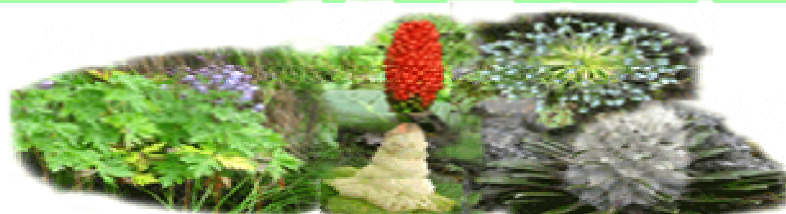


Chapter 7



MEDICINAL PLANT RESOURCES

Sikkim Himalaya represents an extremely unique eco-system rich in medicinal plant wealth associated with Ayurveda, Folk medicine, Homeopathy, Siddha, Amchi (Tibetan) and Unani system of medicines. It is reported to have more than 424 species of medicinal plants which have strong traditional systems of medicines in Sikkim. Many species of Himalayan origin have revolutionized the allopathic systems of medicine. Further more, modern medicines owes to the flora of these mountains. Sikkim harbors an enormous biodiversity of medicinal plants that occur right from the humid river valleys to the cold trans-Himalayan desert. The medicinal plants have traditionally occupied an important position in the socio-cultural, spiritual and medicinal arena of the people in the State.

The local inhabitants use numerous herbal remedies for treatment of various ailments. In addition to it there is the presence of vast repository of local health traditions and practitioners (*Baidya, Amji, Bongthing, Jhankri*, etc). This biodiversity of medicinal plants and its sustainable utilization sustains the health, medicinal, spiritual and other needs. This biodiversity of Sikkim has served as a treasure house for medical purposes. However, this biodiversity is seriously threatened by human activities such as destructive harvesting, loss of habitat or degradation in its quality, leading to extinction of medicinal plants and also resultant dying out of local traditional practices.

✚ The Value of Medicinal Plants

Medicinal plants play an important role in supporting healthcare system in India. According to the World Health Organization (WHO), 80% of the rural population in developing countries utilizes locally available medicinal plants for their primary healthcare needs. About 8000 species of medicinal plants are in current use by local communities all over India. About 90% of the country's medicinal plants are found in forest habitats. Only 10% of the medicinal plants are distributed among other landscape elements like open grasslands, agricultural pastures and in and around fresh water bodies, etc. It may be noted that India is one amongst those nations which possess a historical track record of having made a significant global contribution by virtue of its traditional knowledge of the medicinal plants. In the 21st century, given the global resurgence of the consumer interest in natural products, India's rich medicinal plant heritage of 8000 species and an estimated 40,000 herbal formulations, if conserved and sustainably utilized has global relevance. Thus there is an urgent need to conserve the wild populations of medicinal plant diversity in prioritized forest regions of India. Conservation of medicinal plants will contribute to self-reliance of millions for India's own health needs. The demand for medicinal plants is growing at a rapid pace. In 1947, the annual turnover of the herbal industry was Rs. 2,000 million. The Indian herbal industry's annual turnover was expected to touch Rs. 40,000 million by the end of 2000. This is why India supplies 12% of the world's requirements of medicinal plants. Today, 90% of the medicinal plants consumed domestically and exported are collected from the wild, and only 70 out of around 700 species in the trade are obtained purely from cultivated sources.



Nardostachys grandiflora

Traditional Systems of Medicine

There are a large number of traditional healers - *Baidya*, *Dhami* and *Jhankri* in the Nepali community, *Amji* and *Pow* in the Bhutia community and *Bongthing* in the Lepcha community. Earlier the traditional healers were the only medical practitioners in the village. For these, '*jhar phuk*' is the key word used by the powerful faith healers. The first step in the curative process of traditional healing is an interestingly complicated but inexpensive course of treatment. However with the advent of modern system of medicine and creation of hospitals and improvement in the literacy rate, allopathic medicine have been increasingly accepted by the villagers. It is often easy to visit the clinics and hospitals nearby rather than visiting the traditional healers. This has led to a greater recourse to allopathic government hospitals namely the PHCs and PHSCs.

