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Conservation of indigenous medicinal botanicals in Ekiti State, Nigeria

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Abstract: The rapid appraisal method was used to identify the botanicals used ethnomedicinally from a total of 300 randomly selected respondents drawn from the existing three geo-political zones of Ekiti State, Nigeria. The results obtained revealed that about 40% of the 71 botanicals identified presently rare. Most of the presently abundant botanicals are species primarily cultivated for other purpose other than medicine. Most of the identified species are valued for their curative effects on malaria and fever, the predominant diseases in the study area. The need for the conservation of the rare species cannot be over emphasised as most rural dwellers in the study area depend mostly on herbs from these species. Strategies towards the attainment of this goal are proposed.

Key words: Conservation, Medicinal botanicals, Nigeria

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INTRODUCTION

Ekiti State (about 7000 km², Inland area) is situated between 7°25' and 8°20' North and 5°00' and 6°00' East in the rainforest belt of southwestern Nigeria (EKSG, 1997; Kayode, 1999; 2000). The state which was previously rich in botanicals is now being confronted with massive deforestation due to increase in population, urbanization, uncontrolled logging, lumber being used as fuel and developmental activities since the state was created in 1996.

Although studies on the ethnomedicinal utilization of botanicals abound in Nigeria, these studies were conducted on scattered basis usually by various ethnic groups of the country. Presently, a gross dearth of documentation abounds on the ethnomedicinal utilization of botanicals among the Ekiti, a distinct Yoruba tribe that constitutes over 98% of the 1.6 million inhabitants (EKSG, 1997) of the state.

The study being reported here is part of an ongoing project aimed at the evaluation and conservation of useful flora species in Ekiti State currently

being conducted at the Department of Plant Science, University of Ado-Ekiti, Ado-Ekiti, Nigeria.

MATERIALS AND METHODS

Ekiti State was divided into three zones based on the existing political delineation (Fig.1). In each zone, 15 rural communities were randomly selected: Aye-oja (1), Akola (2), Ido-ajinare (3), Aba-obanla (4), Ita-ore (5), Irele (6), Ayebode (7), Ire (8), Ayegbaju (9), Orin (10), Orun (11), Ajegunle (12), Ogbese (13), Obada (14) and Ogotun (15). In each community, 20 respondents were randomly selected and interviewed with the aid of semi-structured matrix. The interviews were focused and conversational (Martins, 1995; Kayode *et al.*, 1997; Kayode, 2003).

Medicinal botanicals used were identified and voucher specimens collected (Lipp, 1989). The parts of the plant used, doses formulation, sources of plants collections, were defined and documented. Plants identified were later confirmed and voucher specimens

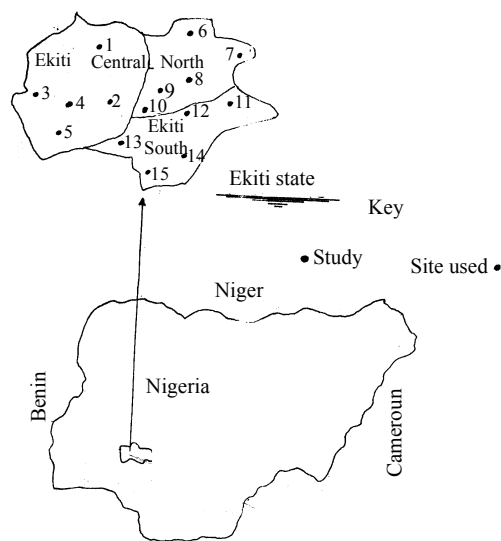


Fig.1 Map of Ekiti State, Nigeria showing the study sites

deposited at the Herbarium of the Department of Plant Science, University of Ado-Ekiti, Nigeria. Field information was confirmed by Balick and Cox (1996).

The relative abundance of the identified botanicals in a 10 km² land area within the identified major source(s) was defined according to Bongers *et al.* (1988) and Kayode (1999) as: Less than 5 individuals as 'rare', 5 to 10 as 'occasional', 11 to 30 as 'frequent', 31 to 100 as 'abundant' and over 100 individuals as 'very abundant'.

RESULTS AND DISCUSSION

A total of 71 botanicals belonging to 41 families (Table 1) were identified as being valued for ethnomedicinal purpose in all of the study area. A considerable proportion of these species were found to be 'rare' on the abundance scale (Table 2). Among the common ones, very few species were found to be on the 'very abundant', 'frequent' and 'occasional' scales. Most of the botanicals on the 'abundant' scale were botanicals cultivated and those that germinated as weeds (Table 2). Although, forest and household farms constituted the major sources of the botanicals, field observations revealed that most of the rare species were still sourced from the forest.

