Medicinal Plants of Khasi Hills of Meghalaya, India

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Abstract

Indigenous people are generally very knowledgeable about the wild medicinal plants around them, many of which have local names and are important to the people medically or are featured in folklore. This traditional knowledge is the best starting point for effective in situ conservation, which requires accurate and up to date information on the status of medicinal plant populations, the extent and nature of plant use by local communities and the capacity of the resource base to support different economic activities. This knowledge can be used in the evaluation and in creation of awareness of the importance of medicinal plant as it is generally easier for the public to relate to the cultural significance than the results of scientific trials. An understanding of the many aspects of human influences on biodiversity and the underlying driving forces of the influences is of crucial importance for setting priorities and directing efforts towards conservation and sustainable use.

INTRODUCTION

Meghalaya is comprised of the South Garo Hills, West Garo Hills, East Garo Hills, West Khasi Hills, East Khasi Hills, Ribhoi and Jaintia Hills districts lying between 25°47" – 26°10" N latitude and 89°45" – 92°45" E longitude and covers an area of 22,549 km^2. The area is bounded on the North, East and West by Assam and on the South by Bangladesh. The Khasis, Jaintias and the Garos are a *Paleo-Mongoloid* people who were said to be one of the earliest waves of the Mongolian invaders. They speak an Austric tongue, *Mon Khmer*, which they were believed to have adopted in course of the wanderings long before they settled in the present location (Gurdon, 1907). In the earliest Sanskrit literature, there is no specific reference of the Khasis or the Khasi and the Jaintia Hills, though there are mentions about the Kiratas of Mongoloid origin. The earliest mention of the word 'khasi' appears is Sankardeva's 'Bhagavata purana' composed about 1500 A.D. in the Indo Aryan literature (Playfair, 1975; Sen, 1985).

The State possesses a great plant wealth that is yet to be fully utilized on a commercial scale. Such utilization could accrue abundant benefit to the farmers of the region. In fact, the region has a great potential for the plantation of medicinal plants because of ideal agro-climatic conditions and suitable soil. Nature, in its generous abundance, had bestowed on Meghalaya a unique array of vegetation, ranging from tropical and subtropical to temperate or near temperate (Gatphoh, 1937; Kanjilal et al., 1982; Elias, 1994; Kharbuli et al., 1999).

Traditions of collecting, processing and applying plants and plant based medications, long and carefully maintained by individuals with a profound knowledge, have been handed down from generation to generation among the indigenous people. The value of such ethno-medicine and traditional pharmacology is now increasingly recognized in modern human and veterinary medicine (Maydell, 1990). These plants mostly grow naturally and are collected by local people and sold to traders who, in turn, sell to the pharmaceutical and cosmetic industry and to exporters. There is no scientific system of collection or regeneration as a result of which many of these plants have become endangered.

Recently it has been noted that increasing biotic influences, including socio-

economic development and unrestrained commercial exploitation of forest wealth, have threatened the survival of the rich genetic resources of this region, amounting to a great loss of national heritage. It is not possible here to describe all the medicinal plants of the state. However, a list of very significant medicinal plants is presented here. The aim is to highlight the most frequently used medicinal plants in the tribal areas of East and west Khasi hills of Meghalaya, India and the diseases against which these plants were used, and stressing the need for sustainable management of medicinal plant resources.

MATERIAL AND METHODS

Along with intensive survey of locally available information on the use of traditional herbal medicine collected through personal interview and literature search, field work was also considered necessary. The methodology followed during field work was based mainly on detailed questionnaires. Carefully planned field work spread over four years from 1998 to 2002 was carried out in different tribal pockets of Meghalaya, India. The purpose of the study was not only the collection of first hand information about the relationship of medicinal plants with the community but also to verify the already published data wherever possible.

All plants were identified using relevant floras and by matching the specimens in the herbaria of Botanical Survey of India at Shillong and at North Eastern Hill University, Shillong. Where necessary, interpreters were employed in order to acquire details of uses and other information on plants and their environment. Tribal markets or weekly *hats* were also visited to study the plants and plant products sold there.

RESULTS

The plants listed were used as medicines widely in Meghalaya before the advent of chemical medicines. These plants have important components, which can cure an extensive range of diseases (Table 1). Fifty-seven medicinal plant species used to treat different diseases were identified.