■ Nepali System Of Traditional Medicine

The Nepali system of herbal medicine survives today as *Jaributi* or simply as *Pahadey dabai*. The practitioners are known as *Baidyas*, *Dhami* or *Jhakri* and can be seen practicing in the most of the rural areas of the state. This system is most prevalent in the Tropical and Subtropical villages.

The traditional system of medicine has no organized set up as compared to that of modern medicine and is fast disappearing under the combined onslaught of modern education and allopathic infrastructure. The Nepali system of medicine which has a wider base is fast eroding and is in a critical need of being revived by organizing the practitioners and linking them up with reputed medical institutes. Amongst the various types of herbal healers in this system of medicine, bone setters are still quite in demand by the villagers. At present the system survives at the peddler level, as there is no existing organized structure or institution supporting this system of traditional medicine within the state. However there is a Pakhrin Herbal hospital at Alagarah, Kalimpong, Darjeeling District of West Bengal, which specializes in bone setting.



Table 7.1 List of Medicinal Plants used by Baidyas/Dhamis/Jhakris

Species	Local Name	Usage	Price \$ / kg
<i>Aconitum heterophyllum</i>	Bikhma	Rheumatism fever, and body pain	32.0
<i>Bergenia ciliata</i>	Pakhanbhed	Oral inflammation, infection, diarrhea	0.3
<i>Nardostachys jatamansi</i>	Jatamashi	Anticonvulsant, cholera, palpitation	1.3
<i>Podophyllum hexandrum</i>	Papari	Vermifuge, emetic, blood purifier	1.5
<i>Picrorhiza kurrooa</i>	Kutki	Dyspepsia and malarial fever	4.6
<i>Swertia chirata</i>	Chirowto	Fever and acidity	0.2
<i>Aesculus indica</i>	Pangra (kernel)	Mumps	4.0
<i>Alstonia scholaris</i>	Chhatiwan (bark)	Diabetes	0.4
<i>Citrus sp.</i>	Bimbira (root)	Worms in children	4.0
<i>Curcuma zedoaria</i>	Phachyeng	Jaundice	1.0
<i>Dipazium polyodioides</i>	Kaliningro (root)	Dysentery	1.5
<i>Mesua ferrea</i>	Nagesori	Inflammation and septic conditions	6.0
<i>Orchis latifolia</i>	Panchunlay	Body-ache, cuts and bruises	1.8
<i>Rheum nobile</i>	Padamchal	Blood clot / swellings	1.4
<i>Terminalia belerica</i>	Barra	Cough	2.0
<i>Terminalia chebula</i>	Harra	Cough	2.0
<i>Viscum album</i>	Harchur	Bone fracture	2.0

(Source: L. K. Rai, Pankaj Prasad, E. Sharma, GBPIHED, Sikkim Unit)

✚ Lepcha System Of Traditional Medicine



Bongthing at Panglabsol festival, Tsunthang

In sharp contrast to the fact that they were the world famous plant collectors and possesses a vast knowledge of ethno-botany, the Lepcha herbal system has almost disappeared. Dzongu in North Sikkim is amongst the last strongholds of the Lepcha culture and this system of medicine is still practiced here. BSI, Sikkim Circle and WWF-Sikkim have conducted research on ethno-botany in this region.

✚ Tibetan System Of Traditional Medicine



A Tibetan practitioner

The Tibetan system of medicine, whose practitioner is called an *Amji* is still prevalent in the Temperate ecoregion, thanks to the support from the Tibetan Medicine Training Institutes at Chagpori, Darjeeling and Dharamsala, Himachal Pradesh. In the STNM government hospital at Gangtok two *Amjis* have been posted on a regular basis. Private clinics also exist in Gangtok and are run by trained *Amjis*. According to the State Biodiversity Strategy and Action Plan (2003) in the temperate ecoregion, the awareness regarding loss of traditional health systems like *Amji*, *Bongthing*, *Pau*, etc has been acutely felt. The villagers of North Sikkim want to open *Amji* Training Centers in association with the *Shedas* (monastery schools) at Thangu and Lachung headed by a local *Amji*.