Botanicals mostly sourced from household

farms were mostly cultivated and weed species. The germinated botanicals were dominated by species whose fruits constituted a major source of income in the study area. In these species, the medicinal products were merely considered as secondary products. Thus income generation constitutes the major incentives for their cultivation. The most frequently occurring species among the weeds was *C. odorata*. This species occurred in large number in all the sources considered in this study. The ecological success of this weed was attributed by Kayode (1999) to its rapid dispersal by wind, its easy establishment in the study area (Etejere, 1980), the existence of a bank of its seeds in the soil of early successional area (Kamakrishnan and Mishra, 1982) and the increased longevity of its seeds due to enforced dormancy after their burial in the soil. The same attributes might be responsible for the occurrence of other weed species obtained in this study.

Most of the botanicals identified in this study were being utilized against malaria and fever, which according to Kayode (2004) are the prevalent diseases in the study area. There is therefore the need to conserve many of the species especially those that were observed to be rare. These botanicals were mostly tree species. Dependence on them is based on those growing in the wild. At present, among limiting factors against their cultivation are the fragmentations resulting from the prevailing land tenure system, the apparent lack of silviculture and biological knowledge of these botanicals and ignorance of the consequences of their loss by the local farmers in the study area. An urgent conservation strategy should be developed to preserve these species for the use of the present and future generations. Such strategy should encourage the domestication of botanicals identified, provide clues to their ecology, enlighten the populace about the dangers in the loss of biological diversity and accommodate the indigenous farmers in both planning and execution of the strategy.

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Table 1 Identified botanicals used ethnomedicinally in Ekiti State, Nigeria

Family	Species	Local (Ekiti) name	Part(s) used*	Major source**	Abundance	Folk medicinal uses
Ameranthaceae	<i>Alteranthera repens</i>	Dagunro	RT, BK, LV	FOR	Rare	Rheumatism
	<i>Amaranthus spinosus</i>	Tete-elegun	RT, ST, LV	FM	Abundant	Diarrhea, Dysentery, Gonorrhoea
Anacardiaceae	<i>Celosia argentea</i>	Sokoyoto	LV	FM	Abundant	Diarrhea
	<i>Anacardium occidentale</i>	Kaasu	LV, BK	FM, HHA	Abundant	Malaria, Asthma, Leprosy
	<i>Mangifera indica</i>	Mangoro	ST, LV, BK	FM, HHA	Very abundant	Malaria, Diarrhea, Diabetics
Annonaceae	<i>Enantia chlorantha</i>	Oso pupa	RT	FOR	Rare	Malaria, Jaundice, Antipyretic
Apocynaceae	<i>Alstonia boonei</i>	Ahun	ST, BK	FOR	Rare	Malaria, Rheumatism
	<i>Raufofia vomitoria</i>	Ira	RT, ST, LV	FOR	Occasional	Fever, Dysentery, Diarrhea
Asclepiadaceae	<i>Calotropis procera</i>	Bomubomu	RT, LV	FM	Abundant	Eczema, Leprosy, Elephantiasis, Asthma, Cough, Rheumatism
Bombaceae	<i>Adansonia digitata</i>	Ooshe	LV, BK, RT	FOR	Rare	Malaria, Dysentery, Diarrhea, Asthma
	<i>Ceiba pentandra</i>	Egigun	LV, BK	FOR	Rare	Fever, Asthma, Headache, Diabetes
Boraginaceae	<i>Cordia melenii</i>	Omo	BK	FOR	Rare	Fever, Cough, Stomachache
Bromeliaceae	<i>Annas comosus</i>	Ope-oyinbo	FR	FM	Abundant	Stomach problems
Cannaceae	<i>Canna indica</i>	Ido	LV	FOR	Rare	Malaria
Caricaceae	<i>Carica papaya</i>	Ibepe	LV	FM, HHA	Abundant	Malaria, Diabetics, Stomach disorder
Combrataceae	<i>Terminalia ivorensis</i>	Idigbo	ST	FOR	Rare	Stomach ache
	<i>Terminalia superba</i>	Afara	RT, ST	FOR	Rare	Laxative
Compositae	<i>Chromolaena odorata</i>	Akintola	LV	FM, HHA	Very abundant	Malaria
	<i>Vernonia amygdalina</i>	Ewuro	LV	FM, HHA	Abundant	Hypertension
Convolvulaceae	<i>Ipomoea batatas</i>	Kunkunduku	LV, RT	FM	Occasional	Asthma
Cucurbitaceae	<i>Momodica charantia</i>	Ejirin-wewe	LV	FOR, FM, HHA	Abundant	Vermifuge, Jaundice
Euphorbiaceae	<i>Acalypha chiliate</i>	Ewon-bonni	LV	FOR	Rare	Asthma, Rheumatism, Bronchitis
	<i>Jatropha curcas</i>	Lapalapa	LV, ST, RT, SD	FM, HHA	Occasional	Ringworm, Eczema, Ulcer
	<i>Jatropha gossypifolia</i>	Lapalapa-pupa	ST-Latex	FM, HHA	Occasional	Ringworm
Gramineae	<i>Bambusa vulgaris</i>	Oparun	LV	FOR, FM, HHA	Abundant	Gonorrhoea, Worm expeller
Gutiferae	<i>Allanblackia floribunda</i>	Orogbo-erin	LV, BK	FOR	Rare	Malaria, Dysentery
	<i>Garcinia kola</i>	Orogbo	BK, SD	FOR	Occasional	Fever, Cough, Hepatitis, Headache
Hyperricaceae	<i>Harungana madagascariensis</i>	Elepo	BK	FOR	Rare	Fever, Cough, Cold, Dysentery, Jaundice

