

Ethnobotanical Survey of Plants used in Treatment of Inflammatory Diseases in Ogun State of Nigeria

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Abstract

In Africa herbalist kept no record and information was usually passed on orally, from generation to generation. Since oral information can never be as accurate as was told to the recipient, a whole library of herbal information were being buried gradually with every person that dies, this work attempts to secure some of these information.

An ethnobotanical survey was conducted into plants and plant recipes used in the treatment of inflammatory diseases in five Local Government Areas in Ogun State of Nigeria viz, Sagamu, Ikenne, Ago-Iwoye, Oru and Ijebu-Igbo through the use of semi-structured questionnaire. Respondents included traditional medical practitioners, herbalists and herb sellers. Eighty three different plant species used in managing inflammatory diseases, the method of preparation of recipes and dosage regimen were documented. Thirty-four (22.2%) of these plants were accredited to rheumatoid arthritis, twenty-three (19.1%) to asthma, twenty-eight (23.2%) to pruritis, twelve (10%) to furuncle (boil), and four (3.3%) to gout. Thirty herbal recipes were accredited to rheumatoid arthritis, three to gout, thirteen to furuncle, fourteen to pruritis and twenty-three to asthma. This ethnobotanical survey has unraveled some of the local uses of these plants in specific areas of West Africa as well as the type of remedies used for the treatment of certain inflammatory diseases

Keywords: Traditional medical practitioners, herbalists, herb-sellers, inflammatory diseases, Ogun State.

1. Introduction

Ethnobotany is based on the knowledge of plants by the local people and their usefulness as understood by the people of a particular ethnic group, since information concerning a particular plant varies from one ethnic group to another (Tor-Anyiin et al, 2003; Igoli et al, 2005). The use of traditional medicine in various therapies by the indigenous population the world over cannot be overemphasized, according to the World Health Organization(WHO), as many as 80% of the world's people depend on traditional

medicine for their primary healthcare needs. Due to poverty, ignorance and unavailability of modern health facilities, most people especially rural people are still forced to practice traditional medicines for their common day ailments, most of these people form the poorest link in the trade of medicinal plants (Khan, 2002.). A vast knowledge of how to use the plants against different illnesses may be expected to have accumulated in areas where the use of plants is still of great importance (Diallo et al, 1999). In the developed countries, 25 per cent of the medical drugs are based on plants and their derivatives (Principe, 1991).

The continuous search for natural plant products for use as medicines is encouraged by ethnobotanical survey; Igoli et al. (2005) recognized ethnobotanical survey as one of the major approaches for selecting plants for pharmacological screening. Several workers have conducted ethnobotanical surveys among various tribes of the African continent and the rest part of the world, (Adjanohoun et al, 1991; Gbolade and Soremekun, 1998; Rashid, 2001; Gbolade 2000; Ajaiyeoba et al, 2002; Osowole et al 2005; Ebong et al., 2005; Khan and Rashid, 2006). In continuation of our studies of ethnobotany of Nigeria for documentation of useful plants and drug discovery efforts (Ajaiyeoba et al, 2003; Ajaiyeoba et al, 2004; Ajaiyeoba, 2006), the ethnobotanical survey of plants/ plant parts used in the treatment of the five inflammatory conditions in various parts of Ogun State in Nigeria, with the aim of documenting these pieces of information for future reference.

2. Materials and Methods

2.1. Study Area

The study area comprises five towns in three local government areas (LGA): Sagamu in Sagamu LGA; Ikenne in Ikenne LGA; Ago-Iwoye, Ijebu Oru and Ijebu-Igbo in Ijebu North LGA located in Ogun State in south western Nigeria. The State covers an area of approximately 16,762 km² with a population of approximately 4,054,272 (10). It borders Lagos State to the south, Oyo and Osun States to the North, Ondo State to the east and the republic of Benin to the west. The inhabitants are mostly farmers and local traders, and with a sizeable proportion of educated citizens. The inhabitants speak mainly Yoruba, which is one of the three major local languages in the country. There are two distinct seasons in the State, namely, the rainy season which lasts from March/April to October/ November and the dry season which lasts for the rest of the year, October/ November till March/April. The temperature is relatively high during the dry season with the mean around 30 °C.

