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ETHNOBOTANICAL SURVEY OF MEDICINAL PLANTS USED IN THE TREATMENT OF MALARIA BY THE IDOMA SPEAKING PEOPLE OF OGBADIBO LOCAL GOVERNMENT AREA OF BENUE STATE, NIGERIA

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ABSTRACT
Ethnobotanical survey of medicinal plants used by the Idoma speaking people of Ogbadigbo local government area of Benue State for treatment of malaria was carried out. The survey was aimed at identifying the plants used in the treatment of malaria among the Idoma people. Information was collected by interviewing indigenous Idoma herbal medicine practitioners, herb sellers, and farmers making use of interviews and structured questionnaire. A total of 37 plant species belonging to 22 families were recorded from the surveys that are being used in herbal antimalarial recipes. *Fabaceae* and *Combretaceae* were most represented with 4 species each (10.8%), followed by *Rubiceae, Malvaceae, Euphobiciceae, Anarcardiaceaea, Moraceae, Meliceae, Annoniceae, Phyllanthaceae and Lamiaceae* represented by 2 species each (5.4%) while the remaining 11 families had 1 species each (2.7%). Investigations included the plant parts used, methods of preparing the herbal antimalarial recipe and how they are administered. The results indicated that the parts of the plants used could be the leaves, stem bark, roots or whole plant. Water was the main medium of antimalarial recipe preparations, irrespective of the part, whole plant or combination of parts of plant used. Though, a large number of plants that are traditionally used for the treatment of malaria were identified, scientific validation of claims of antimalarial potency is required.

Keywords: *Ethnobotanical, Survey, Plants, Malaria, Therapy, Idoma People,*

INTRODUCTION

Malaria is today a disease of poverty in underdeveloped countries, but it remains an important health problem globally. In the last decade, the prevalence of malaria has been escalating at an alarming rate, especially in Africa. An estimated 300 to 500 million cases each year cause 1.5 to 2.7 million deaths, more than 90% in children under 5 years of age in Africa (Good, 2001; Sachs and Malaney, 2002). Medicinal plants, since times immemorial, have been used in virtually all cultures as a source of medicine (Hoareau and Dasilva, 1999). Medicinal plants play an important role in medical system in Nigeria and plant materials remain an important resource to combat serious diseases in the world. Pharmacognostic investigations of plants are carried out to find novel drugs or templates for the development of new therapeutic agents. Since drugs like quinine and artemisinin were isolated from plants and because of the increased resistance of many pathogens, (e.g. malaria parasites) to established drugs, investigation of the chemical compounds within traditional plants is necessary (Philipson, 1991). It is believed strongly that if the herbs used to treat malaria by our ancestors in Africa hundreds of years ago were not effective, malaria would have destroyed Africa (Elujoba, 2005). In view of the problems associated with antimalarial drug resistance, new drugs or drug combinations are urgently required today for treatment of malaria. Preferably, the new drugs should have novel modes of action or be chemically different from the drugs in current use (Philipson and Wright 1991). Plants have always been considered to be a possible alternative and rich source of new drugs and most of the antimalarial drugs in use today such as quinine and artemisinin were either obtained directly from plants or developed using chemical structures of plant-derived compound as templates (Basco *et al.*, 1994). Due to limited availability and/or affordability of pharmaceutical medicines in many tropical countries, the majority of the populations depend on traditional medical remedies (WHO, 2002 and Zirihi *et al.*, 2005), mainly from plants. In ethnomedicine, same plants and/or related species are used for the treatment of related ailments within the same region, or across different regions of the world. For instance, whereas *Maytenus senegalensis* is used in many African regions for the treatment of various ailment including chest pains, rheumatism, snakebites and malaria, plants of the genus *Maytenus* are used to prepare decoctions in South America as anti-inflammatory and analgesic remedies (Sosa, *et al.*, 2006 and Ajaiyeoba, *et al.*, 2006). This is however not surprising since malaria manifests itself with symptoms including fever, pains and immunosuppression and some plants may lack direct antiplasmodial activity but may possess

antipyretic, analgesic and immune stimulatory effects (Idowu, *et al.,* 2010). New antimalarial drugs and approaches to overcome parasite resistance are needed to deal with the expanding problem of drug resistance which continues to challenge malaria control efforts based on early diagnosis and treatments. Only a limited number of antimalarial drugs are currently at an advanced stage of clinical development. In line with this, there is a renewed interest in plant products since the identification of sesquiterpene lactone artemisinin (quighaosu). An attractive option for poor countries is the exploitation of the possible therapeutic effects of their local herbs.

