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RESEARCH ARTICLE

ETHNO-BOTANICAL SURVEY OF LOCAL HERBS USED FOR THE TREATMENT OF MALARIA FEVER AMONG THE URHOBOS PEOPLE IN DELTA STATE, NIGERIA

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ABSTRACT

The local medicinal herbs used in combating malaria among the Urhobo people in Delta state, Nigeria were investigated in this study. The Urhobo people have a rich cultural heritage, which is reflected in the well-developed herbal medicine used to combat malaria and some other common ailments. The survey identified the parts of the medicinal plant used as drug, mode of preparation and mode of administration among the Urhobo people in Delta state. It was observed that some of these plants are used alone or in combination with other plants, which are either taken orally or used for bathing. The study revealed that plant leaves were the main part of plants used by the Urhobo people in the treatment of malaria. The other parts of the plant also used included the stem bark, root bark and whole plant. Information on dosages of the herbs administered to patients varies. The survey was conducted by administering a well-structured questionnaire to select natives who were adjudged by the locals to be knowledgeable in the use of local herbs for medicine. We found out that some plants were more frequently used in treating malaria than others; these plants included *Azadirachta indica*, *Carica papaya*, *Mangifera indica*, *Cymbopogon citratus* and *Citrus aurantifolia*. The study showed that 33 plants belonging to 25 families were frequently used than other plants by the Urhobo people of Delta state Nigeria in treatment of malaria fever.

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INTRODUCTION

Malaria is a mosquito-borne infectious disease of humans caused by eukaryotic protists of the genus *Plasmodium*. It is widespread in tropical and subtropical regions, including much of Sub-Saharan Africa. In Nigeria, malaria is mostly caused by *P. falciparum* and *P. malariae*. The female anopheles mosquito transmits these parasites to humans. Malaria has a great morbidity and mortality than any other infectious diseases of the world (World Malarial Report, 2005; Smith, 1978; WHO, 2000). In humans, the parasites (called sporozoites) travel to the liver, where they mature and release another form, the merozoites. These enter the bloodstream and infect the red blood cells. Despite advances in modern medicine, malaria remains a disease that is difficult to eradicate and is therefore a major health problem, for one main reason: all anti-malarial drugs are expensive for the populations in endemic countries (Zirihi Guédé *et al.*, 2010). Malaria transmission can be reduced by preventing mosquito bite, distribution of inexpensive mosquito nets and insect repellents, or by mosquito-control measures such as spraying insecticides inside houses and draining standing water where mosquitoes lay their eggs (regular sanitation). Malaria is the most clinically important disease worldwide with estimated

300 million to 500 million clinical cases annually. This according to the World Health Organization results is approximately 1.5 million to 2.7 million deaths. Ninety percent of the deaths occur in children under five years of age living in sub-Saharan Africa. In Africa some 3,000 children die of malaria each day, one every second (Finkel, 2007). In Nigeria, 60 million people experience malaria attack at least twice a year. The new data on Nigeria further reveals that 92 percent of this are pregnant women and children under 5 years because their resistant to the disease is low (CNL, 2007 and SPDC, 2007). Malaria is commonly associated with poverty, and can indeed be a cause of poverty and a major hindrance to economic development. Ethno-botanical studies are often significant in revealing locally important plant species especially for the discovery of crude drugs. Right from its beginning, the documentation of traditional knowledge, especially on the medicinal uses of plants, has provided many important drugs of modern day (Flaster, 1996). Out of the total flowering plants reported from the world, more than 50,000 are used for medicinal purposes (Govaerts, 2001; Shippmann, 2002). The growing public interest and awareness of natural medicines have led the pharmaceutical industry and academic researchers to pay more attention to medicinal plants (Day, 1998). This continued reliance of many African people on traditional medicines is partly due to economic circumstances, which place modern health facilities, services and

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Table 1: Showing local herbs used in treating malaria

