

Socio-economic aspects of medicinal plants cultivation In hill eco-system

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Introduction

Medicinal Plants are being used for the treatment of disease/ailments of both human beings and animal since time immemorial. Forest and pasture ranges are the natural herbal houses of valuable medicinal plant wealth. These medicinal plants are one of the major natural resource of our country occurring in diverse eco-system. The hill region of our country, which is known as Himalayas are rich in biodiversity due to the variety of habitat available. The region is also renowned for the vast store house of medicinal plants. The medicinal plants of hill region are in great demand around the world for use by pharmaceutical houses, ethno medicinal practitioners.

Being a hilly state, Himachal Pradesh is rich source of medicinal plants due to varying degree of agro-climatic zonation from sub-tropical to extreme cold is a bucket of large variety of medicinal herbs. There is hardly any representative of the medicinal plants of the continent which is not found in the state except of marine origin. In total out of around 3500 known plant species recorded in the state, about 500 are of medicinal importance. If we view the whole of the agro-climatic scenario of the country, this state is a natural house of many rare and very important temperate medicinal plants species such as *Aconitum heterophyllum* (Atish), *Aconitum deinorrhizum* (Dudhia mohra), *Angelica glauca* (Chora), *Asparagus filicinus* (Safed musli), *Berberis aristata* (Daru haridra), *Bergenia ligulata* (Pashan bhed), *Dactylorhiza hatagirea* (Salampanja), *Dioscorea deltoidea* (Singli-mingli), *Hedychium acuminata* (Kapoor kachri), *Heracicum candicans* (Patrala), *Picrorhiza kurroa* (Kutki), *Podophyllum hexandrum* (Vankakri), *Polygonatum verticellatum* (Meda), *Rheum australe* (Revandchini), *Selinum vaginatum* (Moor), *Swertia angustifolia* (Chiraita bhed), *Taxus baccata* (Rakhal), *Thymus serphyllum* (Van ajwain), *Viola* spp. (Vanfsha), *Valeriana jatamansi* (Sugandhbala).

Market scenario of medicinal plants:

Herbal based products sector is emerging very fast in the present time. A vast national as well as global market of these products in the form of exports of medicinal plants as 60% in the world market. Where as India's share is only 2% despite the fact India has richer diversity.

Nature of Trade:

At present nearly 95% of traded medicinal plants are collected from the wild. Medicinal plants trade in the country is unorganized. Current practices are unsustainable and unscientific. To meet out the increasing demand of raw drugs, the plants are uprooted in a large scale. Temperate region medicinal spp. are in high demand. Due to long gestation period and acute temperate conditions many of the species become extinct due to heavy exploitation. In most of cases the extraction is done at the flowering stage or before the bearing and ripening of the seeds, which leads to the elimination from nature. Thus in the absence of any systematic and scientific harvesting mechanism many of the species are now in the verge of extinction. The list of herbs traded from H.P. are given below:

MEDICINAL HERBS TRADED FROM H.P. IN YEAR 1997 -98

(Quantity in quintals)

| Name of Species | CCF | Chamba | D'shala | Kullu | Mandi | Rampur | Shimla | Total |
|------------------------|-------------|-------------|------------|-------------|--------------|-------------|-------------|--------------|
| Muskbala/Nihani | 76 | 1506 | 1 | 460 | 136 | 11 | 2 | 2192 |
| Dhoop | 103 | 423 | 10 | 152 | - | 251 | 404 | 1343 |
| Chukri/ Rewandchini | - | 460 | - | - | - | 308 | 15 | 783 |
| Brahmi | - | 40 | - | - | - | - | 275 | 315 |
| Patlahan | 30 | 333 | - | - | - | - | - | 363 |
| Tej Patra | - | - | - | - | 567 | - | - | 567 |
| Kaur/ Karu | 35 | 54 | 6 | 11 | - | 17 | 2 | 125 |
| Dorighas | 360 | - | - | 842 | 61 | 224 | - | 1487 |
| Guchhie | 1 | 50 | - | 299 | 17 | 1 | 158 | 526 |
| Birch/ Bhoj Patra | - | - | - | 6 | - | - | 10 | 16 |
| Thuth | 83 | 42 | - | 75 | - | 93 | - | 293 |
| Banyan/ Bajh | - | 47 | - | - | - | 33 | - | 80 |
| Bach | 20 | - | - | 360 | - | - | - | 380 |
| Bankakri | - | 43 | - | - | - | - | - | 43 |
| Bhutkesi | - | 63 | - | - | - | - | - | 63 |
| Discorea | - | 6 | - | - | - | - | - | 6 |
| Chora | - | - | - | 78 | 11 | 30 | 1 | 120 |
| Tulsi Patters | - | 40 | - | 12 | - | - | - | 52 |
| Mithi Patties | - | 30 | - | 6 | - | - | 1 | 37 |
| Kakar Singi | - | 7 | - | 2 | - | - | 1 | 10 |
| Salam Misri | - | - | - | - | - | - | - | - |
| Banafsha | - | - | - | 15 | 12 | - | - | 27 |
| Others | 324 | 1416 | 140 | 2695 | 6968 | 1582 | 1483 | 14608 |
| Berberis roots | - | - | - | - | 7790 | - | - | 7790 |
| Total | 1032 | 4560 | 157 | 5013 | 15562 | 2550 | 2352 | 31226 |

