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Some plants used in the treatment of leprosy in Africa

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Summary Thirty-four speices of plants reported used in the treatment of leprosy in Africa are reviewed. The botanical and vernacular names, localities and comments on the plants are given. The importance of research into herbal medicine to establish the efficacy and toxicity of plants used is discussed.

Introduction

For centuries herbal medicine, a branch of traditional medicine, played an important role in the treatment of diseases world-wide. However, traditional medicine has almost completely been replaced by modern orthodox medicine in industrialized countries, while in the developing countries of Africa and Asia it still remains the dominant form of health care, especially in rural areas. It is often the only form of treatment sort and is sometimes regarded as superior to orthodox medicine in some respects. In some cases it is the last resort sort by Patients who feel no substantial relief after attending a clinic or hospital, particularly in cases of chronic sickness.

Leprosy is one of the most dreaded diseases and almost all branches of traditional medicine including psychotherapy, therapeutic occultism and herbal medicine have been employed in its treatment. In addition, social ostracism was practised. However, herbal medicine has played the most important role in the treatment of leprosy. Even in orthodox medicine plant extracts played an important role in the treatment of leprosy. Chaulmoogra oil (from *Hydnocarpus spp.*) dominated the treatment until the advent of sulphones.

The developing tropical countries with their luxuriant and varied flora and long practice of traditional medicine have accumulated a mass of folk medicine that needs urgent investigation. This is because those versed in traditional medicine are getting fewer and fewer as the younger generation embraces modern education. A few of the plants have been studied and their action on animal body and the rationale for their use by traditional healers confirmed or

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Table 1. Some plants used in the treatment of leprosy in Africa

Plants	Vernacular names	Locality	Comments	References
Acacia arabica, Willd.	Arab (E. Sudan): 'sunt'	East Sudan	A decoction of the pods is drunk and rubbed on the skin	Dalziel (1937)[1]
Acacia Seyal, Del.	Hausa: 'dushe'	Nigeria	Decoction of the bark is used	Dalziel (1937)[1]
Acanthospermum hispidium DC.	Twi: 'sraha nsoe'	Ghana		Dalziel (1937)[1]
Aframomum mala, KSchum	Kimbunga: 'mitwewe'	Tanzania	Decoction of the root is taken	Haerdi (1964)[2]
Bauhinia rufescens, Lam	Bamb: 'sifile'	Sudan	The bark or root is made into an extract, boiled and drunk	Dalziel (1937)[1]
Bauhinia Thonningii Schum.	Hausa: 'Kalgo' Yoruba: 'abafe' Ibo: 'Okpo-atu'	Nigeria	The bark, root or leaf may be chewed	Dalziel (1937)[1]
Caloncoba Welwitschii	Mpomgwe: 'ebongo'	Gabon	The seeds are very rich in chaulmoogra oil and are very much valued for treatment of leprosy	Raponda-Walker and Sillans (1961)[3]
Caloncoba glauca Gilg	Mpomgwe: 'ebongo'	Gabon	The seeds contain Chaulmoogra oil suitable for treatment of leprosy	Raponda-Walker and Sillans (1961)[3]
Capparis tomentosa, Lam.	Hausa: 'haujeri'	Nigeria	The bark and root are used	Watt and Breyer-Brandwijk (1962)[4]
Butyrospermum parkii, Kotschy		French Guinea	The crushed bark is used	Dalziel (1937)[1]

Cassia siberiana, DC.	Hausa: 'gama fada'	Nigeria	Roots are used in combination with other drugs	Dalziel (1937)[1]
Clematis hirsuta, Guill: and Perrq.		French Guinea and Sudan	Used internally in Leprosy	Dalziel (1937)[1]
Commiphora spp.	Kihehe: 'mutelera'	Tanzania	Decoction of the root is drunk and the fruit juice rubbed on the skin	Haerdi (1964)[2]
Cordia goetzei, Gurke.	Kimbunga: 'mgongolokashuka'	Tanzania	The juice of the leaves and a decoction of the root are drunk. The ash from the leaves is rubbed on the skin	Haerdi (1964)[2]
Crinum giganteum, Andr.		Congo	The bulb is used	Watt and Breyer-Brandwijk (1962)[4]
Culcasia spp.	Galoa: 'Owavi-indjina'	Gabon	The leaves are effective against leprosy	Raponda-Walker and Sillans (1961)[3]
Cyrtanthus obliquus, Ait.		South Africa	The root is used	Watt and Breyer-Brandwijk (1962)[4]
Dichrostachys glomerata, Choir.	Bamb: 'buru',	East Sudan	Decoction of the root is used	Dalziel (1937)[1]
Drymaria Cordata Willd.		Gabon	This herb is used in treatment of leprosy	Raponda-Walker and Sillans (1961)[3]
Eleusine coracana, Asch. & Gr.		South Africa	Used with *Plumago zeylanica* as a remedy for leprosy	Watt and Breyer-Brandwijk (1962)[4]
Erythrina sacleuxii, Hua.	Kihehe: 'muhemi'	Tanzania	Decoction of the root and that of *Rubia cordifolia* is drunk for months	Haerdi (1964)[2]
Ficus lecardii, Warb.	Hausa; 'baure' Yoruba: 'aba' Ibo: 'akakaru'	Benue-Bauchi, Nigeria		Dalziel (1937)[1]