S.No	Scientific Name	Common Name	Local Name	Part of Plant used	Mode of Preparation	Mode of Administration
1	<i>Allium sativum</i>	Garlic	Garlic	Bulb	Tincture	Drinking
2	<i>Alstonia boonei</i>	Stool wood	Ukpukuhu	Root, bark and leaves	Infusion, decoction and tincture	Drinking
3	<i>Anacardium occidentale</i>	Cashew	Cashew	Leaves, bark and root	Decoction	Drinking
4	<i>Azadirachta indica</i>	Neem	Dogoyaro	Leaves and bark	Decoction	Drinking and bathing
5	<i>Bambusa vulgaris</i>	Bamboo	Opko	Leaves	Decoction	Drinking
6	<i>Carica papaya</i>	Pawpaw	Eto-oyibo	Leaves and seeds	Boiled with mango leaves	Drinking
7	<i>Chromolaena odorata</i>	Siam weed	Ishero	Leaves	Boiled with <i>Azadirachta indica</i>	Drinking
8	<i>Chrysophyllum albidum</i>	Africa star apple	Uteagadava	Bark and leaves	Decoction	Drinking
9	<i>Citrus aurantifolia</i>	Lime	Uteafere	Fruits and leaves	Leaves and cut fruit are boiled with Lipton	Drinking
10	<i>Croton zambesicus</i>			Roots	Decoction	Drinking
11	<i>Curcuma longa</i>	Turmeric	Iblue	Rhizomes	Tincture	Drinking
12	<i>Cymbopogon citrates</i>	Lemon grass	Iti	Leaves	Boil with honey	Drinking
13	<i>Dacryodes edulis</i>	Native pear	Ube	Leaves and bark	Decoction	Drinking
14	<i>Dialium guineense</i>	Velvet or black tamarind	Ohiorama	Leaves and fruits	Infusion and decoction	Drinking and bathing
15	<i>Emilia sonchifolia</i>		Orho-orua	Whole plant	Decoction	Bathing
16	<i>Irvingia gabonensis</i>	Bush mango	Owe	Bark	Decoction	Drinking
17	<i>Jatropha curcas</i>		Ishakpa	Leaves	Decoction	Bathing
18	<i>Khaya gradifoliola</i>	Mahogany		Bark	Decoction and infusion	Drinking and bathing
19	<i>Mangifera indica</i>	Mango	Imangoro	Leaves and bark	Decoction	Drinking and bathing
20	<i>Melicia excelsa</i>	Iroko	Uloho	Bark and root	Decoction	Drinking and bathing
21	<i>Mormodica charantia</i>	Bitter melon	Urakhanye	Leaves	Infusion	Drinking
22	<i>Newbouldia laevis</i>	Tree of life	Ogiriki	Leaves and roots	Decoction	Drinking
23	<i>Ocimum gratissimum</i>	Tea bush	Erhan	Leaves	Infusion	Drinking
24	<i>Parquetina nigrescens</i>		Ufiogba	Leaves	Infusion	Drinking
25	<i>Persea Americana</i>	Avocado pear	Ipear	Leaves and bark	Decoction	Drinking and bathing
26	<i>Phyllanthus niruri</i>		Iyeke	Leaves	Tincture	Drinking
27	<i>Piper guineense</i>		Eshasha	Seed	Ground seeds and used as spices	Eat as soup
28	<i>Psidium guajava</i>	Guava	Igueva	Leaves	Boil with mango and pawpaw	Drinking
29	<i>Rauvolfia vomitoria</i>		Urhi-ewre	Root	Infusion	Drinking
30	<i>Senna alata</i>	Senna	Orkipkabe-vwerhen	Leaves	Decoction	Drinking
31	<i>Sida acuta</i>	Broom weed		Leaves	Decoction	Drinking
32	<i>Vernonia amygdalina</i>	Bitter leave	Orhingbo	Leaves	Infusion	Drinking
33	<i>Zingiber officinale</i>	Ginger	Ginger	Rhizomes	Tincture	Drinking

Table 2: Plant species and their Families

S.No	Families	Plants Species
1	Anacardiaceae	<i>Anacardium occidentale</i> and <i>Mangifera indica</i>
2	Apocynaceae	<i>Alstonia boonei</i> and <i>Rauvolfia vomitoria</i>
3	Asteraceae	<i>Emilia sonchifolia</i>
4	Bignoniaceae	<i>Newbouldia laevis</i>
5	Burreraceae	<i>Dacryodes edulis</i>
6	Caricaceae	<i>Cariaca papaya</i>
7	Compositae	<i>Chromolaena odorata</i> and <i>Vernonia amygdalina</i>
8	Curcubitaecae	<i>Mormodica charantia</i>
9	Euphorbiaceae	<i>Croton zambesicus</i> , <i>Jathropa curcas</i> and <i>Phyllanthus niruri</i>
10	Fabaceae	<i>Senna alata</i>
11	Gramineae	<i>Bambusa vulgaris</i>
12	Irvingiaceae	<i>Irvingia gabonensis</i>
13	Lauraceae	<i>Persea Americana</i>
14	Leguminosae	<i>Dialium guineense</i>
15	Liliaceae	<i>Allium sativum</i>
16	Malvaceae	<i>Sida acuta</i>
17	Meliaceae	<i>Azadirachta indica</i> and <i>Khaya gradifoliola</i>
18	Moraceae	<i>Melicia excels</i>
19	Myrtaceae	<i>Psidium guajava</i>
20	Periplocaceae	<i>Parquetina nigrescens</i>
21	Piperaceae	<i>Piper guineense</i>
22	Poaceae	<i>Cymbopogon citrates</i>
23	Rutaceae	<i>Citrus aurantifolia</i>
24	Sapotaceae	<i>Chrysophyllum albidum</i>
25	Zingiberaceae	<i>Curcuma longa</i> and <i>Zingiber officinale</i>

pharmaceuticals out of the reach of the majority of the population. However, in many cases, it is also attributable to the widespread belief in the effectiveness of many traditional therapies. Even where western biomedical care is available, many people still prefer traditional treatments for treating many ailments (Asfaw *et al.*, 1999; Addis *et al.*, 2001). The main objective of this survey is to preserve indigenous knowledge of these herbs and to present indigenous medicinal plants/herbs used in the treatment of malaria among the Urhobo people of Delta state. Modern medical practice has not fully exploited indigenous medicinal plant in the treatment of this unwanted disease. There is need to conduct research into these indigenous medicinal herbs in order to find a lasting solution to malaria disease. The low accessibility and inability to afford orthodox medicine by rural dwellers, the need to remain healthy and to be economically productive, is one of the major reasons that have led to their dependence on indigenous medicinal herbs.