There are a lot of local plants in Nigeria for treatment of various diseases. However, scientific studies have been conducted only on a limited extent with few medicinal plants. Owing to the adverse effect of many synthetic drugs (orthodox drugs) and the cost of procuring these drugs. It is needful as a matter of fact to use plants which are natural reservoir of many antimicrobial agents as well as various therapeutic activities.

A number of herbal plants have been used traditionally in the treatment of variety of feverish conditions and many have been found to be effective and safe when used against malaria. Ethno botanical survey is an important step in the identification, selection and development of therapeutic agents from medicinal plants. However, there is no documented report on the plants traditionally used by the Idoma speaking communities in Ogbadigbo local government area of Benue State, Nigeria; for the treatment of malaria. Therefore there is need to collate information from Idoma speaking people of Ogbadigbo local government area of Benue State. The aim of this study was to collate information from an indigenous Idoma people living in Ogbadigbo local government area of Benue State, about their current traditional uses of plants for the treatment of malaria, their local names, and the plant part(s) used, method of preparation and mode of administration.

MATERIALS AND METHODS

Study Area

This research was carried out in Ogbadigbo local government area of Benue State. Benue State lies within the lower river Benue trough in the middle belt region of Nigeria. Benue occupies a landmass of 34,059 square kilometres. Its geographic coordinates are longitude 7° 47’ and 10° 0’ East, Latitude 6° 25’ and 8° 8’ North. Based on Koppen climate classification, Benue State lies within the savanna climate and experiences two distinct seasons, the wet season and the Dry season. The rainy season lasts from April to October with annual rainfall in the range of 100-200mm. The dry season begins in November and ends in March. Temperatures fluctuate between 21 – 37 degrees Celsius in the year (Ochefu, *et al.*, 2007).

Fig. 1: Map showing Ogbadibo Local Government.

Informed consent

The purpose of the study was explained to the indigenous Idoma herbal medicine practioners, hunters, farmers and community and opinion leaders in the town. Consent to conduct the study was given by the traditional herbs sellers and community leaders. Informed consent was obtained from each of the participants. A semi – structured questionnaire was administered randomly to obtain information on their knowledge about malaria and its symptoms, commonly used herbs and parts frequently used for antimalarial remedies. A total of 100 people were interviewed, to obtain information on the ethno botanic and ecological characteristics of the plants and the methods of use in the treatment of malaria. The plant specimens collected were identified by Mr Segun Adeyanju and specimen vouchers have been deposited in the herbarium at the Department of Biological Sciences, University of Abuja, for references.

Questionnaire administration and plant sample collection

Ethno medicinal information and plant samples were collected between June and November 2017 by means of oral interview with identified local herbalists, farmers and herb sellers using structured questionnaire from the different villages making up the community. Information on the demographic structure of respondents (age and sex) were generated from the questionnaire, the respondents provided information on plant part used, mode of preparation, method of administration and other medicinal uses. The respondents helped in identification and collection of the indeginenous plants.

RESULTS

Table 1 shows the lists of medicinal plants often used for malaria therapy and other illnesses by the Idomas in Ogbadigbo local government area of Benue State. The recipes also, could be a combination of various species of plants. Treatment regimens of malaria generally included drinking, bathing and steam inhalation of the aqueous herbal preparations for 4-7 days or until symptoms of malaria disappear. Herbal remedies can either be prepared from dry plant

‘’ingredients’’ or freshly collected samples from the field. Respondents however affirmed that either plant material is efficient depending on accessibility to plant species as some plants are not easily seen within the locality. Hence, they are collected fresh or bought and preserved dry. In Ogbadibo, the herbal remedies are prepared in a local clay pots.

DISCUSSION

The survey has provided information about 37 plant species belonging to 22 families used in herbal antimalarial recipes in the treatment of malaria and other human ailments by Idoma speaking communities in Ogbadigbo local government area of Benue State, Nigeria. According to the respondents the plants have been used from generation to generation and have been found to be effective in the prevention and treatment of malaria. These plants are quite similar to those used in Ghana (UNESCO, 1998) , Sierra Leone (Agbovie, *et al.,* 2002) and agree with the work of Idowu *et al*., 2010, Kayode *et al*., 2009, Olowokudejo *et al*., 2008, Ajibesin *et al*., 2008, Odugbemi *et al*., 2007, Barnish and Samai, 1992 and Oliver, 1960 in Nigeria.