Table 1 continued

Plants	Vernacular names	Locality	Comments	References
Guiera senegalensis Lam.	Hausa; 'Sabara' Fulani: 'geloki'	Sokoto, Nigeria	Plant has special reputation as a preventive of leprosy. A cold decoction is drunk every morning and evening. In particular it is given to new-born child and the child of a leper or where there is suspicion of hereditary taint or early symptom	Dalziel (1937)[1]
Hilleria latifolia, H. Watt.	Twi: 'anafranaku'	Ashanti, Ghana	The plant is boiled and drunk	Dalziel (1937)[1]
Lasiosiphon kraussianus, Meisn.	Hausa: 'tururibi'		Methanol extract of the root was reported to have a therapeutic action in leprosy	Tubery (1968)[5]
Lonchocarpus cyanescens, Benth.	Me: 'njala wai'	Sierra-Leone	The root is used	Dalziel (1937)
Ocimum viride Willd.	Mpongwe: 'nunduwele'	Gabon	The leaves are used	Raponda-Walker and Sillans (1961)[3]
Parkia filicoides, Welw.	Hausa: 'dorawa' Yoruba: 'Irugba' Ibo: 'agirili-Igala'	Nigeria	The young unexpanded flower buds are sometimes used as a medicine or preventive	Dalziel (1937)[1]
Pentaclethra macrophylla, Benth.	Basa: 'blay-bu'	Liberia	Wood is sometimes boiled with other native drugs and used. The pounded bark is applied locally	Dalziel (1937)*1*
Plumbago zeylanica, Linn.		South Africa	The powdered root is used internally and locally with *Eleusine corocane*	Watt and Breyer-Brandwijk (1962)[4]

Rubia cordifolia, L	Kipogoro: 'muswania'	Tanzania	The juice of the leaf is rubbed on the skin. Decoction of the root together with that of *Erythrina sacleuxii* is boiled and drunk	Haerdi (1964)[2]
Sapium grahamii, Prain	Hausa: 'yazawa'	Nigeria	The leaves and roots with the leaves of *Loranthus spp.* found on *Vitex cienkowskii* and shea butter tree are used.	Dalziel (1937)[1]
Stereospermum kunthianum, Cham.	Kimbunga: 'mkokonanguruwe'	Tanzania	Decoction of the root and bark is drunk together with that of *Tamarindus indica*. Also the ash from the bark and root is mixed with oil and rubbed on the skin lesions	Haerdi (1964)[2]
Tamarindus indica, L.		Nigeria	An extract is made of the bark and husk of the pods of *Tamarindus indica* and the leaves and bark of *Diospyros mespiliformis* and drunk	Dalziel (1937)[1]
Tamarindus indica, L.	Kiswashili: 'mkwaju'	Tanzania	Decoction is made from the root and bark along with those of *Stereospermum kunthianum* and drunk	Haerdi (1964)[2]

rejected but a great majority has not been investigated, even though there is increased awareness of the role of traditional health care in the developing countries.

The therapy of leprosy is not yet satisfactory and it may be that traditional herbal remedies would have something to offer for effective treatment or a model on which chemists can work and improve upon.

This review of some plants used in the treatment of leprosy in Africa (Table 1) is presented with the hope that it would stimulate research interests to establish their efficacy or otherwise in the treatment of leprosy.

Discussion

The importance of investigations into traditional herbal medicine cannot be overemphasized. A number of drugs used in modern orthodox medicine originated from folk medicine. For instance, d-tubocurarine a muscle relaxant used in modern orthodox medicine was isolated from curare which was used as arrow poison by the South American Indians (Goodman and Gilman, 1975).[6] Quinine was discovered from the bark of the Cinchoma tree which was also used in South America for the treatment of fever. Until some decades ago Cinchoma alkaloids formed the sole chemotherapeutic agents for specific treatment of malaria. *Rauwolfia* was used by the ancient Hindus for the treatment of hypertension, insomnia and insanity. On investigation, reserpin was isolated and is a valuable antihypertensive agent as well as tranquilizer. The ancient Hindus also used Belladona plants from which atropine and scopolamine were isolated and used to present day (Goodman and Gilman, 1975).[6] Ipecacuanha was used by natives of Brazil in the treatment of diarrhoeas. It was used as such in modern orthodox medicine for the treatment of amoebiasis, though its use is limited because it causes severe gastrointestinal irritation, nausea and vomiting, but its emetic property is now used to induce vomiting in case of orally ingested drugs. *Cascara Sagrada* obtained from the bark of *Rhamus purshiana* was used by Indians of California as a carthartic and is still used as such in modern orthodox medicine.