DISCUSSION

It has been shown that through numerous examples that the tribal of Meghalaya make wide use of a large variety of medicinal plants available to them. The demand in the local market has increased causing a threat to these wild species. In order to protect the diversity of medicinal plants of the state, the following are being suggested:

The data on medicinal plants will serve as a useful tool to prepare development and action plan for herbal drug industry for improving and uplifting the life and economy of the state. What is urgently needed is the integration of all aspects of medicinal plants diversity in our planning for development of local community with linkages to conservation and protection of all kinds of plants traditionally used by indigenous people.

An effective way of giving protection to biodiversity and ethno-medicinal plants is to provide a legal cover to the habitat or the species to enable enforcement agencies to have authority to control/regulate their enactment.

In situ and ex situ conservation of endangered or likely to be endangered (rare) species should immediately be started in the appropriate districts of the state. Use of spontaneous and wild collected plants must be limited as far as possible and replaced step by step by cultivation. Rural people should be encouraged to raise their own ethno-medicinal gardens or herb gardens in their vacinity to ensure conservation of the depleting biodiversity in medicinal plants.

Research priority should be given to develop appropriate technology for propagation, cultivation, processing, chemical characterisation and marketing of medicinal plants, useful and endangered species. Local people should be trained how to propagate, preserve and collect the medicinal plants as a part of extension. They should be educated and provided with the proper guide lines, so that there is a continuous regeneration of wild flora. It is again important that we should not disturb the local forest flora, which is generally susceptible to environmental changes which may lead to

extinction of natural species.

With the erosion of the tribal cultures, the traditional healers have become a threatened category. Also the genetic diversity in medicinal plants has diminished due to shifting cultivation and large scale destruction of their natural location. The over-exploitation of medicinal resources in unscientific manner by unskilled labour and poor natural or artificial regeneration have resulted in virtual extinction of certain vital species.

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Tables

Table 1. Common medicinal plants used by the Khasi tribe.

Sl. No	Scientific Name	Local Name	Family	Status*	Mode of Utilization
1.	*Acorus calamus* (L.)	U-bet	Araceae	C	Leaves boiled in water for 2-3 hours and the vapour inhaled for influenza and headache.
2.	*Adiantum phillipense* (Linn.)	Tyrkhang khyllai	Adiantaceae	R	Paste of leaves is applied to fractured bones.
3.	*Ageratum conyzoides* (Linn.)	Ksangd agiem	Asteraceae	A	Paste of leaves and lime is applied to cuts acting as homeostatic.
4.	*Albizzia chinensis* (Osb)	Dieng phallut	Mimosaceae	C	Bark decoction is applied on ringworm and also as antidote to insect bites.
5.	*Allium tuberosum* (Roxb)	Jyllang	Liliaceae	A	Extract of whole plant is used against problems, especially for hypertension.
6.	*Amomum aromaticum* (Roxb)	Ilashi saw	Zingiberaceae	A	During nausea and vomiting, the rhizome is smashed and made into paste in hot water and taken directly.
7.	*Antidesma bunius* (L.)	Soh-syllai	Euphorbiaceae	A	Patients suffering from pains in the joints are bathed with the solution from the boiled leaves.
8.	*Averrhoa carambola* (L.)	Sohpyrshong	Averrhoaceae	A	Ripe fruit are taken as medicine for jaundice.
9.	*Azadirachta indica* (A. Juss.)	Dieng nim	Meliaceaae	F	Extracts of boiled leaves are used for diarrhoea and dysentery.
10.	*Bauhinia variegata* (L.)	Dieng tharlong	Caesalpiniaceae	C	Flowers are boiled and eaten for piles for dysentery.
11.	*Betula alnoides* (Buch Ham)	Dienglieng	Betulaceae	C	Root extract is given for indigestion and flatulence.
12.	*Buddleja macrostachya* (Benth)	Jalong krem	Buddlejaceae	F	Leaves are used for venereal disease.
13.	*Cinnamomum pauciflorum* (Nees)	Dieng tarthia	Lauraceae	C	Extract of bark and young shoots, mixed with coconut oil, is used as an antiseptic.
14.	*Cinnamomum tamala* (Nees & Eberm.)	La tyrppad	Lauraceae	C	Leaves are fried in mustard oil and placed on tooth to remove toothache.
15.	*Citrus latipes* (Swingle)	Sohkymphor	Rutaceae	C	Fruit juice is taken as an appetizer; paste of leaves is applied on joints suffering from gouty and rheumatism. Juice of fruit are rubbed on rashes and ringworm
16.	*Clerodendrum colebrookianum* (Walp.)	Sla jarem	Verbenaceae	C	Leaves are boiled and the water is taken to reduce high blood pressure.
17.	*Colocasia esculcenta* (Schott)	La wang	Araceae	F	Tender leaves are tied on forehead in case of high temperature due to fever. Partially cooked corms are used for rickets disease.
18.	*Costus speciosus* (J. Konig ex Retz Smith)	Sla pangmat	Zingiberaceae	F	Rhizome cut and ground into pieces and the powder is eaten against bronchitis, inflammation, anemia and rheumatism.
19.	*Curcuma angustifolia* (Roxb)	‘niang-soh-pet	Zingiberaceaae	F	Paste of rhizome and leaves is boiled in water and given to children for gripe.