Conservation & cultivation:-

Keeping in view the above facts this sector can play major role for generation of income & livelihood of the households in Himachal Pradesh. At present the source of valuable temperate medicinal plants is wild. To conserve and save this valuable wealth in nature and also to make the raw material available for the use, it is essential that these may be brought under cultivation. The temperate medicinal plants are not only rare in occurrence, but these are also highly remunerable crops.

Constraints in medicinal plants sector:-

1. Lack of agriculture practices.
2. Indiscriminate harvesting and post-harvesting managements.
3. Lack of genuine germplasm.

4. Poor processing techniques.
5. Unorganized/ invisible market.
6. Lack of reliable database.
7. Lack of proper regulatory practices for exploitation of medicinal plant.

Remedies:

1. Identification of forest habitats for commercial regeneration & utilization of medicinal plants.
2. Development of agro-practices and post-harvest techniques.
3. Increasing awareness among peoples regarding bio-diversity, conservation, sustainable and protective use of plant resource.
4. Involving more people for adopting cultivation of medicinal plants.
5. Creation of market linkage within and out side the state.
6. Creating infrastructure for good manufacturing facilities for processing of medicinal plants.

Role of Ayurveda:

The Dept of Ayurveda H.P. Govt. being a direct consumer of the herbs & herbal drugs is quite aware with the magnitude and gravity of the problem of depleting these plants from nature and hence has drug, cosmetic, extracts, soft drinks, food supplements or as raw material is available. According to WHO survey report, about 21,000 medicinal plants are used in whole of the world for the treatment of disease.

(a) Domestic scenario of botanical/medicinal plants:

According to ethno-biological survey conducted by the Ministry of Environment and Forest, 7500 plants species belong to 386 families and 2200 genera are used by 4635 ethnic communities for human and veterinary health in the country. The domestic market of medicinal plant is about of 3 billion, which includes condiments and food additives (14%) herbal extracts (22%), essential oils, gums resins (19%) and crude drug (45%). Himachal is also the largest supplier of valuable temperate plants e.g. Kuth, Singli-mingli, dhoop, kutki, Sugandhala & Somlata etc. A list of top 20 medicinal plants traded in Indian market is given below:-

TOP 20 Medicinal Plants traded in India

| Trade name | Botanical name | Family | Part used | Common name |
|------------------------------|--|---------------|----------------|--|
| ATIS* | <i>Aconitum heterophyllum</i> Wall. Ex Royle | RANUNCULACEAE | Tuberous roots | Atis |
| MEETHA TELIA/ BACHNAG* | <i>Aconitum violoceum</i> (Jacq.) Stapf | RANUNCULACEAE | Tuberous Roots | - |
| SAFED MUSLI | <i>Chlorophytum borivillianum</i> Sant. & Fernandez | LILIACEAE | Tubers | Biskandri, Safed musli |
| GUGGUL | <i>Commiphora wightii</i> (A.) Bhandari | BURSERACEAE | Resin | Guggul |
| MAMIRA/ MISHMI BITTER* | <i>Coptis teeta</i> Wall. | RANUNCULACEAE | Roots | Coptis, goldthread, mishmee-bitter |
| SALAMPANJA/ SALEP* | <i>Dactylorhiza hatahirea</i> (D.Don.) Soo | ORCHIDACEAE | Fruits | Baiberang, Wawrung |