Table 7.2 Prioritization of threats to Local Health Culture (LHC)

Priority	Threat	Priority percentage
1.	Lack of knowledge sharing by traditional healers	16
2.	Impact of Western culture and western education	15
3.	Lack of faith in LHC	15
4.	Lack of specific government programmes	12
5.	Easy availability of Allopathic medicines	12
6.	Lack of scientific backing to LHC	10
7.	State promotion of Allopathic medicines	9
8.	Lack of Traditional Primary Health Care Centers	7
9.	Shortage of medicinal plants resource	3
10.	Time taking cure	1

State Government Specific Programmes related to Medicinal Plants

1. State Medicinal Plants Board (SMPB)

For overall conservation and development of medicinal plants, State Medicinal Plants Board was established in June 2002. This board is the nodal agency for the development of medicinal plants sector in the state. This newly created board is carrying out the following activities in the state:

- Creation of 13 Herbal Gardens of 10 hectare each on degraded forest land for *insitu* and *exsitu* conservation of the gene pool of indigenous medicinal plants of the state. The total funds allotted for each herbal garden is about Rs 20.00 lakhs for three years. Creation of a raw drug museum at Forest Secretariat, Deorali, Gangtok. This is a 100% Centrally Sponsored Scheme of the National Medicinal Plants Board, Department of Indian System of Medicines & Homeopathy, and Government of India.
- Registration of medicinal plant farmers, collectors, traders and manufacturers.
- Creation and establishment of “*Jadi Booti Chetna Kendras*” in all the four districts.
- Distributing Panchayat Biodiversity Registers to be managed by the Gram Panchayats.



2. Forest Development Agency (FDA)

This is a 100% Centrally Sponsored Scheme under the National Afforestation Plan of the National Afforestation and Eco Development Board of the Ministry of Environment and Forests, Government of India. Under this programme, the Joint Forest Management Committees and Eco Development Committees shall take up plantation of medicinal plants. A total of six FDAs have been registered in Sikkim to implement this five year programme during the 10th five year plan.

3. Integrated Watershed Development Project (IWDP)

This is a Centrally Sponsored Scheme of the Department of Land Resources, Ministry of Rural Development, Government of India. This scheme is being implemented by the Forest, Environment and Wildlife Department under the guidance of the Zilla Panchayat. This scheme is being implemented on a watershed basis under the common guidelines of watershed development. This programme is expected to promote the generation of employment in the rural areas besides enhancing people's participation at all stages in the development of wastelands leading to sustainable development and equitable sharing of the benefits. Integrated Community Nurseries have been created on private land in the nine Gram Panchayat Units of South Sikkim and are being managed by a self help group under the guidance of the concerned JFMC / WC. Most of these nurseries already have a medicinal plants section. These nurseries have good infrastructure including a germination chamber, hardening chamber, bio-composting, vermi-composting, nursery beds etc and can be brought under the network of decentralized nurseries.

4. Development of Sanctuaries and National Parks

This is a 100% Centrally Sponsored Scheme for the eco development in sanctuaries and national parks under the Ministry of Environment & Forests, Government of India. Under this scheme, integrated community nurseries were created on private land around all the six sanctuaries of the state during 2002 –2003. These nurseries are being managed by a self help group under the guidance of the concerned EDC. A medicinal plants section is being initiated in these nurseries. These nurseries have good infrastructure including a germination chamber, bio-composting, nursery beds etc and can be brought under the network of decentralized nurseries.

5. Community Biodiversity Conservation, North East Council

This is a 100% Centrally Sponsored Scheme of the North East Council for the conservation of biodiversity including medicinal plants through people's participation. This scheme has been recently initiated in the state and shall be implemented by the State Medicinal Plants Board.

6. Panchayat Herbal Gardens

The Rural Development Department, Government of Sikkim has created herbal gardens which are owned by the Panchayat in every Gram Panchayat Unit of Sikkim.

