
Traditional treatment of malaria in Mbarara District, western Uganda

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Abstract

An ethnobotanical survey on traditional treatment of malaria was carried out in Mbarara District, western Uganda, a malaria-endemic area. From this study, traditional healers understood malaria symptoms. Malaria was reported to be the most common condition treated by traditional healers in this area. Plants were the single most important source of natural products used for malaria treatment. Most of the plants used in malaria treatment belong to the family Asteraceae. The most commonly used plant parts were the leaves. Water was the most common solvent and the oral route was the most commonly used. From this study there are a number of plants in Mbarara district that can be used as sources of herbal remedies for malaria. A number of these plants can be incorporated in the national primary healthcare package after scientific studies on safety and efficacy are done.

Key words: malaria, medicinal plants, traditional treatment, Uganda

Introduction

Malaria is one of the leading causes of mortality and morbidity in the world with about 70–150 million people showing signs and symptoms of the disease annually (Wernsdorfer, 1988). In Uganda it accounts for 25–40% of all outpatient visits at health facilities and 20% of all hospital admissions (Ministry of Health Malaria, 2003). Chemotherapy remains the most important method of controlling malaria although the incidence of parasite resistance to common drugs is on the rise (White *et al.*, 1999).

Traditional medicines are also used to treat malaria by at least 80% of people living in malaria-endemic parts of Africa (World Health Organisation, 2002). Knowledge of traditional medicines accumulated over a long time is transmitted orally from generation to generation (Sofowora, 1993; World Health Organisation, 2000, 2002). Traditional medicines are widely used in many parts of the world and their importance is on the rise. To many communities, they are perceived to provide holistic treatment for physical as well as psycho-spiritual illnesses and hence preferred to orthodox medicine (Tabuti, Dhillion & Lye, 2003). However, knowledge of traditional practices and materials is being lost with time because of non-documentation. The problem is aggravated by extermination of indigenous resources with environmental degradation and deforestation.

Plant parts are the most widely used resources in malaria traditional medicines. The recorded history of plant medicine is at least 7000 years. Yet fewer than 10% of the worlds' approximately 250 000 flowering plant species have been examined for pharmacological properties (Stix, 1993). The first important event in the history of malaria was the discovery of the 'Peruvian fever tree' chinchona. The bark preparation became widely used in Europe by the 16th century (Knell, 1991). Ethnobotanical surveys done in Uganda have indicated that the plants, *Vernonia amygdalina* Del., *Bidens pilosa* L., *Justicia betonica* L., *Schkuria pinnata* (Lam) Thell., *Secamone africana* (Oliv.) Bullock, *Cissus integrifolia* (Baker) Planch, among others are used to treat fever, sore throat, pelvic pain and intestinal parasitosis (Mubiru *et al.*, 1994; Bukenya *et al.*, 1997; Tabuti *et al.*, 2003). This study documents some of the antimalarial medicinal plants used in Mbarara district, an area where the majority tribe; Banyankole, has been reported to extensively use traditional medicine for malaria treatment among other tribes of Uganda (Kamatenesi, 2004; Tabuti *et al.*, 2003).

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Methods

Study area

The study was carried out in Mbarara district, a malaria-endemic district in south-western Uganda. The major ethnic group in the district is the Banyankole, who derive their livelihood on subsistence agriculture, crop and animal husbandry. The study was carried out in the corridor along Bukanga, Isingiro and Kashari counties, a predominantly pastoral area, and reported to have had the highest incidence of malaria in 2003 (DHHS, 2003). The study also covered areas of the Mbarara Municipality and Rwampara County.

Study design and sample size

This was a field study carried out between October 2003 and December 2004. Data collection involved a cross-sectional approach involving a combination of biological and social science approaches: semi-structured interviews, questionnaires, open discussion, direct observation and field walks in wild medicine collection areas were used. To any new area we entered, an introduction of the study to the local council was done. They would then help us identify respondents.