2.2. Informed consent

Informed consent was obtained orally from all participants made up of the TMPs, herbalists or herb sellers before inception of the interview.

2.3. Administration of questionnaire

The various methods available for the collection of ethnomedical data on medicinal plants were documented (Sofowora, 1993). However, for the purpose of this work, ethnomedicinal information on the plants used in the treatment of inflammatory diseases were obtained by consulting Traditional Medical Practitioners (TMP's), herbalists, herb-sellers, and by enquiring from villagers in five towns namely: Sagamu, Ikenne, Ijebu-Igbo, Ijebu-Oru and Ago-Iwoye located in Ogun State, in the south western part of Nigeria. The use of semi-structured questionnaire and oral interview were adopted to obtain the relevant ethnomedicinal data. The questionnaire were administered by trained interviewers and in some cases, monetary incentives were given to unwilling respondents. It was divided into three sections. Section (1) deals with demographic information such as: age, sex, religion, local tribe, duration of practice, nationality, and the specialty. Section (2) is on treatment of inflammatory diseases consisted of questions like: the type of inflammatory diseases that have been treated before, frequency of treatment, accompanying side effects, duration of treatment and use of verbal instructions. Other

questions centered on whether he/she uses herbal therapy alone, or otherwise, availability of plants, various locations of the plants within the study area, and their knowledge of treatment. Attempts were made to identify the local names given to the diseases. In section (3), plants and recipes used for treating the five common inflammatory diseases viz: asthma (*Iko ule-ule/awule*), rheumatoid arthritis (*arunmolegun*), gout (*kodo*), pruritis (*inarun*), boils (*ewo*) were considered.

2.4. Collection Authentication of plant samples

Fresh plant samples were collected from the TMP's, herbalists or herb sellers. Herbal anti-inflammatory remedies were authenticated by comparison with appropriate voucher specimens at the herbaria in Department of Botany, Obafemi Awolowo University (University herbarium Ife, UHI) and Forestry Research Institute of Nigeria (FHI), Ibadan.

3. Results and Discussion

3.1. Personal information on respondents

For the purpose of this survey, a total of 45 respondents were interviewed through the use of semi-structured questionnaire administered by trained interviewers within the five LGA's covered by this survey (namely Sagamu, Ijebu Igbo, Ago Iwoye, Ijebu Oru and Ikenne). These respondents were mainly Traditional Medical Practitioners (TMPs) (50%), herbalists (35%) and herb sellers (15%) (Table 1). Most of the herb sellers were women while the TMP/ herbalists were mostly men. Most of them claimed to be skilled in the treatment of the five common inflammatory diseases such as asthma, rheumatoid arthritis, pruritis, furuncle and gout rampant within the study area. The interpretation of the data generated from this survey gave an insight into the age, sex, religion, mode of treatment, duration of treatment and sources of knowledge of the TMP/ herb sellers and herbalists. Majority of these respondents fall within age range 21-40 and 41-60. A similar age range was for herb sellers by (Ajaiyeoba et al. 2003.) All the respondents were Nigerians from mainly the Yoruba ethnic group and they were mostly males (70%) with 65% of them practicing the Islamic religion.

Table 1: Demographic survey of respondent

Parameters		%
Practice Specification	<i>Herbalist</i>	35
	<i>Herb-seller</i>	15
	<i>Traditional medical practitioner</i>	50
Age (years)	1 -20	0.00
	21-40	28
	41 -60	50
	>60	22
Sex	<i>Male</i>	70.00
	<i>Female</i>	30.00
Religion	<i>Christianity</i>	15.00
	<i>Islam</i>	65.50
	<i>Traditional</i>	20.50