Table 1 (Continued). Common medicinal plants used by the Khasi tribe.

20.	*Curcuma domestica* (Velaton)	Shynrai stem	Zingiberaceae	A	Rhizome paste with leaves of *Lindera latifolia* and fruits of *Piper longum* applied for various skin disease; paste of rhizome of this plant, ginger and mustard oil applied and tied around fractures to set the bone.
21.	*Dendrobium moschatum*	Tiew dieng	Orchidaceae	F	Juice of leaves is used as ear-drops for ear pain.
22.	*Drymaria cordata* (L.) Willd.ex Roem & Schult)	Bat-nongrim	Caryophyllaceae	A	The whole plants are crushed and the juice is applied for burns, skin diseases and snake bites.
23.	*Eleusine indica* (L.)	Lang krai	Poaceae	C	Root juice is used for jaundice.
24.	*Elsholtzia blanda* (Benth)	Bat-skain	Lamiaceae	C	The juice of the leaves is applied for mosquito bites and as mosquito repellant.
25.	*Engelhardtia spicata* (Bl)	Dieng Iyba	Juglandaceae	C	A fine paste made from inflorescence and young leaves is applied on scabies and other skin diseases.
26.	*Erythrina arborescens* (Roxb)	Dieng-song	Papilionaceae	F	The leaves are made into paste with ginger and applied for skin diseases of pig.
27.	*Eupatorium adenophorum* (L.)	Bat iong	Asteraceae	A	Crushed leaves applied on injuries.
28.	*Garuga pinnata* (Roxb)	Dieng khiang	Burseraceae	F	Fruit juice is given for indigestion, stem juice is applied for conjunctivitis and leaf juice with honey is given for asthma.
29.	*Gaultheria fragrantissima* (Wall)	'La thynrait	Ericaceae	A	Paste made from leaves is applied to bone fractures and sprains.
30.	*Gynocardia odorata* (R.Br)	Sohliang	Flacourtiaceae	F	Seeds for leprosy, nausea and rheumatism.
31.	*Hedyotis scandens* (Roxb)	Mo-shoh shu	Rubiaceae	C	Ground leaves taken for gastric troubles; decoction of the dried leaves is taken for cough and cold.
32.	*Hodgsonia heteroclite* (Roxb.)	Soh risa	Curcubitaceae	F	Paste from roots with ginger and lime cures fever.
33.	*Houttynia cordata* (Thunb)	Jamyrdoh	Saururacae	A	Leaves are eaten raw for blood purification and also applied to treat sores and boils.
34.	*Hypocharis radicata* (L.)	bat jhur kthang	Asteraceae	C	Tender leaves are eaten raw or boiled to control stomach upset.
35.	*Kaempferia rotunda* (L.)	Ingsmoh	Zingiberaceae	C	Medicine for stress-related stomach trouble and as general tonic.
36.	*Litsea khasiana* (Meissn)	Dieng mosu	Lauraceae	C	Powdered roots along with *Piper nigrum* and sugar candy is given for chronic bronchitis.
37.	*Mahonia pycnophylla* (Fedde)	Ningmat	Berberidaceae	F	The juice of the bark and leaves diluted with distilled water and used for eye disease.
38.	*Mallotus philippensis* (Lamk) Muell	Dieng chandan	Euphorbiaceae	F	Powdered fruits with little sugar are given for tapeworm.
39.	*Melia azedarach* (L.)	Dieng ja rasang	Meliaceae	F	Barks is used as an anthelmintic, leaves and fruits are used as febrifuge to cure malarial fever, flowers are crushed and applied as poultice on skin eruption.