(to be continued in the next page)

Family	Species	Local (Ekiti) name	Part(s) used*	Major source**	Abundance	Folk medicinal uses	
Labiatae	<i>Ocimum basilicum</i>	Efinrin-wewe	LV, ST, FR	FM, HHA	Abundant	Head ache, Cough, Gonorrhea	
	<i>Ocimum gratissimum</i>	Efinrin-ajase	LV	FM, HHA	Abundant	Fever, Cold, Cough, Diarrhea	
Leguminosae	<i>Cajanus cajan</i>	Otili	LV, SD	FM	Abundant	Smallpox, Chicken pox	
	<i>Desmodium gangetium</i>	Emimo	LV, RT	FM, FOR	Frequent	Fever, Asthma, Dysentery, Diarrhea	
	<i>Parkia biglobosa</i>	Iru	ST, LV, FR	FM	Frequent	Malaria, Fever	
	<i>Pterocarpus erinaceus</i>	Apepe	LV, ST	FOR	Rare	Dysentery, Diarrhea	
	<i>Pterocarpus osun</i>	Osun	LV, ST	FOR	Rare	Skin diseases	
Liliaceae	<i>Allum cepa</i>	Alubasa	FR, SD, LV	FM	Abundant	Stimulant, Cough	
Lythraceae	<i>Lawsonia inermis</i>	Laali	LV	FM, FOR	Rare	Jaundice, Gonorrhea	
Malvaceae	<i>Hibiscus sabdariffa</i>	Isapa	LV	FM	Frequent	Cough	
	<i>Sida acuta</i>	Iseketu	LV	FM, HHA	Frequent	Malaria, Ulcer, Fever	
Meliaceae	<i>Azadirachta indica</i>	Dongoyaro	LV, BK	HHA, FM	Frequent	Malaria, Piles, Syphilis, Roundworms, Antiseptic	
	<i>Carapa procera</i>	Urere	BK, SD, LV	FOR	Rare	Ringworm, Boils, Dressing, Rheumatism	
	<i>Entadrophragma cylindricum</i>	Igebu	BK	FOR	Rare	Fever, Cough, Black tongue	
	<i>Kyaya senegalensis</i>	Oganwo	ST, RT	FOR	Rare	Malaria, Jaundice	
	<i>Lovoa trichilioides</i>	Koko-igbo	ST, BK	FOR	Rare	Cough, Yellow fever	
	Moraceae	<i>Antiaris africana</i>	Oro	ST, BK	FOR, FM	Occasional	Rheumatism
		<i>Ficus capensis</i>	Opoto	LV, ST, RT	FOR	Occasional	Dysentery, Leprosy, Epilepsy
Myrtaceae	<i>Melicia excelsa</i>	Iroko	RT, BK	FOR	Rare	Rheumatism	
	<i>Psidium guajava</i>	Guafa	LV	FM, HHA	Frequent	Malaria, Cough, Urinary diseases, Stomach ache	
Myriticaceae	<i>Pycnanthus angolensis</i>	Akomu	LV, ST, RT	FOR	Rare	Anthelmintic	
Nyctaginaceae	<i>Boerhaavia diffusa</i>	Eti-elela	RT, ST, LV	FOR, FM	Abundant	Asthma, Gonorrhea	
Ochnaceae	<i>Lophira alata</i>	Ekki	LV, BK, RT, SD	FOR	Rare	Malaria, Cough, Jaundice, Gastrointestinal disorders	
Palmae	<i>Cocos nucifera</i>	Agbon	RT, BK, FT	FM, HHA	Frequent	Bronchitis, Dysentery	
	<i>Elaeis guineensis</i>	Ope	RT	FM	Abundant	Malaria	
Papilionaceae	<i>Baphia nitida</i>	Igi-osun	RT, BK	FOR	Occasional	Ulcer Boils, Dressing	
Rubiaceae	<i>Morinda lucida</i>	Oruwo	ST, LV	FOR	Rare	Malaria, Diabetics	
	<i>Morinda morindoides</i>	Oju-ologbo	RT, LV, FR	FOR	Rare	Fever, Jaundice	
Rutaceae	<i>Citrus aurantifolia</i>	Orombo-wewe	LV, ST, RT, FR	FM, HHA	Occasional	Fever, Jaundice, Headache	
	<i>Citrus aurantium</i>	Gayinganyin	RT, FR	FM, HHA	Occasional	Cough, Rheumatism, Sore throat	
	<i>Citrus sineensis</i>	Orombo	ST	FM, HHA	Abundant	Malaria, Fever, Dysentery, Headache, Vermifuge	
	<i>Fagara zanthoxyloides</i>	Ata	RT, BK	FOR	Rare	Gonorrhea, Sickle cell anemia	

