

Original Research Article

Ethnopharmacological survey of herbal treatment of malaria in Lagos, Southwest Nigeria



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ABSTRACT

Aim: This ethnobotanical survey was conducted to investigate the pattern of treatment practices and medicinal plants used for malaria therapy in Lagos State, Nigeria.

Methods: Focus group discussions were initially held with traditional herbal medicine practitioners (THMPs), herb retailers (HRs), elderly people, nursing mothers and undergraduate students to identify who had ever used herbs to treat malaria fever. Participants were recruited from various local government areas in Lagos. Five hundred and fifty eligible participants were interviewed with a semi-structured questionnaire purposely designed to collect information on the type, composition, method of preparation, dosage, and mode of administration of herbal preparations used as local antimalarial therapies.

Results: Herb sellers (36.4%), THMPs (27.3%), nursing mothers (27.3%), undergraduate students with knowledge of herb use (5.5%), and elderly people with knowledge of herb use (3.5%) were the participants in this study. Forty one plant species belonging to 27 families were identified as being used locally for antimalarial herbal recipes. Of these Enantia chlorantha (31.5%), Carica papaya (27.5%), Azadirachta indica (25.5%), Cymbopogon citrates (23.3%), Morinda lucida (22.7%), Mangifera indica (21.1%), and Alstonia boonei (20.5%) were the most frequently used plants. The stem barks, roots, leaves or whole plants were the plant parts most frequently used. These were used either alone or in combination with other plant parts. Different plant species were also used in combinations.

Conclusion: Indigenous plants with potential antimalarial properties were identified in this survey. The plants could serve as good sources of new antimalarial plant therapies.

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1. Introduction

The major burden imposed by malaria on the sub-Saharan African population is well recognized. *Plasmodium falciparum* is responsible for an estimated 300–500 million clinical attacks of malaria globally, and over one million under-five childhood deaths in sub-Saharan Africa (Snow et al., 2005). The disease accounts for an estimated loss of 44.7 million disability adjusted life years (DALYs), more than 80% of which are currently concentrated in sub-Saharan Africa (WHO, 2002). In the absence of effective intervention strategies and the rapid increase of drug resistance, the number of malaria cases might double over the next 20 years (Breman, 2001).

More than 15% of those who survive an acute attack of cerebral malaria are left with severe neurological deficits, and varying degrees of brain damage that may impair learning and development (Holding and Snow, 2001). The direct economic costs of malaria are enormous and weigh particularly heavily on resource-poor countries. Recent research has shown a close correlation at the country level between the rate of economic development and the burden of malaria, even after adjusting for potential confounding factors (Sachs and Malaney, 2002). This indicates that malaria is an important constraint on economic progress.

It is not surprising that *P. falciparum*, the species of malaria parasite responsible for the majority of malaria deaths, is now highly resistant to most of the available antimalarial drugs. This has been exacerbated by self-medication, empiric treatment of malaria, and use of counterfeit drugs (Oshikoya and Senbanjo, 2010). Since the late 1950s, resistance to chloroquine developed originally in two regions – South America and Southeast Asia – and is now widespread throughout the world. Resistance of *P. falciparum* to other antimalarial drugs including sulfadoxine-pyrimethamine and mefloquine followed within a few years of their introduction (Mockenhaupt, 1995). Cross-resistance between halofantrine and mefloquine is suggested by reduced response to halofantrine when used to treat mefloquine failures (ter Kuile et al., 1993).

Artemisinin-based combination therapy (ACT) is used as the first line treatment of uncomplicated P. falciparum malaria in over 100 countries and is the cornerstone of malaria control and elimination programmes in these areas. However, despite the high potency and rapid parasite killing action of ACTs there is a high rate of recrudescence associated with a monotherapy and recrudescence is not uncommon even when ACT is used (Ittarat et al., 2003). Compounding this problem are reports that some parasites in Cambodia, a known centre of drug resistance, have decreased in vivo sensitivity to ACTs. This raises serious concerns for the development of resistance to the ACTs in the field even though no major phenotypic and genotypic changes yet have been identified in these parasites (Cheng et al., 2012; Hoyer et al., 2012). Therefore, there is an urgent need to find alternative and highly potent compounds for malaria treatment (Marfurt et al., 2012).

The use of medicinal plants may hold the key to new and more effective antimalarial treatments in the future. Thus, there is a need to shift attention to natural products as raw materials for the development of new antimalarial treatments and, if possible, a vaccine with minimal side effects. In this regard, the indigenous medicinal plants in Nigeria that are used in combating malaria are yet to be fully explored.

Considering the rich flora diversity in Nigeria, it is imperative to identify and develop the types of medicinal plants (including the various species and plant parts) used as herbal treatment for malaria in Lagos state, Nigeria. One of the objectives of this study was to discover how the various plant species and parts are combined for use and their potential adverse effects following short and prolonged use.

2. Materials and methods

2.1. Study area

Lagos is a commercial centre in Nigeria with a little over 17.5 million inhabitants, a yearly growth rate of 3.2% and the second most populous city in the country (Nigerian Population Commission, 2007).

Twenty two per cent of the 787 square miles of the state is made up of lagoons and creeks that stretch over 180 km along the coast of the Atlantic Ocean. It extends westward to Badagry and eastwards to Epe, terminating in the riverine area of Lekki. Lagos is a multi-sociocultural melting point attracting both Nigerians and non-Nigerians alike, due to its economic and sociopolitical importance. This has led to migration from the rural areas within the country to the city, resulting in the diversified ethnic composition of inhabitants of the state. The indigenes of Lagos are mostly Aworis, Eguns and Ijebus. There are five major administrative divisions (Ikeja, Epe, Ikorodu, Badagry and Lagos Island) in the state as shown in Fig. 1. The study was therefore conducted in the five divisions to allow a better overall coverage of the entire state.

Of the 20 Local Government Areas (LGAs) in Lagos State and 37 Council Development Areas (CDAs), 14 LGAs were selected for the study: Badagry, Epe and Ikorodu are suburb/rural in nature while Apapa, Eti-Osa, Ibeju-Lekki, Kosofe, Lagos Mainland, Lagos Island, Mushin, Ojo, Oshodi-Isolo, Shomolu, Surulere, are urban settlements. The study was conducted over a period of three months – June–August, 2010. A cluster sampling technique was employed for the selection of the LGAs and simple random sampling technique for the selection of the participants.

2.2. Participant recruitment

Participants were recruited from both urban and rural areas of the state. The urban areas are densely populated with people of various tribes, occupations, social classes, religions and levels of literacy. However, the rural areas are populated mostly by indigenous Lagosians and few foreigners from the neighbouring states and countries. The rural communities generally lack the basic amenities of life including modern health facilities, pipe borne water, good roads and housing. The THMPs and HRs in each community were approached through their leaders, while elderly people, nursing mothers and undergraduate students were approached through the community leaders. Identified participants were initially invited to participate in group discussions to determine their eligibility. Only the individuals older than 25 years of age who Download English Version:

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