| | | | | |
|---------------------------|--|------------------|---------------------|-----------------------------|
| VIDANGA/ BAIBARANGA | <i>Emblia ribes</i> Burm. f. | MYRSINACEAE | Fruits | Baiberang, Wawrung |
| NAGKESAR | <i>Mesua nagassarium</i> (Burm. F.) Kosterm | CLUSIACEAE | Dry stamens | Nagkesar, nagesar |
| RAMPATRI / BOMBAY MACE | <i>Myristica malabarica</i> Lam. | MYRISTICACEAE | Aril & Mace | Van-jayphal |
| JATAMANSI* | <i>Nardostachys grandiflora</i> DC | VALERIANACEAE | Rhizomes & roots | Jatamansi, balchir |
| GAOZABAN | <i>Onosma bracteatum</i> Wall. | BORAGINACEAE | Flowers | Gaozaban |
| KUTKI* | <i>Picrorhiza kurroa</i> Royle ex Benth | SCROPHULARIACEAE | Roots & rhizomes | Kuru, Kutki |
| KAKRA-SINGI* | <i>Pistacia integerrima</i> Stewart ex Brandis | ANACARDIACEAE | Galls | Kakra-singi |
| SARPAGANDHA | <i>Rauwolfia serpentina</i> Benth. ex Kutz | APOCYNACEAE | Roots | Chandrabhaga Chota-chand |
| MANJISHTA | <i>Rubia cordifolia</i> Linn. | RUBIACEAE | Roots | Manjit, Manjith |
| CHANDANA/ SANDALWOOD | <i>Santalum album</i> Linn. | SANTALACEAE | Heartwood | Safed-chandan, Sandal |
| CHOCHINI GULABI | <i>Smilax glabra</i> Roxb. | SMILACACEAE | Roots | Barichob-chini |
| CHIRAIYITA* | <i>Swertia chirayita</i> Karst. | GENTIANACEAE | Whole plant | Chirayita |
| TAGGAR/ MUSKBALA* | <i>Valeriana hardwickii</i> Wall. | VALERIANACEAE | Rhizomes & roots | Taggar, Nihani, Asarun |
| BANAFSHA | <i>Viola pilosa</i> Blume | VIOLACEAE | Flowers | Banafsha |

Note: * - Plants traded from temperate zone of Himachal Pradesh

(b) Global scenario:

According to survey report of the WHO at present about 100 crores of world population relies on the plant based health care systems and their numbers increasing day-by-day. Annual global market of medicinal plants is about \$65 billion and increasing about 16% every year. At present India's exports is of 446 crores only and is expected to be raised 3000 crores by the end of 2005. While, China

undertake a comprehensive project on the conservation and cultivation of high altitude medicinal plants. This programme is being executed from the Research Institute in ISM, Joginder Nagar, Mandi H.P. To take care of different aspects of medicinal plants like survey, collection, utilization, conservation & cultivation, Training awareness & extension activities. At this center one Ayurvedic herbarium is also set for the documentation of different samples of raw herbs for identification. For conducting research & development activity on medicinal plant, department has set up Herbal Gardens in different agro-climatic zone to raise the germplasm of genuine medicinal plant spp. and also to develop the agro-techniques of medicinal plants.

Conclusion:

Himachal Pradesh being a hilly state has rich medicinal plant diversity and is the largest supplier of temperate medicinal plants/crude drugs is disorganized and state has no market of its own. People collect the usable parts from the wild source and sell it through middle man of the business parties of big market like Delhi, Amritsar, Saharanpur etc. on low price. The entire pressure is on the wild source and only few crops like kuth, kala jira, Kesar & Hops are cultivated. For the creation of employment to the people of H.P. at their door step this valuable wealth can be exploited on scientific & sustainable basis. More & more crops should be brought under cultivation to is the pressure on the wild source and fulfill the requirement of pharmaceutical industries. If judicious exploitation of medicinal plants is coupled with organized market, H.P. state become pioneer in the Herbal Industry.