Research Initiatives in the Medicinal Plant Sector

- ✦ STNM Hospital, Gangtok: The hospital has been conducting research in herbal medicines in conjunction with the GBPIHED, Sikkim unit.
- ✦ Sikkim Manipal Institute of Medical Sciences and Central Referral Hospital: This institute based in Tadong, Gangtok has the facilities for pharmacological research in herbal medicine.
- ✦ Department of Health: During the past decade and half, the state of Sikkim's Directorate of health have sponsored and set up Tibetan medicine clinics. Since then the clinics have helped thousands of people.
- ✦ Department of Horticulture: The Department of Horticulture, Government of Sikkim, had initiated a trial plantation of *Panax pseudo-ginseng* at Lachung (3000m) for a detailed study of the plant under cultural conditions. Cultivation of high altitude endangered medicinal plants like *Picrorrhiza kurrooa* and *Orchis latifolia* has also been initiated.
- ✦ Department of Science and Technology : This department has promoted research and documentation in the field of medicinal herbs in the past

The following are some of the other important institutions involved in the research and development of medicinal plants in Sikkim.

1. G.B. Pant Institute of Himalayan Environment and Development (GBPIHED)
2. Botanical Survey of India (BSI)
3. Indian Council of Agricultural Research (ICAR)
4. Regional Research Centre of Ayurvedic Medicine
5. Himalayan Pharmacy Institute (HPI)
6. Pragya NGO
7. Khangchendzonga Conservation Committee (KCC), West Sikkim
8. Sikkim Paryavaran Samrakshan Sangh (SPSS), South Sikkim
9. The Mountain Institute, Sikkim Office
10. Maenam Nursery at Damthang, South Sikkim
11. "Hidden Forest" Nursery, Gangtok:

Initiatives in Local Health Culture Conservation

- ✦ **STNM Hospital, Gangtok:** This government hospital has a separate *Amji* clinic and has employed two *Amjis* on a regular basis since long. The head *Amji* is Mr. Sonam Tshering who is amongst the very few Sikkimese healers trained at Tibetan Medical and Astro Institute, Gangchen Kyishong, Dharamsala 176216, Himachal Pradesh. The other *Amji*, Nyidon is on deputation from this institute at Dharamsala. This is the only government hospital in Sikkim where there is a regular *Amji* Clinic visited by scores of people.
- ✦ **Men-Tse-Khang or Amji Hospital, Namnang, Gangtok :** This is a charitable clinic under HH Dalai Lama run by *Amji* Kelsang Dorjee. He also mentioned a scholarship instituted by HH Dalai Lama for two Trans-Himalayan students at regular intervals.
- ✦ **Tashi Namgyal Private Clinic, Namnang, Gangtok :** This is a private clinic run by the father of *Amji* Sonam Tshering.
- ✦ **Chagpori Tibetan Medical Institute:** The Chagpori Tibetan Medical Institute, CTMI at Darjeeling, West Bengal is one of the two major institutions in the country for the development of Tibetan medicine system, the other being the Tibetan Medical and Astro Institute, TMAI at Dharamsala, Himachal Pradesh. The CTMI herb collection team makes botanical expedition to Sikkim, Bhutan and Nepal for herb collection and field data collection.
- ✦ **Pakhrin Herbal Hospital, Algarah, Darjeeling, West Bengal:** Baidhya Chewang Pakhrin is perhaps one amongst a few Indian herbalists who have been serving the rural masses with dedication and distinction. Thus, he has been healing bone fracture with herbal medicines for over the last forty years. This knowledge of treatment has been inherited from his forefather and is being successfully applied by the forth generation. The system of the secret knowledge of healing is said to have come to the first Baidya of the family as a blessing in his dream. Be that as it may from small beginning in a house clinic, Baidhya Pakhrin is able to institute a twenty bedded hospitals with cabin as of now.

