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Ethnobotany and Healthcare in Mozambique

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Introduction

Plant resources in Africa offer a variety of products used by people. They are used as food, medicine, timber, building material, material for crafting, fuelwood, etc. (e.g., Bandeira *et al.*, 1999; van Wyk & Gericke, 2000). Good food and shelter play an important role in prevention of illnesses such as malnutrition, anaemia, and shortage of vitamins in people's diet. The use of medicinal plants by local people may account for 70 percent or more of basic healthcare treatment in Africa (World Conservation Monitoring Centre, 1992).

Mozambique with its approximately 5,500 plant species (World Conservation Monitoring Centre, 1992) provides very few species to the international market; but locally, the medicinal plants play a key role for basic healthcare, particularly in rural areas (e.g. Verzar & Petri, 1987; Jansen & Mendes 1991). Despite a long history of medicinal plant use in Mozambique, research in this subject is still very small covering mostly ethnobotanical work (e.g. Jansen & Mendes, 1990, 1991). In Africa, in general, few phytochemical studies have been published.

This paper deals with aspects of medicinal plants used in treatment of common diseases in southern Africa mainly, with special reference to Mozambique. Focus is given to the following major diseases: (i) diarrhoea, (ii) malaria (iii) respiratory complaints and (iv) sexual diseases. Known chemical constituents from the plant species are also discussed in relation to the plant medicinal use.

Procedure

Information on the main plant species used by local people in Mozambique to address common diseases was obtained primarily from The Office of Medicinal Plant Studies (Ministry of Health Mozambique) and information gathered at the Eduardo Mondlane University plant collection. Additional information was gathered from

literature (e.g. Jansen and Mendes, 1990, 1991; Gelfand *et al.*, 1985; Scott *et al.*, 1996). Phytochemical information associated with common diseases was mostly gathered from literature.

Results and Discussion

In Africa, many plant species are reported to have medicinal value. In Mozambique, up to 10 percent of its approximately 5,500 plant species (World Conservation Monitoring Centre, 1992) has been identified as being used in traditional medicine. These plant species are used in an array of diseases ranging from simple or complex pathological complications to psychological and mental illnesses. Nearly all diseases have been handled by traditional medicine in Mozambique except illnesses requiring a major surgical intervention. This seems similar in other parts of Africa. The main groups of diseases in Africa include diarrhoea, malaria, sexual complaints, respiratory complaints (including hypertension), malnutrition/anaemia, mental diseases, rheumatism/arthritis, and parasitic infections such as schistosomiasis. The first four illnesses are the most important as they affect a large proportion of people, as well as produce high rates of mortality in Africa and Mozambique in particular. Therefore, this paper gives emphasis to these four illnesses.

[Table 1](#) lists the main plant species used by local people for the traditional medicine treatment of diarrhoea. There are three different kinds of diarrhoea: (i) common diarrhoea, characterized by liquid or semi-liquid faeces recurrent many times a day, (ii) dysentery, which is a type of bloody-diarrhoea infected by the vibrio *Shigella* and (iii) cholera, a water diarrhoea infected by vibrio *Cholera*. The last two diseases usually have a high lethal rate in Mozambique, if not treated within a short period of time. The plant species *Acacia nilotica*, *Annona senegalensis*, *Elephantorrhiza elephantina* and *Sclerocarya birrea* have been reported as being frequently used by local people in Mozambique and elsewhere in Africa (e.g. Gelfand, 1985; Scott *et al.*, 1996; van Wyk *et al.*, 1997). These plants species (see again [Table 1](#)) seem to play a major role in stopping or slowing down diarrhoea recurrence, but usually the patient's need for hydration requires an intervention of modern medicine. These complementary needs may represent an important opportunity for collaboration of both traditional and modern medicine. Most plant species used to treat diarrhoea contain tannins, and to some extent terpenoides, compounds already known to have

anti-diarrhoeal and anti-septic properties (see Bruneton, 1995). Roots and bark comprise 75 percent of the plant part used in diarrhoea treatment. In Congo (formerly Zaire), 8 species out of 38 revealed antidiarrhoeic properties (Lona *et al.*, 1999).

Malaria is still one of the main causes of the high mortality rates among both children and adults in most African countries, including Mozambique. Usually, traditional medicine based on plants has been rather efficient in treating malaria symptoms. *Momordica balsamina* is frequently used to cure vomits believed to be associated with bilis and fever. *Spirostachys africana* is used in healing headaches. *Rauvolfia caffra* contains alcaloides, which is used for malaria, as well as reserpin, a compound used in healing high blood pressure (van Wyk *et al.*, 1997). *Bridelia cathartica* is commonly used in southern Mozambique to heal malaria headaches. This species seems to have methyl-salicylate, a headache-healing compound (Scott *et al.*, 1996). Pains in bone articulation associated with malaria have traditionally been tackled using a mixture of leaves of eucalyptus, avocado, and guava in Mozambique. More research is needed in order to know whether these plant species affect malaria plasmodium. *Bridelia cathartica*, and recently *Salacia kraussii*, have revealed some anti-malarial activity (Jurg *et al.*, 1987; Figueiredo *et al.*, 1998). Leaves comprise up to 60 percent of the plant part used in malaria treatment in Mozambique. In Kenya, leaf extracts of *Vernonia brachycalyx* O. Hoffm. Schreber have shown strong anti-malarial activity (Oketch-Rabah *et al.*, 1999).