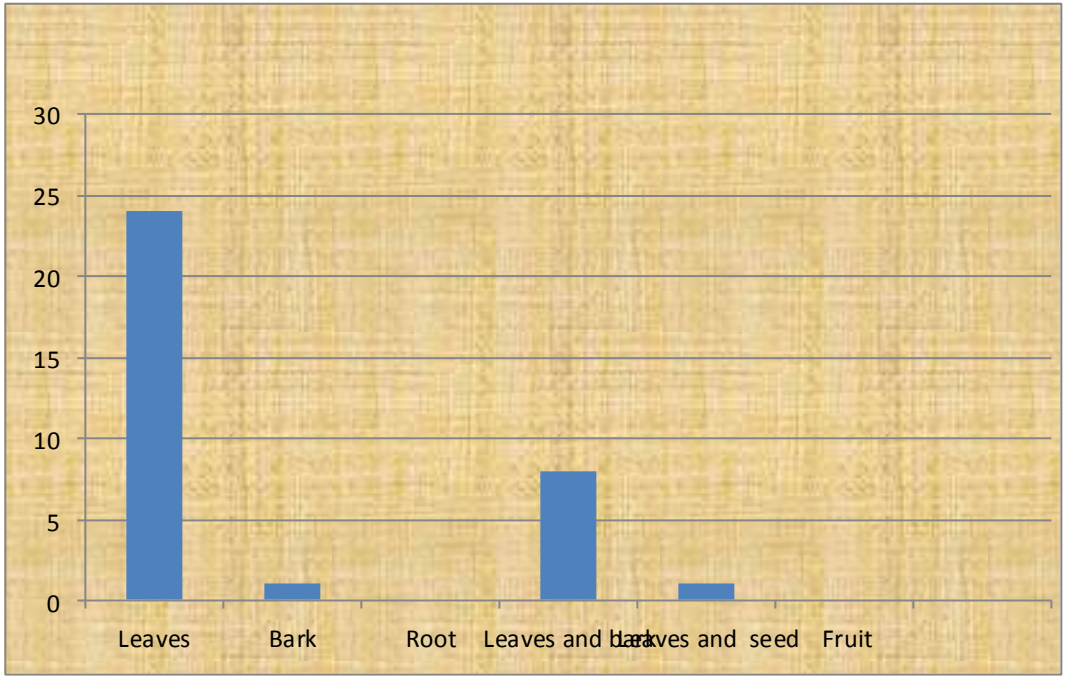
The majority of the herbal preparations identified in this study involved boiling the plant material and then drinking the extract. However, none of the people interviewed provided any information about how they might “standardize” treatments and the amounts used were generally vague. Thus the quality could vary greatly among prescriptions and the reason for mixing different herbs is to tackle different symptoms of malaria since some of the herbs are for different ailments. The use of herbal remedies for prevention and cure of ailments of increasing interest due to the superiority and efficiency of activity provided by phyto-constituents in herbs and undesirable effects of modern medicine. Evidences prove that herbal therapy is more effective than other available treatments, with lesser side effects, and economic in nature.

Table 1: Common plants or herbs used among Idoma of Ogbadigbo local government area of Benue State in treating Malaria, their scientific names, local names and other medicinal uses.