3.2. Treatment of Inflammatory Conditions

With the exception of gout, the practitioners mainly specialized in the treatment of the other inflammatory diseases. Many of the respondents could not clearly distinguish between gout and rheumatoid-arthritis. 80% of the respondents employed plant and animal parts in their therapies with obvious absence of side effects in most cases reported (Table 3). This either implies that the plants have no side-effects when used or the side-effects are mild or the TMP's never took notice of such side-effects which is usually the case. It is generally observed that administration of plant decoctions rarely

elicit noticeable side effects compared with orthodox drugs, because they are considered as nature cure (Sofowora, 1993). Half of the respondents confirmed regular supply of their plant remedies from the forest, and others (20%) usually sourced for plants either from the home gardens or markets. This development supports the clamour for biodiversity preservation through cultivation and afforestation programmes (Sofowora, 1993) Knowledge of herbal treatment was mainly acquired either by ancestral means or by training or both (Suffness and Douros, 1979), while duration of treatment ranged from 2-3 weeks to 3-5 weeks as reported by 40% and 36% of the respondents respectively, orthodox medicine duration of treatment last for nothing less than 3 months. 84% of the respondents claimed the use of verbal instructions in administering herbal recipes to their patients. This is believed to enhance the understanding of the dosage and methods of application of the remedies. In orthodox practice, written label instructions usually accompany prescriptions dispensed in the pharmacies or bought from the community pharmacies.

3.3. Recipes for Inflammatory Diseases

With regard to the various recipes employed by the respondents in treating various inflammatory diseases, rheumatoid-arthritis and asthma have the largest number of recipes, indicating the preponderance of these two diseases within the study area. 70% of the 30 recipes documented for rheumatoid-arthritis were administered orally in form of decoctions/ concoctions, soup, syrup, powder or mixture. The remaining recipes were for topical use as creams, soap, mixture or solution. It is interesting to note that all the recipes usually prescribed for asthma were administered orally (Table 7).

Majority of the thirteen recipes documented for furuncle were for external use while a few were for oral administration as soup or decoction. Fourteen recipes were reported for pruritis and most of these (71%) were administered orally (Table 8). Only one of the recipes was prescribed for both external and internal use. It is obvious from this survey that gout is the least treated inflammatory disease within the study area since only 3 recipes were reported (Table 5). A similar survey conducted by Igoli et al (2005) among the Igede people of Nigeria indicated use of similar method of preparation and application for recipes implicated in treating various internal and external infections.

When the individual components of the recipes were considered, it was apparent that plants were in the majority, although non-plant materials were sometimes included. Honey, local gin, soda water and pap served as vehicles for pastes, creams or mixtures intended for either local application or internal use. Forty plants included in recipes for rheumatoid-arthritis belonged to 33 genera in 28 families. Among the listed plants, *Zingiber officinale*, *Garcinia cola*, *Allium sativum*, *Allium cepa* and *Piper guineense*, top the list (Table 2), the frequency of citation is in the order *Allium sativum* L. = *Allium cepa* L. = *Garcinia cola* Heckel (13.3 %) < *Zingiber officinale* Roscoe (20 %) (Table 9). 27 plants in 25 genera occurring in 23 families were recorded for anti-asthmatic recipes (Table 2). The recipes for treating pruritis were sourced from 28 plants which belonged to 24 genera in 16 families (Table 4). According to this survey, the least number of plant sources were recorded for furuncle (14 genera in 13 families, Table 3) and gout (4 genera in 4 families, Table 5). As regards recipes for gout, furuncle and pruritis, individual plant materials are seldom used repeatedly, hence frequency of citation appears insignificant. Overall, 83 plants (in 69 genera and 43 families) and other non-plant parts are generally employed in the traditional pharmacopoeia of Ogun State for treating inflammatory diseases. Among the plants documented in this survey, *Alstonia boonei* De Willd (Olajide et al, 2000) and *Zingiber officinale* (Ojewole, 2006), and others (Ekpendu et al, 1994; Akindele and Adeyemi, 2007; Ogbole et al, 2007) have been investigated for their anti-inflammatory properties.