(to be continued in the next page)

Family	Species	Local (Ekiti) name	Part(s) used*	Major source**	Abundance	Folk medicinal uses
Sapindaceae	<i>Bligha sapida</i>	Ushin	BK	FM, HHA	Frequent	Malaria, Ulcer, Back-ache, Head ache
	<i>Lecaniodiscus cupenioides</i>	Akika	ST, RT, LV	FOR	Rare	Malaria, Fever, Dressing
Sapotaceae	<i>Chrysophyllum albidum</i>	Agbalumo	ST, BK	FM	Occasional	Fever
Solanaceae	<i>Capsicum frutescens</i>	Ata	FR	FM	Very abundant	Malaria, Fever, Dysentery
Sterculiaceae	<i>Cola acuminata</i>	Obi-abata	BK, SD	FM	Abundant	Stimulant, Diarrhea
	<i>Cola nitida</i>	Obi-gbanja	BK, SD	FM	Abundant	Stimulant, Diarrhea
Tiliaceae	<i>Glyphaea brewis</i>	Atori	LV	FOR, FM	Occasional	Gonorrhoea, Diarrhea, Fever, Dressing
	<i>Trumfeta cordifolia</i>	Esua	LV	FOR	Rare	Malaria, Laxative
Ulmaceae	<i>Trema guineensis</i>	Ofoforo	LV	FOR	Rare	Fever, Cough, Bronchitis, Dysentery, Pneumonia
Violaceae	<i>Hybanthus enneaspermus</i>	Abiwere	LV, ST, RT	FOR, FM	Occasional	Painless delivery
Zingiberaceae	<i>Afromomum melegueta</i>	Ata-ire	FR, SD, LV	FOR, FM	Frequent	Stimulant, Smallpox, Chicken pox

*RT=Roots, BK=Barks, FR=Fruits, LV=Leaves, SD=Seeds, ST=Stems; **FOR=Forest, FM=Household farm, HHA=Household area

Table 2 Eco-demographic records of the identified botanicals in Ekiti State, Nigeria

Description [†]	
(a) Abundance. Proportion of botanicals presently found:	
i) Very abundant: 4%;	
ii) Abundant: 25%;	
iii) Frequent: 13%;	
iv) Occasional: 18%;	
v) Rare: 39%.	
(b) Source. Proportion of botanicals presently sourced from:	
i) Forest: 56%;	
ii) Household farm: 56%;	
iii) Household area: 27%.	
(c) Conservation.	
i) Identified botanicals cultivated in the study area;	
Status	Botanicals
Very abundant	<i>C. frutescens</i> [*] , <i>M. indica</i> [*]
Abundant	<i>A. cepa</i> , <i>A. comosus</i> [*] , <i>A. occidentale</i> [*] , <i>C. acuminata</i> [*] , <i>C. argentea</i> , <i>C. cajan</i> , <i>C. nitida</i> [*] , <i>C. papaya</i> [*] , <i>C. sineensis</i> , <i>E. guineensis</i> [*] , <i>V. amygdalina</i>
Frequent	<i>A. indica</i> , <i>B. sapida</i> [*] , <i>C. melegaeta</i> , <i>C. nucifera</i> [*] , <i>H. sabdariffa</i> , <i>P. biglobossa</i> [*] , <i>P. guajava</i> [*]
Occasional	<i>A. africana</i> , <i>C. albidum</i> [*] , <i>C. aurantifolia</i> [*] , <i>C. aurantium</i> [*] , <i>G. kola</i> [*] , <i>I. batatas</i>
Rare	None
ii) Botanicals that germinated as weeds in the study area.	
<i>A. spinosus</i> , <i>B. diffusa</i> , <i>B. vulgaris</i> , <i>C. odorata</i> , <i>C. procera</i> , <i>D. gangetium</i> , <i>M. charantia</i> , <i>O. basilicum</i> , <i>O. gratissium</i>	

[†] Proportion calculated to the nearest whole number; * Botanicals with edible fruits

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