Table 7.3 Medicinal Plant Conservation Areas (MPCA) in Sikkim

Sl. No	MPCA	Location	Ecoregion	Altitude (m)		Area In ha
				From	To	
1	Kitam Reserve Forest	Kitam	Tropical	280	740	500
2	Maruni Taar Reserve Forest	Zoom	Tropical	750	1000	100
3	Tayong Reserve Forest	Gyalsing	Tropical	900	1100	100
4	Karthok Reserve Forest	Pakyong	Tropical	1200	1400	100
5	Chuba Reserve Forest	Chuba	Tropical	1200	1400	100
6	State Biodiversity Park	Damthang	Sub Tropical	1500	1800	100
7	Dubdi Khasmahal	Yuksam	Sub Tropical	1700	2000	200
8	Rabdentse Bird Reserve	Tikjuk	Sub Tropical	1800	2000	100
9	Fambong Lho Sanctuary	Gangtok	Sub Tropical	1800	2000	200
10	Tendong Nature Reserve	Damthang	Sub Tropical	2000	2400	200
11	Maenam Sanctuary	Ravangla	Sub Tropical	2400	2700	200
12	Rate Chu Reserve Forest	Gangtok	Sub Tropical	2500	2700	200
13	Okhrey to Hilley to Barsey	Barsey	Temperate	2500	3100	300
14	Kyishongla (Upper Tholung)	Tholung	Temperate	2700	3000	100
15	Pangolakha Sanctuary	Pangolakha	Temperate	3000	3300	200
16	Shingba Sanctuary	Shingba	Temperate	3100	3500	200
17	Rachela	Rachela	Temperate	3300	3500	200
18	Tshoka to Dzongri	Tshoka	Temperate	3300	4200	600
19	Zema to Thangu	Zema	Temperate	3500	3900	200
20	Kyongnosla Sanctuary	Kyongnosla	Temperate	3700	4000	100
21	Dzongri to HMI Base Camp	Dzongri	Temperate	4200	4800	600
22	Yumesamdong	Yumesamdong	Trans Himalayas	4000	4300	300
23	Lashar Valley	Lhasar Valley	Trans Himalayas	4000	4200	300
24	Muguthang	Muguthang	Trans Himalayas	4200	4500	300
Total Area (ha)						5500
% of Geographical Area						0.775085

Table 7.4 List of Existing Medicinal Plant Conservation Areas

Sl. No	MPDA	Linked to MPCA	Management	District	Ecoregion	Altitude m	Area ha
1	Kitam Herbal Garden	Maruni Taar Reserve Forest	SMPB	South	Tropical	450	3
2	Aushadhi Ban	Tayong Reserve Forest Karthok Reserve Forest Chuba Reserve Forest	MUSS, NGO	South	Tropical	700	3
3	State Biodiversity Park Herbal Garden	State Biodiversity Park	SMPB	South	Sub Tropical	2000	3
4	Yuksam Territorial Nursery	Dubdi Khasmahal	Territorial	West	Sub Tropical	1700	1
5	Tikjuk Territorial Nursery	Rabdentse Bird Reserve, Fambong Lho Sanctuary	Territorial	West	Sub Tropical	1800	1
6	Samdruptse Herbal Garden	Tendong Nature Reserve	SMPB	South	Sub Tropical	1800	3
7	Samdruptse Smriti Van		SMPB	South	Sub Tropical	1800	3
8	Maenam Herbal Garden	Maenam Sanctuary	SMPB	South	Sub Tropical	2400	3
9	Ratey Chu Herbal Garden	Rate Chu Reserve Forest	SMPB	East	Temperate	2000	3
10	Bulbuley Smriti Van		Working Plan	East	Temperate	1800	1
11	Guranshe / Noonthaley Herbal Garden	Okhrey to Hilley to Barsey	SMPB	West	Sub Tropical	1800	3
12	Barsey Herbal Garden		SMPB	West	Sub Tropical	1900	3
13	Tholung Herbal Garden	Kyishongla (Upper Tholung), Pangolakha Sanctuary	SMPB	North	Temperate	3000	3
14	Dombang / Zekuphyak Herbal Garden	Shingba Sanctuary, Rachela	SMPB	North	Temperate	4000	3
15	Khecheopalri Herbal Garden	Tshoka to Dzongri	SMPB	West	Sub Tropical	2000	3
16	Zema Herbal Garden	Zema to Thangu	SMPB	North	Temperate	3600	3
17	Thangu Herbal Garden		SMPB	North	Temperate	4000	3
18	Kyongnosla Herbal Garden	Kyongnosla Sanctuary	SMPB	East	Temperate	4000	3
19	Hilley Potato Seed Farm	Dzongri to HMI Base Camp, Yumesamdong, Muguthang, Lashar Valley	FEWD	West	Temperate	3000	3

Reference:

Plan for Conservation and Sustainable Utilization of Medicinal Plants of Sikkim-2003,
Prepared by the Sikkim State Level Planning Committee