



## The Role of Plants in Human Welfare

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### Abstract

After literature survey, the ethno-botanical information reveals that plant species are widely used throughout the world for different purposes like for instance medicine, edible fruits, vegetables, ornamentals, fencing, fuel wood, timber wood, fodder, agricultural tools and structural materials etc. Whereby all the growth forms like herbs, shrubs, trees, climbers, epiphytes and trailers plays their role. Nonetheless, the most important concern is that most plant species due to their dire need, improper collection, overgrazing, deforestation, pollution and other anthropogenic influences are proceeding towards the door steps of IUCN categories. For example, some of the very important and precious medicinal plants like *Valeriana jatamansi*, *Acorus calamus*, *Podophyllum hexandrum* and *Paeonia emodi* are threatened due to their unwise collection by the residents for medicinal purposes. So, it could be concluded and recommended that during field visits conservation status of such important plant species must be kept in mind to conserve their generation and biodiversity for future.

**Keywords:** Ethnobotany; Literature Survey; Conservation; Pakistan

### Historical Perspectives of Plants Uses

Kazmi and Siddiqui [1] in upper Guraiz and Astore valley identified eighty seven medicinal plants and also enlisted their local names, distribution, elevation and traditional uses. Hocking [2] expected that some 84% of the Pakistan's rural population depend upon medicinal plants for their remedial necessities.

Zaman and Khan [3] reported hundred medicinal plants of West Pakistan with their botanical names, family names, distribution, description, constituents and traditional uses. Singh and Pandey [4] reported one hundred and twenty five medicinal plant species lore of the tribes of eastern Rajasthan belonged to one hundred and four genera and fifty four families. They gathered this information from the natives included Hakims, Vaidis, herbalists and forest officials. Some medicinal folk recipes regarding these plants were also documented.

A field survey was conducted by Khan [5]. The report included that ninety five plant species used by herbalists and hakims. Medicinal plants consumption was about 56.5 lac kg per annum valued up to Rs. 3,60,000 PKR. Bye [6] set a field survey to investigate the Mexican and Tarahumara medicinal plants sold in local market. Pie and Mmandhar [7] reported that at least 70% medicinal plants and animals which consist of wild species in Himalayan Ranges and the population (70–80%) for their health care depends on traditional medicines.

Farooq [8] carried out the medicinal plants survey of Pakistan in which fifty two medicinal plant species belonging to twenty five families of angiosperms. Traditional medicines of Pakistan and India were discussed. From 1989 to 1991, field work was carried out in *Calhaus* (Jaguanum Island) and people were interviewed for plants and their local uses. Baluchistan Province was surveyed by Goodman and Ghafoor [9]. They collected one hundred and fourteen plant species with traditional usage.

A field survey in Mansehra was conducted in which fifty three wild and seventeen cultivated medicinal plants were collected by Haq [10] and these plants were enlisted with botanical names, local or vernacular names, family, parts used, habit, habitat, distribution, constituents, medicinal and traditional uses. Winter and Botha [11] reviewed on the role of national botanical garden in propagating and selling indigenous

plant species. They also discussed the relevancy to plant conservation. Saleem et al. [12] have done a laboratory work on the biological activity of 59 indigenous plant species which are used as insecticides. Plant sources as insecticides can be used to overcome harmful effect of modern insecticide like *Melia azadarach* and *Pterospermum acerifolium*.

Khan [13] reviewed the area of Punjab thorn forests, where the factors causing down fall of these forests like felling, wind erosion, desertification, salinity, over grazing and water logging were described. Due to the highly ecological and ethno botanical value *Salvadora oleoides* was pointed out specifically.

Cowling and Samways [14] discussed the interaction between richness of endemic plant species "response variable" and area, mean annual temperature and rainfall, latitude and altitudinal range (explanatory variables) in fifty two biogeographic regions scattered over the major biomes on all continents of the world. According to well-known pattern, the highest numbers of endemic plant species are present at regions of low and large altitude. On the other hand, the residuals model analysis determined that mid-latitude regions (with semi-arid and strongly seasonal climates) harbor much more endemic species as compared to model predictions.

Cousins [15] checked the antiviral, antibacterial and antifungal activities of plants which are used in human and veterinary medicines and also in crop protection. Haq and Hussain [16] reported forty seven medicinal plants of Palandri, District Poonch with their local names in Pahari, Punjabi, Pushto and Urdu were given. Traditional uses of these medicinal plants were enquired from people of the surveyed area and medicinal uses of the plants were also given.