Two-research assistants conversant with the language and cultures of the local people were hired. These made it appropriate to extract relevant information from unsuspecting respondents. About one hundred and fifty respondents, at least 25 from each sub-county were interviewed. The plants used for treatment of malaria, methods of preparation and administration of the plant preparations were documented.

Data collection

Data were collected using semi-structured and open-ended questionnaires together with direct observations. Three research assistants conversant with the language and cultures of the area were trained in data collection. Before interviewing people in a village they introduce themselves to the Local Council chief who would in turn help them identify respondents.

The interview questions mainly focused on the plants used for treatment of malaria, the parts used, process and route of administration. However, other social-related questions were asked especially to achieve rapport with the

respondents. During field walks, plants mentioned by healers were identified locally. A voucher specimen was then collected and taken to the herbarium in Makerere University for proper scientific identification. Photographs and slides were also taken at the site.

Data analysis

Data were analysed both qualitatively and quantitatively. Responses obtained from open-ended questions were grouped into categories according to similarity in the responses. Percentages were derived from closed-ended questions. Analysis was performed with the help of SPSS computer software. Data were analysed qualitatively with the help of SPSS computer software.

Ethical issues

The study was approved by Makerere University, Faculty of Medicine Ethical Committee and cleared by the National Council of Science and Technology. Before interviewing heads of households, permission was sought from the Chairman Local council I of the area.

Results

Fever, intensive sweating, shivering, vomiting, high body temperature, convulsions in children, general weakness and lack of appetite were reported to be symptoms of malaria by the traditional healers. Malaria was reported to be the most common condition treated by traditional healers in this area. Plants were the single most important source of natural products used for malaria treatment. The twenty most frequently used plants for treatment of malaria in Mbarara district are given in Table 1. Most of the plants were from the family Asteraceae, and other families included Verbenaceae, Anacardiaceae, Agavaceae, Vitaceae, Cucurbitaceae, Solanaceae, Labiatae, Rutaceae, Flacourtiaceae and Myrsinaceae.

Plant parts were used either singly or in combinations for the treatment of malaria. Methods of preparations include: to freshly pounded materials water is added and the material is squeezed to obtain a liquid that is taken orally (decoctions), dried or fresh materials boiled in water and the liquid taken orally (concoctions), smearing fresh pounded plant materials all over the body (poultice) as well as hot baths whereby herbs are boiled and steam-bathed by the patient. Detailed methods of preparation and

Table 1 The twenty most frequently used plants used to treat malaria by traditional healers in Mbarara District, western Uganda

No.	Scientific name	Family	Local name	Frequency
1.	<i>Vernonia amygdalina</i>	Asteraceae	Omubirizi	102
2.	<i>Aloe</i> sp.	Agavaceae	Rukaka	85
3.	<i>Pseuderthria hookeri</i>	Fabaceae	Omukongorane	31
4.	<i>Clerodendrum rotundifolium</i>	Verbanaceae	Ekishekashekye	30
5.	<i>Lantana trifolia</i>	Verbanaceae	Omuhuki	26
6.	<i>Toddalia asiatica</i> Lam.	Rutaceae	Kabakura	24
7.	<i>Vernonia lasiopus</i>	Asteraceae	Omujuma	24
8.	<i>Erlangea cordifolia</i> (Oliv.) S.Moore	Asteraceae	Obutooma	24
9.	<i>Mangifera indica</i> L.	Anacardiaceae	Emiyembe	22
10.	<i>Erythrophleum suaveolens</i>	Cesalpinoidea	Omurama	22
11.	<i>Senna didymotrya</i>	Fabaceae	Omugabagaba	22
12.	<i>Microglossa pyrifolia</i>	Curcubitaceae	Akabindizi	20
13.	Unidentified	Asteraceae	Obunyazabashumba	18
14.	<i>Bothriocline longipes</i> (Oliv.&Hiern) NEBr.	Asteraceae	Ekyoganyanja	18
15.	<i>Nicotiana tabaccum</i> L.	Solanaceae	Etaabe	17
16.	<i>Plectranthus forskahlii</i> Willd	Labiatae	Ekizera	17
17.	<i>Trimeria bakeri</i> Gilg	Flacourtiaceae	Omwatanshare	16
18.	<i>Maesa lanceolata</i> Forssk.	Myrsinaceae	Omuhanga	15
19.	<i>Conyza</i> sp.	Asteraceae	Oruheza	15
20.	<i>Cassia occidentalis</i>	Fabaceae	Omuhanga	15