Respiratory complaints cover an array of ailments such as pneumonia, bronchitis, asthma, cough, etc. (e.g. van Wyk *et al.*, 1997; Diallo *et al.*, 1999). The orchid *Ansellia africana* (whole plant) is largely used in asthma treatment in southern Mozambique (Fato, 1995). *Opuntia* spp. (whole plant), although an introduced species in Africa, is largely utilized as an expectorant in healing bronchitis and cough. The bark of *Warburgia salutaris*, a very popular species in southern Africa, is used to heal mainly cough and cold. Mannitol seems to be the main chemical constituent in this species, which also contains tannin used for diarrhoea disease (van Wyk *et al.*, 1997). Hypertension is traditionally medicated using *Rauvolfia caffra*, known to have reserpine (Scott *et al.*, 1996).

Traditional medicine has had a role in slowing opportunistic infections related to the AIDS virus such as diarrhoea, pneumonia, and skin infections. Medicinal plant

practitioners are quite reluctant to provide information on plants species used with AIDS patients. The list provided in [Table 1](#) is still preliminary. These plants, according to traditional practitioners, are rather more efficient in healing other sexual complications such as infertility (e.g., *Sarcostema viminale*) and prostate hypertrophy (e.g., *Prunus africana*, *Hypoxis hemerocallidea*). Phytosterol is the main compound occurring in the plant species used for healing prostate hypertrophy and impotency (e.g., Scott *et al.*, 1996).

Research in bioactive products is still at early stages in many countries in Africa. This type of research has to be promoted as a means for the developing countries to understand the potential use of their plant resources, and as a means for better promoting basic healthcare. Few works in phytochemical research in Mozambique have been internationally published (Jurg *et al.*, 1991; Figueiredo *et al.*, 1998; Pagula *et al.*, 2000) and they have dealt with plants species used as anti-malarial and essential oils. Future research in medicinal plants should also cover the species with antibacterial and molluscicidal activity as studies elsewhere in Africa (e.g. Ndamba *et al.*, 1994; Oketch-Rabah & Dossaji, 1998; Eloff, 1999).

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Table 1. Major medicinal plants species used in Mozambique

Key:

- A. antidiarrhoeal
- B. antimalarial
- C. respiratory
- D. sexual complaints

(+) = used
 (-) = not used

Botanical names	A	B	C	D
<i>Acacia karroo</i> Hayne	+	+	-	-
<i>Acacia nilotica</i> (L.) Willd. ex Del.	+	+	+	-
<i>Acridocarpus natalitus</i> Juss.	+	-	-	-
<i>Adansonia digitata</i> L.	+	+	-	-
<i>Alepidea amatymbica</i> Eckl. & Zeyh.	-	+	-	-
<i>Aloe marlothii</i> Berger	-	-	-	+
<i>Annona senegalensis</i> Pers.	+	-	+	+
<i>Ansellia africana</i> Lindl.	-	-	+	-
<i>Bridelia cathartica</i> Bertol. f.	-	+	-	+
<i>Capparis tomentosa</i> Lam.	-	-	+	-
<i>Cissampelos mucronata</i> A. Rich.	+	-	-	+
<i>Combretum molle</i> R. Br. Ex G. Don.	+	-	-	-
<i>Dichrostachys cinerea</i> (L.) Wight & Arn.	-	-	-	+
<i>Elephantorrhiza elephantina</i> (Burch.) Skeels	+	-	-	+
<i>Eriosema cordatum</i> E. Mey.	-	-	-	+
<i>Euclea natalensis</i> A. DC.	-	+	+	-
<i>Garcinia livingstonei</i> T. Anders.	+	-	-	-
<i>Gladiolus dalenii</i> van Geel	+	-	-	-
<i>Hypoxis hemerocallidea</i> Fisch. & C.A. Mey.	-	-	-	+
<i>Kigelia africana</i> (Lam.) Benth.	+	-	-	-
<i>Lannea discolor</i> (Sond.) Engl.	-	-	-	+
<i>Lippia javanica</i> (N. L. Burm.) Spreng.	-	+	+	-
<i>Maytenus senegalensis</i> (Lam.) Excell	+	-	-	-
<i>Melia azedarach</i> L.	+	-	-	-
<i>Momordica balsamina</i> L.	-	+	-	-
<i>Myrothamnus flabellifolius</i> Welw.	-	-	+	-
<i>Ophuntia</i> spp.	-	-	+	-
<i>Ozoroa obovata</i> (Oliv.) R. & A. Fernandes	+	-	-	-
<i>Prunus africana</i> (Hook.f.) Kalkm.	-	-	-	+
<i>Rauvolfia caffra</i> Sond.	-	+	+	-
<i>Rhoicissus tridentata</i> (L.f.) Wild & Drummond	-	-	-	+

<i>Salacia kraussii</i> (Harv.) Harv.	+	+	-	-
<i>Sarcostemma viminale</i> (L.) R. Br.	-	-	-	+
<i>Schotia brachypetala</i> Sond.	+	-	-	-
<i>Sclerocarya birrea</i> (A. Rich.) Hochst. subsp. <i>caffra</i> (Sond.) Kokwaro	+	-	-	+
<i>Securidaca longepedunculata</i> Fresen.	-	-	+	-
<i>Senna occidentalis</i> (L.) Link	-	+	-	-
<i>Spirostachys africana</i> Sond.	+	+	-	-
<i>Tabernaemontana elegans</i> Stapf.	-	+	+	-
<i>Terminalia sericea</i> Burch. ex DC.	+	-	-	-
<i>Trichilia emetica</i> Vahl	+	-	-	-
<i>Vernonia colorata</i> (Willd.) Drake	-	-	+	-
<i>Warburgia salutaris</i> (Bertol. f.) Chiov.	-	-	+	-
<i>Zanthoxylum capense</i> (Thunb.) Harv.	-	+	-	-
<i>Ziziphus mucronata</i> Willd.	+	-	-	+