Table 2: Professional experience

		%
Frequency of treatment	<i>Irregular</i>	80.00
	<i>Regular</i>	20.00
	<i>Not at all</i>	0.00
Other treatment apart from herbs	<i>A. None</i>	20.00
	<i>B. Non respondents</i>	0.00
	<i>C. Divination/oracle/incantation/ animal part</i>	80.00
Source(s) of knowledge of herbal treatment	<i>Ancestral</i>	34.00
	<i>Training</i>	26.00
	<i>Ancestral & Training</i>	40.00
Duration of treatment (weeks)	<i>2 -3</i>	10.50
	<i>3 -5</i>	40.00
	<i>5 – 12</i>	36.00
	<i>Non respondents</i>	38.50
Availability of plant/plant parts	<i>In the forest only</i>	45.00
	<i>Other places (e.g. market, around the house)</i>	20.00
	<i>Not Available</i>	20.00
	<i>Not always available</i>	15.00
Accompanied side effect(s)	<i>None</i>	86.00
	<i>Nausea and vomiting</i>	5.00
	<i>Others</i>	9.00
Accompanied verbal instruction	<i>Yes</i>	84.00
	<i>No</i>	7.00
	<i>Non-respondent</i>	9.00

Table 3: Ability to diagnose and treat inflammatory diseases

Treatment specialization	Percentage of respondents	
	YES	NO
Rheumatoid arthritis	55	45
Asthma	50	50
Pruritis	40	60
Gout	8	92
Furuncle (boil)	35	65

Table 4: List of some recipes for rheumatoid-arthritis

	Recipes	Solvent(s) used	Type of preparation
1	Cut <i>Alstonia boonei</i> bark, <i>Citrus aurantifolia</i> (10 fruits), <i>Citrus paradise</i> fruits, <i>Zingiber officinale</i> , <i>Allium sativum</i> , <i>Allium cepa</i> .	Water/Soda water	Decoction or concoction
2	<i>Cassia fistula</i> leaves, <i>Allium sativum</i> bulb and pure honey.	Pure honey	Topical (Cream)
3	<i>Garcinia cola</i> roots, <i>Combretum bracteatum</i> leaves, <i>Crateva adansonii</i> , <i>Combretum zenkeri</i> leaves	Water/Alcohol	Decoction
4	<i>Cassia fistula</i> leaves snail meat.	Water	Soup
5	<i>Garcinia cola</i> , <i>Zingiber officinale</i> , and <i>Allium sativum</i>	Water/Soda water	Decoction
6	<i>Alchornea cordifolia</i> leaves, camphor, and <i>Zingiber officinale</i> .	-	External (Soap)

Table 5: List of some recipes for gout

	Recipes	Solvent(s) used	Type of preparation
1	<i>Abrus precatorius</i> leaves and seed, <i>Aframomum melegueta</i> wholeplant,	Lime water	Decoction
2	<i>Jateorhiza micrantha</i> leaves and solid pap	-	Topical preparation
3	<i>Alchornea cordifolia</i> leaves and local palm wine	Palm wine	Topical preparation

Table 6: List of some recipes for furuncle

	Recipes	Solvent(s) used	Type of preparation
1	<i>Dioclea reflexa</i> leaves and <i>Vernonia amygdalina</i> leaves,	Coconut oil	Topical (paste)
2	<i>Xylopia aethiopica</i> leaves and white chalk,	-	Topical (paste)
3	<i>Alternanthera sessilis</i> leaves and catfish.	Water	Soup
4	<i>Carica papaya</i> fresh seeds	-	-
5	<i>Citrus limon</i> juice to wash the boil every morning and <i>Aloe vera</i> juice every night.	Juice	Topical (solution)

Table 7: List of some recipes for asthma

	Recipes	Solvent(s) used	Type of preparation
	<i>Ananas comosus</i> fruit, unripe <i>Carica papaya</i> fruit,, palm nut, pap water	Pap water	Concoction
	Honey <i>Garcinia cola</i> , <i>Zingiber officinale</i> and <i>Allium sativum</i> .	Honey	Mixture
	<i>Carica papaya</i> seed	-	-
	<i>Garcinia cola</i> root bark, a pinch of salt.	Water	Decoction
	<i>Corchorus oleratus</i> and honey	Honey	Mixture
	<i>Crudia klainei</i> leaves or bark	Water	Decoction

