder	
Oparun/panontin*	<i>Bambusa vulgaris</i>	<i>Poaceae</i>	Leaf	Leaf milled and use with pap (corn starch)	[34-36]
Osunsun/Aviatin*	<i>Corpolobia lutea</i>	<i>Polygalaceae</i>	Root	Infusion of root in alcohol	
	<i>Senna obtusifolia</i>	<i>Fabaceae</i>	Whole plant	Decoction	

Table 5: Table showing plants used in the treatment (or management) of female infertility

Local names	Scientific names	Family	parts used	Mode of preparation	Documented literature.
Amuje	<i>Byrsocarpus coceineus</i>		Bark	Decoction	
Amunututu/zedari*	<i>Desmodium gangeticum</i>	<i>Fabaceae</i>	Whole plant	Decoction	
Ayipayida/ alupayida*	<i>Uraria picta</i>	<i>Fabaceae</i>	Whole plant	Decoction of whole plant	
Ayo/ajikun*	<i>Caelsalpinia bonduc</i>	<i>Leguminaceae</i>	Root	Infusion	
Egbesi	<i>Nauclea latifolia</i>	<i>Rubiaceae</i>	Root and	Tincture	

			bark		
Egbesi	<i>Sarcocephalus latifolus</i>	<i>Rubiaceae</i>	Root	Infusion in alcohol	
Ekana ekun/dediyo*	<i>Argemone mexicana</i>	<i>Papaveraceae</i>	Whole plant	Decoction	[37, 38]
Emo agbo	<i>Pupalia lappacea</i>	<i>Amaratheaceae</i>	Seed	Ashing	
Laari/laritin*	<i>Lawsonia mermis</i>	<i>Lythraceae</i>	Leaf	Leaf boiled in corn starch broth (pap broth)	
Lara pupa	<i>Ricinus communis</i>	<i>Euphobiaceae</i>	Leaf	Decoction	[39, 40]
Ojiji/jiji*	<i>Dalbergia lactea</i>	<i>Leguminaceae</i>	Stem	Decoction	
Owu akeses/sekanfuntin*	<i>Gossypium barbadenses</i>	<i>Malveaceae</i>	Leaf	Decoction	[38]
Polopolo oka baba	<i>Sorghum caudatum</i>	<i>leguminoceae</i>	Whole plant	Decoction	
Ubo/kavotoetin*	<i>Landolphobia dulcis</i>	<i>Apocynaceae</i>	Root	Decoction	

- Egu name

4. Discussion and conclusion

The ethnomedicinal survey showed that plants are still widely used by the indigenous people of Badagry local government of Lagos state especially among the Eguu people and Aworis of the area. However, most of the herbal practitioners interviewed were advanced in age, and mostly males. A number of them had relatives and apprentices indicating that traditional medicine is still widely practiced even among the younger generations. This thus reduces the fear that the interest in Africa traditional medicine (ATM) is slowly been lost to urbanization and western medicine, which in the strict sense have their sources from this same traditional medicine.

The findings of this study are at variance with other surveys where fear of the gradual disappearance of the indigenous knowledge in the country and the world at large has been reported. , for example, Lala people of Nigeria [41] and Aguambu-bamumbu people of Cameroon [42]. The findings from this study suggest that many young people developing interest in traditional medicine, which itself is gaining more popularity globally, probably due to costs, unavailability and side effects of some synthetic drugs, not forgetting resistance developed by some infectious microbes on the conventional drugs. Presently in Nigeria, there is a gradual paradigm shift along all strata of the people resulting in an upswing in herbal product usage with a concurrent increment in herbal practitioners. A lot of the present tradomedical practitioners are western educated with background in diverse disciplines. This has resulted in better preparation, packaging and in some cases efficacy of the herbals being sold. Also, during the cause of this survey, it was observed that against the belief that herbal practitioners restrict their knowledge of indigenous medicine to their progenies and relatives many of the practitioners are encouraging people, especially the young to serve as apprentice (interns), after which the interns graduate and are allowed to establish on their own.

Findings also show that in Nigerian higher institutions and other parts of the world, students from biological and basic medical sciences departments like botany, biochemistry, pharmacognosy and phytomedicine are encouraged to undergo internship programmes, academically referred to as industrial training (IT) in reknowned herbal centers. This is done on the basis that the students have foundational knowledge of what traditional medicine entails and its contribution to the primary healthcare delivery in the world. Another observation was that the knowledge and use of herbal medicine are associated with supernatural powers, and hence some of the herbal preparations and therapy are supported with rituals and chanting of incantations. Some of the respondents also expounded on the belief that medicinal plants can only be harvested at specific times of the day, while some need to be harvested with incantations. A similar observation was made

by an earlier report [43]. The focus of this survey was herbals used in the treatment/management of diabetes, asthma, obesity and infertility in both sexes. These conditions are quite common among the Badagry people, with various forms of fertility challenges being the most topical. Interestingly quite a number of the plants identified by the various respondents in the course of this survey have been scientifically evaluated as shown the in a sixth column across tables 1 to 5.

Badagry and its peoples have a vast heritage of medicinal and traditional knowledge. The use of traditional and/or indigenous knowledge continue to play a vital role in health care delivery in the local government and will continue to play a major role as long as modern health care facilities continue to be an illusion and unavailable to the vast majority of the populace. There is the need to preserve the plant diversity, as there is an increase in the rapid extinction of plant species.

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