MATERIALS AND METHODS

The survey was carried out among the Urhobo people of Delta state in Nigeria, cutting across ten (10) villages, which includes Iwrhakan, Aloba, Olota, Ododegho, Udo-ophori, Ogoda, Orere, Iwrhenene, Ogbowwa and Okpaka. Delta state is located in the south-south geopolitical zone of Nigeria. There is also community of non-natives among these people in the villages; these non-natives come from various parts of Nigeria. The people of these villages are mainly farmers, primary schools teachers, petty traders, palm-wine tappers, anglers and hunters, although there are some traditional healers and herbalist among them. These communities have no primary healthcare facilities to take care of the people's immediate medical needs. A well-structured and pretested questionnaire was administered to focus groups in form of question and answer, this focus group comprises of traditional

healers, primary schools teachers, elderly people of age 60 and above and the middle-aged people of age 30-60. A stratified sampling method was adopted in presenting the questionnaire to the focus group. After administering the questionnaire, there were usually discussions on the indigenous knowledge of the medicinal herbs mentioned. In each of these villages, 100 questionnaires were administered to people adjudged by the locals to be knowledgeable in the use of local medicinal herbs. Questions based on types and parts of plants often used for malaria treatment; methods of preparation and administration were asked. Indigenous information on medicinal plants was compiled according to Generic name, common names, parts of plants used, mode of preparation and administration. Collection of these plants cut across various locations in the community. Collection of plant samples were carried out with the assistance of traditional medicine practitioners. During this ethno-botanical survey, the following were the information gathered; identification and name of the plants used to treat malaria, different parts of the plant used as drugs, methods of collection, and mode of preparation and administration of the medicament to patients. The collected samples and specimens were identified at the Herbarium of the National Centre for Genetic Resources and Biotechnology (NACGRAB), Ibadan, Nigeria.

RESULTS AND DISCUSSIONS

The summaries of the plants parts exploited to treat malaria fever in the study area are shown in the Table 1 below, the survey shown that 33 plants species belonging to 25 families are used by the Urhobo people in Delta state for malaria treatment. These plants are similar to those used for malaria therapy in Ghana (UNESCO, 1997), Sierra Leone (Agbovie *et al.*, 2002) and agree with the work of Oliver (Barnish and Samai, 1992) and Singha (Oliver, 1960) on medicinal plants of Nigeria. We found out that some plants were frequently used in treating malaria than others; these plants included *Azadirachta indica*, *Carica papaya*, *Mangifera indica*, *Cymbopogon citratus* and *Citrus aurantifolia*, this findings is in line with researches carried out by Idu *et al.*, 2008; Okoegwale and Omofezi, 2001. The study reveals that plant leaves are the part frequently used by the Urhobo people in the treatment of malaria. The following parts of the plants are used for malaria treatment; leaf, stem bark, root bark and whole plant. There are different methods of collecting these plants part; for roots and whole plants, the collection is made with a hoe, leaves are usually collected by hand while with stems and roots bark, the collection is done with machetes. Easily accessible specimens (leaves) are usually collected by hand. The parts of these plants could be used alone or in combination with other herbal materials in the fresh or dried forms. The mode of application is mostly oral by drinking the extracts or concoctions. However, the dosage levels and the quantities harvested at a time are at variance dependent on individuals experience and discretion. During the survey 8 traditional medicine practitioner were met, these traditional medicine practitioner gave information on the indigenous knowledge of herbs used in treating malaria fever. It was noted that 33 medicament receipts are developed to treat malaria by the Urhobo people in Delta state. Most of the plants were used either alone or in combination with other herbs. Similar results were reported in Okeigbo Nigeria (Tolu *et al.*, 2007) and Ndokwa west Nigeria (Ogie-Odia *et al.*,

2009) which indicated that all the medicinal formulas are mono-specific.

Conclusion

This survey shows that there exist many potent indigenous medicinal herbs used by the Urhobo people in combating malaria. It can be concluded that plant leaves are important ingredient in traditional medicine for the treatment of malaria fever as it featured as component in many of the herbal preparations. The importance of this study is that the indigenous knowledge of these medicinal plants is preserved and can be further exploited. There is need for researchers to explore and uncover all the medicinal potentials of these indigenous plants. Further research could therefore be embarked upon, on the indigenous knowledge of these medicinal plants in the development of new anti-malaria drugs with improved efficacy. Continued reliance of many African people on traditional medicines is partly due to economic circumstances, which place modern health facilities, services and pharmaceuticals out of the reach of the majority of the population. However, in many cases, it is also attributable to the widespread belief in the effectiveness of many traditional therapies. Even where western biomedical care is available, many people still prefer traditional herbal therapy for treating many ailments.

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