All these examples point to the fact that investigations of folk remedies could lead to the discovery of potent drugs, not only for the diseases for which they were originally used by the natives but also for diseases unknown to the natives. The fact that plants like *Calonchoba welwitschi* and *Calonchoba glauca* used by the natives in treatment of leprosy contain chaulmoogra oil (Raponda-Walker and Sillans, 1961)[3] shows that some of the herbal treatment would be effective.

However, it is not only important to investigate the herbals to establish their efficacy but it is also equally important that their toxic effects be investigated. In the past few years, there have been a number of reports of poisoning in humans after administration of herbs. In Jamaica, venoocculsive liver disease

in children was traced back to consumption of 'bush teas' which are infusions of various plants including *Senecio* and *Crotalaria spp.* (Schoental, 1963).[7] There was a decrease in the incidence of this disease following a successful educational campaign against 'bush teas' (Schoental, 1972).[8] Schoental and Coady (1968)[9] reported on the hepatoxicity of a number of Ethiopian and East African medicinal plants, including *Senecio, Crotalaria, Heliotropium* and *Cynoglossum* species. Liver cirrhosis and tumours were produced in experimental animals by these plants. Also alkaloids from South African plants used as medicinal plants induced liver tumours including malignant hepatocarcinoma in rats (Schoental, 1968).[10] Cycads used in East Africa have been shown to contain carcinogenic factors (Muegera 1977.)[11] It has been suggested that high incidence of primary liver cancer reported from South Africa might be related to the use of hepatotoxic plants in medicinal herbs as the incidence of primary liver cancer is not higher in American blacks than in whites (Schoental, 1968).[10]

Other herbally induced liver conditions include hepatitis (Mokhobo 1974,[11] 1976)[13] and liver necrosis (Wainwright and Schonland 1975).[14] The plant *Callilepis laureola* was incriminated in the latter case. Renal failure has been reported as a consequence of widespread use of nephrotoxic traditional herbal medicine in Central Africa (Lowenthal *et al.*, 1974;[15] Dukes *et al.*, 1969)[16] and in South Africa (Buchanan and Cane, 1976).[11] Among the plants incriminated are *Asparagus spp, Securidaca Longepedunculata, Euphorbia matabensis spp* and *Crotalaria laburnifolia* (Dukes *et al.*, 1969).[16] Other toxic effects reportedly associated with herbal medicine include aplastic anaemia (Lowenthal *et al.*, 1978),[18] severe penile burns caused by *Cussonia Corbisien* and *Steganotaenia araliacea* (Buchanan 1975),[19] shock, hypotension, acidosis (Buchanan and Cane 1976),[17] dehydration, paralytic ileus and perforation of the intestines (Solleder 1974).[20]

These reports stress the importance of thorough investigations into the herbals and these should include chronic toxicity tests especially with those that are to be used over a long period in the treatment of diseases like leprosy. Plants that are acutely toxic are usually recognized by the natives but those that have insidious effects that would be revealed after a latent period are unlikely to be known by those who use them.

However, these reports of toxicity should not deter investigations to foster the development of herbal medicine. Some of the principles contained in these plants may be toxic in large amounts but may prove of benefit to disease conditions when used in small amounts. This is of course true of all drugs. There are also incidences of carcinogenicity, teratogenicity, iatrogenic diseases and toxic reactions to synthetic drugs. One should therefore not discard a plant merely because it contains toxic substances or has caused poisoning when used in human. The dose used has to be taken into consideration in judging the plant.

[*Addendum.* Our attention has recently been drawn to three other communications which are relevant to this subject; (1) Pares Y. Inventory of African

Higher Plants Used in Folk Medicines for Leprosy Therapy. 1 – Families *Acanthaceae* to *Dilleniaceae.* Personal communication in Leprosy Scientific Memoranda, June 1979, Memo L-1033/1, (2) Phillipson JD. Natural products as a basis for new drugs. *Trends in Pharmacological Science,* 1979, **1**, No 2, 36, and (3) WHO. Inventory of medicinal plants; selection and characterisation. *WHO Chronicle,* 1979, **33**, 56. Based on documents prepared for WHO on this subject, 9–13 October 1978, Geneva. Reference: unpublished WHO documents DPM/WP/78.2 and 4. *Authors*].

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