administration are summarized in Table 2. The main parts used included leaves, roots and the bark. These were mostly given in fresh form but in some cases as a dried product.

Table 2 Plant Parts, methods of administration and route of administration of common antimalarial preparations used by traditional healers in Mbarara District, Western Uganda

Scientific name	Parts used	Method of preparation	Route of administration
<i>Vernonia amygdalina</i>	Leaves and roots	Boiling in water/squeezing in cold water	Drinking/hot bath
<i>Aloe</i> sp.	Leaves	Boiling in water	Drinking
<i>Pseuderthria hookeri</i>	Leaves and roots		Drinking
<i>Clerodendrum rotundifolium</i>	Leaves and roots	Squeezing in cold water	Smearing
<i>Lantana trifolia</i>	Leaves and roots		Drinking
<i>Toddalia asiatica</i> Lam.	Leaves and roots		Drinking
<i>Vernonia lasiopus</i>	Leaves and roots		Drinking
<i>Erlangea cordifolia</i> (Oliv.) S.Moore	Leaves and roots		Drinking
<i>Mangifera indica</i> L.	Leaves and bark	Boiling in water	Drinking
<i>Erythrophleum suaveolens</i>	Leaves and roots		Drinking
<i>Senna didymotrya</i>	Leaves		Drinking
<i>Microglossa pyrifolia</i>	Leaves		Drinking
Unidentified	Leaves and roots	Boiling in water	Drinking
<i>Bothriocline longipes</i> (Oliv.& Hiern)	Leaves	Squeezing in cold water	Drinking
<i>Nicotiana tabaccum</i>	Leaves	Squeeze in cold water/boiling in water	Drinking
<i>Plectranthus forskahlii</i>	Leaves		Drinking
<i>Trimeria bakeri</i> Gilg.	Roots	Grinding	Drinking
<i>Maesa lanceolata</i> Forssk.	Leaves and bark	Squeezing in cold water	Drinking
<i>Conyza</i> sp.	Leaves and bark		Drinking
<i>Senna occidentalis</i>	Leaves		Drinking

Discussion

The use of traditional medicines around the world is on the rise (Chou, 2001). The cost and poor access to allopathic medicines contribute to the popularity of traditional medicines. In many communities' in tropical Africa culture links people to traditional medicines making people perceive them as readily accessible, understandable and safe, moreover the mode of payment is acceptable to the people. In this study we observe that Mbarara district has a number of species used for the treatment of malaria, most belonging to the family Asteraceae. This is the family to which *Artemisia annua* L. belongs, a plant from which the endoperoxide sesquiterpene lactone, artemisinin was isolated (Klayman, 1985, Hien & White, 1993). The other compounds with antiplasmodial activity derived from plants of the Asteraceae family include the sesquiterpenes, zingiberene-3,6- β -endoperoxide and zingiberene-3,6- α -endoperoxides (Ruecker *et al.*, 1996). It is possible that some of the plants identified in this study have got compounds with antimalarial properties.

The major challenge to the use and development of traditional medicines is the lack of evidence of efficacy, safety and quality assurance mechanisms. Guidelines have been developed on the methods of evaluating the safety and efficacy of traditional medicines (WHO, 2000), but there are limited resources in developing countries, including Uganda to address these issues.

From this study there are a number of plants in Mbarara district that can be used as sources of herbal remedies for malaria and that indeed can be incorporated in the national primary healthcare package after scientific studies on safety and efficacy are done.

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