

**Research Article**

## **NEED FOR CONSERVATION AND PROPAGATION OF MEDICINAL PLANTS OF HIMACHAL PRADESH, INDIA**

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### **ABSTRACT**

The alpine and sub-alpine areas of Himachal Pradesh provide a matchless wealth of highly priced medicinal, aromatic plants and known as a natural reservoir of these herbs. In alpine pasture and meadows due to continuous loss of forest land, uncontrolled grazing and irregular exploitation of medicinal herbs by commercial enterprises have resulted in depletion of valuable medicinal plants used since ancient times. There are many medicinal plants which have become rare in several tracts while a few others have fallen in the list of endangered species. Therefore it has been felt that there is an urgent need for conservation via ex-situ and in-situ cultivation of these valuable and threatened species by establishing high altitude nurseries in their natural habitat, so that regular supply to pharmaceutical industries and users could be maintained and above all this valuable flora of the alpine or sub-alpine areas of Himachal Pradesh could be conserved.

### **INTRODUCTION**

The use of medicinal plants for curing diseases in human society is almost as old as man himself. The earliest mentioned use of medicinal plants is found in Rigveda. After the Vedas there is no information on the development of this science in India for a period of about 1000 years. The study of Indian indigenous drugs first started in the early part of the first century and it was then confined to the collection of available information with regard to various medicinal plants growing in different parts of the country. Anon (1976), Chauhan NS (1988), Chawdhery HJ and Wadhwa BM (1984), Chinnathurai AK, Vivekanandan R and Kumaravelu G (1997), Chopra RN and Chopra IC (1955), Dastur JF (1970), Dey KL (1996), Gammie GA (1898), Jain SK and Sartry AR (1979), Gupta BK (1985), Jain SK (1981), Joshi P, Pande HC and Pandey PC (2004), Joshi (1995), Joshi DN (1962), Rau MA (1975), Samant SS and Palni LMS (2001), Semwal JK (1984), Sing JS (1992), Sharma M and Singh H (1990), Uniyal SK, Awasthi A and Rawat GS (2002), Vavilov (1920) have described the medicinal properties of Indian medicinal plants. In Himachal Pradesh difference in topographical set-up of land forms, variation in climate and soil have resulted in different vegetational types from tropical at foot hills to highest limit of any vegetation (6000 m). Himachal Pradesh has been a source of spiritual, mythological and biological sites since ancient times. We are fortunate enough to have the richness of high quality of medicinal herbs in Alpine and sub-alpine regions of Himachal Pradesh, which has been traditionally regarded as a sacred heaven of potent medicinal herbs. The credit goes to our ancient Rishis who have identified and used hundreds of plants of medicinal value through ages.

During recent years, man and his associates are changing the ecosystem of Himachal Pradesh by construction of roads, buildings, dams etc., thus causing continuous loss to forest land resulting that the valuable medicinal plants mentioned in literature and folklores are no longer found in the accessible habitats in large quantities and many of which have become rare or endangered. Over exploitation of medicinal herbs by local people, traders and improper management have also threatened the survival of many valuable species from the natural habitats.

The demand of these high qualities of medicinal herbs from alpine and sub-alpine region of Himachal Pradesh is increasing day by day within and outside the country. Time has come when serious and effective measures are required to meet the challenge. Therefore this is a time to think and formulate strategy for the conservation for supply as raw materials to industries, users and above all to maintain ecological balance of these areas.

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### MATERIALS AND METHODS

The completion of project work was made possible by doing field survey of area i.e. alpine and sub-alpine area of Himachal Pradesh. Study area present at altitude ranging from 1800 to 6401 m. above mean sea level. About 70% of the total alpine area of the North –West Himalayas is present in Himachal Pradesh. State, has diversity in its soil, physiographic, land use pattern and cropping system.

The medicinal plants were collected from time to time during flowering and fruiting season. The plants collected from study area were consisted of almost all parts so that they can be easily recognized and able to provide maximum information. Herbarium of plants was also prepared.

Beside this information related to collected plants was also gathered by discussing with people inhabiting the area. Study material from various reference books was also referred. The whole available information is then written stated in project report.

### RESULTS AND DISCUSSION

The following alpine and sub-alpine medicinal plants of Himachal Pradesh have been classified as endangered and likely to be endangered (rare) groups therefore there is an urgent need for ex-situ and in-situ conservation.

#### *Endangered species of Medicinal plants*

1.Aconitum heterophyllum 2. Aconitum ferox 3. Aconitum deinorrhizum 4. Aconitum falconeri 5.Aconitum violaceum 6. Aconitum benthamii 7. Atropa acuminata 8. Angelica glauca 9. Colchicum luteum 10. Corydalis govaniana. 11. Dactylorhiza hatagirea 12. Discorea deltoidea 13.Gentiana kurroo 14.Nardostachys grandiflora 15.Picrorhiza kurroa 16. Podophyllum hexandrum 17. Rheum australe 18. Saussurea costus 19. Saussurea obvallata.

#### *Likely to be endangered (rare) Medicinal Plants*

1.Artemisia brevifolia 2. Artemisia dracunculus 3. Berberis aristata 4.Delphinium denudatum 5. Delphinium brunonianum 6.Ephedra gerardiana 7. Fritillaria roylei 8. Hedychium spicatum 9. Hyoscyamus niger 10. Hyoscyamus niger 11. Jurinea dolomiaca 11Meconopsis aculeate 12. Potentilla fulgens 13. Picrasma quassioides 14. Saussurea hypoleuca 15. Senecio quinquelobus 16. Skimmia laureola.

The commercial cultivation of medicinal plants is still not given due importance. The species mentioned above are mostly from alpine and sub-alpine regions of Himachal Pradesh, which have limited scope for their sustenance in wild imperative need to conserve these species of rhizomes and roots, which remain dormant more than two to six months under heavy snow. So there is an urgent need to save these plants for their multiplication by growing them on mass scale in temperate regions of Himachal Pradesh , for internal consumption of pharmaceutical enterprises, such as Ayurvedic, Unani, Homeopathic, Sidha and also in Allopathic system of medicines. Following measures are suggested for conservation, protection, propagation and development of these medicinal plants.

Systematic rotational collection should be done in different alpine and sub-alpine areas.

Germplasm centre for important or likely to be threatened alpine and sub-alpine plant species should be developed in temperate climatic regions or zones.

In-situ and ex-situ conservation of endangered or likely to be endangered (rare) species should be immediately being started in the appropriate region of Himachal Pradesh.

Heavy grazing and destruction of medicinal herbs should be checked in alpine and sub-alpine regions, as these species do not produce sufficient seeds or vegetative forms for regeneration. If grazing can not be avoided then rotational deferred grazing may be introduced to these areas, which can be opened for grazing for one year or one season and can be closed for another year or other season and vice-versa.

Rising of high altitude nurseries and drug farms (small as well as big) should be developed by the various Research Institutes, University, Laboratories engaged in medicinal and aromatic plants in collaboration with Forest Department.

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The herb collectors 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 greatly susceptible to environmental changes which may lead to extinction of natural species.

Cultivation of medicinal plants should be encouraged in Agroforestry. Technology for raising, harvesting of medicinal plants should be made available to the farmers.

Domestication of medicinal plants should be encouraged.

The development, protection, propagation and conservation of alpine and sub alpine medicinal plants of Himachal Pradesh is a national task which requires well planned, coordinated and continued efforts of individuals, voluntary organizations, village, Block and District level bodies, Non Government Organizations, cooperative societies and various other agencies of State and Central Government.

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