Table 8: List of some recipe for pruritus

	Recipes	Solvent(s) used	Type of preparation
1	<i>Strophantus gratus</i> , pork meat and pepper.	Water	Soup
2	<i>Celosia argentea</i> roots, <i>Hymenostegia afzelii</i> , <i>Uvaria chamae</i> , <i>Agelaea oblique</i> , <i>Dioclea reflexa</i> , <i>Piper guineensis</i> , <i>Allium sativum</i> , <i>Aframomum melegueta</i> , salt and potash.	Hot pap	Powder
3	Gun powder, black and yellow sulphur, black soap	-	External (Soap)
4	<i>Anogeissus leiocarpus</i> stem bark, <i>Strophantus gratus</i> root, <i>Vernonia amygdalina</i> , <i>Khaya senegalensis</i> stem bark, <i>Allium sativum</i> , <i>Cocos nucifera</i> root, lime, male stones,	Water	External (Decoction)

Table 9: List of most commonly mentioned plants used in the treatment of inflammatory diseases

Local name	Botanical name	Family	Common name	Part(s) used	Frequency
Ginjia	<i>Zingiber officinale</i> Rosc	Zingiberaceae	Ginger	Tuber	27
Ayu	<i>Allium sativum</i> L.	Liliaceae	Garlic	fruit	25
Alubosa	<i>Allium cepa</i> L.	Liliaceae	Onion	bulb	21
Osan wewe	<i>Citrus aurantifolia</i>	Rutaceae	Lime	leaves	19
Ata ire	<i>Aframomum</i> <i>melegueta</i> K. Schum	Zingiberaceae	Alligator Pepper	seed	16
Ori	<i>Butyrospermum</i> <i>parkii</i> Kotschy.	Sapotaceae	Shea Butter	wax	16
Iyere	<i>Piper guineensis</i> Schum. et Thonn	Piperaceae	Climbing Black Pepper	Leaves/fruit	15
Agbon	<i>Cocos nucifera</i> .	Arecaceae	Coconut Tree	fruit	15
Awun	<i>Alstonia boonei</i> De Wild.	Apocynaceae	Patternwood	Leaves/bark	15
Orogbo	<i>Garcinia cola</i> Heckel .	Guttiferae	Bitter Cola	Root/bark	14
Ewuro	<i>Vernonia</i> <i>amygdalina</i> Del.	Compositae	Bitter Leaf	Root/leaves	14
Eru	<i>Uvaria chamae</i> P. Beauv	Annonaceae	Finger Root	Root	14
Ibepe	<i>Carica papaya</i> L.	Caricaceae	Pawpaw	Leaves/unripe fruit	14
Ewa fifun	<i>Vigna unguiculata</i> (L.) Walp.	Leguminosae	White Beans	seed	14
Namunamu	<i>Jateorhiza</i> <i>macrantha</i> (Hook.f.) Exell & Mendonça.	Menispermaceae	-----	leaves	10
Osan wewe	<i>Citrus aurantifolia</i>	Rutaceae	Lime	fruit	10
Oju ologbo	<i>Abrus precatorius</i> L.	Leguminosae	Jequirty/Cat's Eye	Seed	

4. Conclusion

It is apparent that the knowledge of the uses of plants, which is jealously guarded by their owners, formerly seemed secure from generation to generation but the changes imposed by modern life on social structures and attitudes now seem too often to cause the loss or rejection of such local knowledge

This ethnobotanical survey has documented various recipes implicated in the treatment of five known inflammatory conditions in Ogun State, and has identified rheumatoid arthritis and asthma as the predominant diseases. This publication has also revealed several plants with potential as anti-inflammatory agents for scientifically rationalization.

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