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Sadaqat [17] studied ten medicinal plant species of the Cucurbitaceae family, which includes *Momordica dioca*, *Benincasa hispida*, *Citrullus* spp., *Corallocarpus epigalous*, *Trichosanthes cucumeria*, *Cucumis melo*, *C. sativus*, *T. dioca*, *Luffa acutangula* and *L. echinata*. Martin [18] proposed that the main threats to shrubs and trees are basically the fuel deficiency at Sulaiman Range Mountains. In severe and long winter season, massive quantities of wood for fuel purposes are used and about thirteen thousand people span their life on selling *Pinus gerardiana* plant seeds in a good yielding year.

Flora of Dabargai hills, Swat was studied by Khaliq [19] consisted of one hundred and forty indigenous plant species of fifty-three families. Some one hundred and twenty five indigenous plant species were used by the local peoples for various purposes where sixty nine were medicinal, seventy six fodder, eighteen fuel wood, thirteen fruit yielding, twelve vegetable, twelve timber, six mud supporters and four species of hedge plants.

A total of fifty-six edible species of mushrooms from Pakistan were discussed by Sultana et al. [20] which were forty four species from KP and Azad Kashmir each, five species from Punjab, four species from Baluchistan and three species from Sindh. Some commercially exploited edible species in the world included *Auricularia* spp., *Agaricus bisporus*, *Stropharia rugosoannulata*, *Coprinus comatus*, *Lentinus edodes*, *Flammulina vellutipes*, *Phellorina inquinans*, *Pleurotus ostreatus* and *Volvariella volvacea*.

Khan and Fevre [21] conducted study on plant species for medicinal uses in Chitral. Their findings revealed that eighty five plant species from thirty nine families were used by local inhabitants for medicinal requirements. Shinwari and Shah [22] carried out a field study about the ethnobotany of Kharan District, Baluchistan. They revealed that local people of the area used 171 species of angiosperms for food, fodder, medicine, making houses, tool handles, carts, axles, wheels and ploughs etc. and are mostly dependent on wild plant species.

Badshah et al. [23] surveyed Pirghar Hills, South Waziristan for ethno ecological work. The summer flora was consisting of ninety seven plant species of forty three diverse families in Pirghar Hills, South Waziristan Agency, Pakistan. They reported that eighty three plant species had different traditional uses.

Khan et al. [24] investigated that in Hindu-Kush Himalayas biodiversity was badly affected by the deficiencies of fuel. Different solutions were recommended to minimize the harmful impact of fuel insufficiency by applying certain strategies at state, regional and local level. Exploration of different other fuel sources, plantation of rapid growing trees and endangered plant species conservation were also recommended.

Qureshi et al. [25] reviewed that fifteen species of Gymnosperms were used as traditional medicines by the inhabitants of Chitral. A field survey was conducted at Peshawar and adjoining areas by Rehman [26] where one hundred and thirty plants were reported as honeybee plants. It included both wild and cultivated plants. Figueiredo et al. [27] carried out an ethnobotanical investigation in Brazil. Top priority conservation areas were considered to be Atlantic Forest remnants and local communities that were dependent on fish and small level agriculture.

Shinwari and Khan [28] discussed one hundred and three plant species of Margalla hills, Islamabad belonging to ninety two genera and forty nine families out of which, twenty six plant species were being sold in the market. Shinwari and Khan [29] investigated that local people of Margalla Hills National Park, Islamabad depends on the

indigenous plant resources for shelter, food, fodder and medicines etc. They discussed fifty herbaceous plants used for healthcare by the local people of the national park. *Viola canescens* and *Asparagus adscendens* were found vulnerable to harvesting.

Hoareau and De-Silva [30] reported that worldwide trade of medicinal plants is 800 million US dollars per annum. The medicinal plants approximately retail at 1.6 billion dollar per year is reported in botanical market of USA. India exports 32,000 tones and China exports more than 120,000 thousand tons per year and leads the global markets. Europe imports about 400,000 tons of medicinal plants per annum, worth millions of US dollar from Asia and Africa.

A field survey was conducted in Swat by Chaudhry et al. [31]. They reported that five thousand families of the area are actively involved in collecting medicinal plant species and annually more than 5000 tons of medicinal plants were collected by them. Shinwari et al. [32] carried out a field survey in the Hindu Kush Himalayas to evaluate the conservation status of medicinal plants of the area. About 12% medicinally prosecuted flora of Pakistan and 10% threatened flora was determined by them. A range from fifty five to three hundred and forty five medicinal plants species were documented as the total number of plants of the explored area.

