

Current research on medicinal plants: Five lesser known but valuable aspects

Developing a medicinal plants sector, across the various states of the Indian Himalaya, has become an important issue. Different stakeholders in the medicinal plants sector have projected Uttarakhand, one of the Himalayan states, as an 'Herbal

This notion has made medicinal plants as a commodity of high value across the state. At the same time, realizing the continuous depletion of this valuable resource, attempts are being made for its large-scale cultivation and multiplication in order to meet its escalating demand as well as long-term sustainability. There are many aspects of research associated with the medicinal plants sector. We have identified the following five aspects that are not studied properly or lesser known to carry out research work.

The majority of current research programmes on medicinal plants conservation are being shifted from ecosystem to the species level. Although there are protected areas (PAs) across the Himalaya, except for a few PAs such as the Valley of Flowers in North West Himalaya and Tipi Orchid Sanctuary in North East Himalaya, most of the PAs have a focused attention on the preservation of faunal diversity. Not even a single PA is basically known for conservation of medicinal plants. Therefore, there is an urgent need for identification and notification of areas for conservation of medicinal plants on a priority basis.

Over-collection of medicinal plants has been identified as one of the severe threats to medicinal plants population. Habitat alteration and specificity, narrow range of distribution, overstocking and over-grazing of areas by domestic animals are some of the threats endangering the existing populations of medicinal plants. Additionally, natural enemies such as pathogens, herbivores and seed predators could substantially limit the abundance of rare medicinal plant species in any given area. The Himalayan musk deer (*Moschus chrysogaster*) extensively grazes the flowers of 'Fenkamal' (*Saussurea gossypiphora*), an endangered high altitude medicinal plant species; hence this rare species has un-

dergone reduction in species density and frequency. The Himalayan mouse hare or Pyka (*Ochotona roylei*), locally known as 'Runda' in Uttarakhand Himalaya, also feeds on many medicinal plant species and their increasing population in high altitude areas has created an additional pressure on many medicinal plant populations. Mouse hares not only feed on these valuable medicinal plants but also destroy a sizeable quantity of medicinal plants in the high altitude areas. The Monal pheasant feeds on the tubers of many medicinal plant species such as *Dactylorhiza hatagirea* (Figure 1) and *Polygonatum verticillatum*. Notwithstanding, studies are lacking on impact of wild herbivores on medicinal plant populations including impact of domestic animals on medicinal plant populations. Therefore, there is an urgent need to carry out detailed investigations on the habitat utilization patterns, feeding ecology, geographical distribution patterns and impact of herbivores on medicinal plant population.



Figure 1. *Dactylorhiza hatagirea*; an endangered medicinal plant species.

Most of the documentation and research on indigenous uses of medicinal plants is focused on the human aspect. Animal husbandry is a backbone of economy in the Himalayan region and maintaining a healthy animal population will obviously benefit various ethnic and non-ethnic communities prevalent in the Himalaya. In North East Himalaya, possessing a large number of domestic animals is an indication of prosperity of their respective owners. Since there are many medicinal plant species used in curing various animal-related disorders and diseases, research should also be carried out and emphasized on the uses of medicinal plants for curing livestock diseases.

There are some aspects of medicinal plants, which are basically ignored, but they could be important from the conservation point of view. On many occasions, collection of plant material, especially of rare and endangered medicinal plant species, from natural habitats for various experimental purposes by researchers, also poses a threat to their natural population in the wild. The researchers must be aware on the germination potential, and seedlings and rhizomes survival strategies of the desired species collected from the wild for scientific experiments. Researchers must plant at least a similar number of individuals back in nature after completion of research work on collected species.

Since there are many gaps in medicinal plant research, institutions involved in such research should identify these gaps and build-up capacity in achieving the desired aims of medicinal plants sector through intra- and inter-institutional networking.

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