Table 1 (Continued). Common medicinal plants used by the Khasi tribe.

40.	*Nepenthes khasiana* (Hk.f.)	Ksetphare	Nepenthaceae	R	The juice of young flowers or unopened pitchers mixed with rice beer (kyiad) and taken to cure stomachache, eye sores or urinary troubles.
41.	*Osbeckia stellata (*Buch.Ham ex D. Don)	Soh-lyngkthut	Melastomaceae	A	Paste of leaves is applied to wounds of various types, against snake bites, and also used to stop nose bleeding.
42.	*Oxalis corniculata* (L.)	Jabuit	Oxalidaceae	A	Used as medicine for diarrhea.
43.	*Piper griffthii* (DC)	Mrit khlaw	Piperaceae	F	Dried seeds are powdered and mixed with honey and the yolk of egg and this is taken for severe cough.
44.	*Plantago erosa* (Wall.)	Shkor blang	Plantaginaceae	C	Paste of leaves used for bandaging of wounds; leaves are warmed on the fire and wilted leaf is kept pressed on boils for quick burst and removal of puss.
45.	*Pouzolzia hirta* (Bl.)	Memsleh	Urticaceae	C	The roots are used for hair tonic. The roots are crushed or boiled in water which is then used in the bath to promote good hair growth.
46.	*Potentilla fulgens* (Hk.)	Rosaceae	Lynniang	C	The rootstocks are believed to strengthen the gums and teeth and also reported to be used in diarrhoea. Slices of the rootstock are chewed with betelnut, lime and betel leaf locally. It has been reported to be antidiabetic.
47.	*Psidium guajava* (L.)	Soh priam	Myrtaceae	C	The leaves are crushed and the extract is drunk in case of chronic dysentery.
48.	*Rhus semialata* (Murr)	Sohma	Anacardiaceae	C	The fruits are soaked in water which is drunk for stomachache. Buds are boiled and taken for diarrhoea.
49.	*Rorippa nasturtium-aguaticum* (L.) Hayak	Tyrso-um	Brassicaceae	C	Whole plant taken boiled or raw as a tonic usually during pneumonia or other pulmonary ailments.
50.	*Rubia cordifolia* (L.)	Rhoi	Rubiaceae	C	Paste of leaves is applied for ulcer and the crushed roots for poisonous stings of insects and caterpillars.
51.	*Rubus ellipticus* (Sm)	Soh-shiah	Rosaceae	F	The fruits and crushed roots are used to cure dysentery.
52.	*Schima wallichii* (Choisy)	Diengngan	Theaceae	C	Young leaves are boiled; the solution is taken to cure flatulence.
53.	*Smilax glabra* (Roxb.)	Khong	Smilacaceae	C	The juice of leaves is applied for skin diseases. Sometimes the leaves are dried and the resultant powder, mixed with oil, is applied for skin diseases.
54.	*Taxus baccata* (L.)	Dieng seh Blei	Taxaceae	R	Leaves along with ginger are made into paste and applied on tumors.
55.	*Terminalia chebula* (Retz.)	Soh salukah	Combretaceae	C	Fruits are roasted and eaten as a diuretic. Root paste is used for conjunctivitis.
56.	*Zanthoxylum acanthopodium* (DC)	Ja-iur	Rutaceae	F	Medicinal spice for stomach disorders, fish poison insecticide and vermicide.
57.	*Zingiber zerumbet* (Sm.)	Ing-Blei	Zingiberaceae	A	Fresh rhizome is eaten to relieve stress.

*A - Abundant; C - Common; F - Frequent; R – Rare