	Species Name	Family Name	Local Name	Common Name	Parts Used	Other Medicinal Uses
1	*Lophira lanceolata*	*Ochnaceae*	*Hookuta*	Dwarf red iron wood	Leaves	High fever, typhoid
2	*Tamarindus indica*	*Fabaceae*	*Ochiomoma*		Leaves, bark	
3	*Garcinia kola*	*Clusiaceae*	*Ogorigo*	Bitter cola	Leaves	High fever
4	*Daniella oliveri*	*Fabaceae*	*Chiha*		Leaves	
5	*Cymbopogon citratus*	*Poaceae*	*Achi-ubeke*	Lemon grass	Leaves	High fever
6	*Grewia mollis*	*Malvaceae*	*Humerdza*	Lettuce	Bark	Typhoid, high fever
7	*Terminalia catappa*	*Combretaceae*	*Kuegh*	Indian almond	Leaves	Loss of appetite
8	*Diospyros mespiliformis*	*Ebenaceae*	-		Leaves	High fever
9	*Moringa oleifera*	*Moringaceae*	*Geringedu*	Drumstick tree	Bark, leaves	Malaria fever,diahrrhoea
10	*Vitellaria paradoxa*	*Sapotaceae*	*Okume*	Shel butter	Leaves, bark	Fever, burnt skin
11	*Psidium guajava*	*Myrtaceae*	*Uguava*	Guava	Leaves	Typhoid
12	*Acalypha hispida*	*Euphorbiaceae*	-	Chenille plant	Stem, leaves	
13	*Mangifera indica*	*Anacardiaceae*	*Umangoro*	Mango	Leaves	Fever, typhoid
14	*Ficus sur*	*Moraceae*	*Ugbanokolo*	Bush fig	Leaves	tooth ache
15	*Piliostigma thonningii*	*Fabaceae*	*Gyacin-kpande*	Carmel's foot	Leaves	
16	*Nauclea latifolia*	*Rubiaceae/*	-	Canary cheesewood	Bark, leaves	
17	*Khaya senegalensis*	*Meliaceae*	*Haa kiriki*	African mahogany	Leaves	Fever
18	*Azadirachta indica*	*Meliaceae*	*Udogonoyaro*	Neem tree/dogoyaro	Leaves	stomach upset
19	*Lannea acida*	*Anacardiaceae*	*Hilgbur*		Leaves	loss of appetite, typhoid
20	*Citrus limon*	*Rutaceae*	*Aremu*	Lemon	Leaves, Fruit	skin infection
21	*Terminalia macroptera*	*Combretaceae*	*Otobi*	Kwandari	Leaves	High fever
22	*Parinari polyandra*	*Chrysobalanaceae*	*Ibua kuna*	Fula-fulfulde	Leaves	Malaria fever
23	*Anogeissus leiocarpa*	*Combretaceae*	*Otla*	Chew stick	Leaves, stem	Cough
24	*Annona muricata*	*Annonaceae*	*Oda oluje*	Soursop	Leaves	Malaria fever
25	*Erythrina senegalensis*	*Fabaceae*	*Acheche*	Coral tree	Leaves	Typhoid
26	*Morinda lucida*	*Rubiaceae*	*Enem-okplichi*	Brimstone tree	Leaves	
27	*Newbouldia laevis*	*Bignoniaceae*	*Ogblichi*	African nut tree	Bark, leaves	Pain killer, cough, skin Infection
28	*Hymenocardia acida*	*Phyllanthaceae*	*Enanche*	Life stick	Leaves	Loss of appetite
29	*Bridelia ferruginea*	*Phyllanthaceae*	*Ede*		Leaves	Typhoid
30	*Alchornea cordifolia*	*Euphorbiaceae*	*Owie*		Leaves	Typhoid
31	*Treculia africana*	*Moraceae*	*Ofifio*	African breadfruit	Leaves	

32	*Annona senegalensis*	*Annonaceae*	*Ukpokpo*	Wild custard apple	Leaves, bark	High fever, typhoid
33	*Terminalia senegalensis*	*Combretaceae*	*Okino*	Bambara	Leaves	Malaria fever
34	*Cola milenii*	*Malvaceae*	*Obokpehe*	Kolanut	Leaves	High fever
35	*Carica papaya*	*Caricaceae*	*Uderu*	Pawpaw	Leaves, bark	High fever, typhoid
36	*Gmelina arborea*	*Lamiaceae*	*Umelaina*	Melina tree	Leaves, bark	Typhoid, high fever
37	*Ocimum gratissimum*	*Lamiaceae*	*Anyeba*	Scent leaf	Leaves	High fever

Thirty Seven (37) Plants were encountered and the parts being used are leaves (64.9%), barks (2.7%), Root (0%) leaves and bark (21.6%), leaves and seed (2.7%), fruits (0%) respectively.



CONCLUSION

The Nigerian society stands to gain more working towards the integration of traditional medicine into its health care delivery system. Plants are part of our own natural resources that we must learn to utilize for sustainable development. This study has attempted to provide information about the treasure of medicinal plants with anti-malarial properties used by the Idoma communities as prescribed by individuals and groups in Ogbadigbo local government area of Benue State, Nigeria.

RECOMMENDATION

Further research is needed to identify active principles from these medicinal plants to assess their dosage and quality control, and investigate their interactions and adverse effects. There is need to carry out further investigations to understand the mechanism of action of herbal medicines in order to develop efficient and safe agents.

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