A field survey was proposed to record medicinal plants of Kahutaa, Rawalpindi. About twenty five species belonging to eighteen families were recorded which were being utilized by the local people of the area for different medicinal purposes. Some of the most remarkable and representative species of the concerned area were *Saussurea hereromala* (used as a tonic for animals), *Cyperus rotundus* (generally used for dyspepsia, fever and cholera), *Pongamia pinnata* (The oil was applied to cure herpes and eczema), *Boerhaavia diffusa* (helpful for jaundice and other liver complaints) and *Euphorbia helioscopia* (leaves were used to cure mad dogs) [33].

Dastagir [34] studied pharmacognostic effect of *Juglans regia* and *Acacia nilotica*; it was used as miswak for cleaning teeth in different sites of Pakistan. Schippman [35] studied that medicinal plants collection is a very important revenue source for local people but there is no proper management in place. Plant habitats and long term viability may be jeopardized by wild collection. Due to local, commercial and biological extinction many plants species are getting threatened. Other causes like thorough habitats conversion and rapidly growing human population also cause damages. Recently, fourteen worldwide traded medicinal plants were included in the list of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES).

World Health Organization [36] reported that majority of the people of the world make use of medicinal plants for their health and other requirements in a traditional way. Plants for medicinal purposes were frequently used by traditional medicines practitioners and also in the domestic remedies. Due to limited public health care services, medicinal plants are mostly used in the developing countries. Furthermore, in the developed world, demands of alternative and traditional medicines have increased more recently.

Shinwari et al. [37] conducted a field investigation at Bar and Shinaki valleys of Northern areas to examine the conservation status of medicinal plants. They observed that 22% plants were utilized for gastro-intestinal troubles by the local residents pursued by 11% of the medicinal plants for pulmonary and bronchial complaints. They recommended *Ephedra gerardiana* and *Carum bulbocastanum* for *in-vitro* cultivation to attain rapid advantages and *Hippophae rhamnoides* to help the locals, as well as being a valuable export.

Hamayun and Khan [38] conducted an ethno botanical survey to study shrubs and trees of District Buner. As the area has diverse flora and high ethno botanical potential. A total of ninety four different plant species were recorded with potential to be exploited by local population for a number of purposes like medicinal, fruit yielding, timber, fodder, fuel wood, ornamental and making agricultural tools. Number of species like *Skimmia laureola*, *Pistacea integrima*, *Berberis lyceum*, *Abies pindrow*, *Daphne oleoides* and *Juglans regia* need conservation policies and protection because of the severe pressure from local inhabitants.

Ahmad [39] discussed thirty one (aromatic and medicinal) plant species at 3 different locations. The groundwork results showed that *Aconitum heterophyllum*, *Aconitum violaceum*, *Bistorta amplexicaulis*, *Colchicum luteum*, *Ginkgo biloba*, *Crocus sativus*, *Matricaria chamomile*, *Viola odorata*, *Podophyllum hexandrum* and *Valeriana jatamansi* may be cultivated effectively as minor crops on marginal fields.

Shinwari and Gilani [40] performed a field survey of Astore, Gilgit to gain information about plants biodiversity conservation, potential income to local residents and to find out and check the medicinal plants harvest levels. Their results revealed that the quick downfall of medicinal plants resources is because of conservation use requirements, *in-situ* and *ex-situ* conservation and guidance of local population about the collection and marketing of medicinal plants. Out of thirty four medicinal plants, five were endangered; eighteen vulnerable and nineteen species were reported as rare. *Ferula narhex*, *Saussurea lappa*, *Tamarix gallica*, *Betula utilis* and *Podophyllum hexandrum* were found to be under severe threats of losing in natural habitats.

Hamayun [41] conducted a field survey at Malam Jabba Valley, Swat from where one hundred and eighty seven ethno botanically important plants species belonging to seventy five families were reported. The authors categorized plants in which ninety five species as medicinal plants, fifty seven as agro forestry based plant species, thirty nine as vegetables and pot herb species, thirty two as ornamental, thirty as edible fruits yielding species, twenty seven species for thatching and sheltering, nineteen species as fencing, hedge and poisonous plants each and fourteen species were reported as timber yielding plants.

## Conclusion

Local people of remote areas mainly depend upon plant resources, therefore due to overgrazing and unwise plants cutting for various resources, plant life of such areas is under high biotic pressure. Some very important and precious medicinal plants like *Valeriana jatamansi*, *Acorus calamus*, *Podophyllum hexandrum* and *Poeonia emodi* got threatened in their natural habitats due to unwise medicinal plants collection by the residents. Conservation of each species is imperative and its loss may result in grave consequences for times to come. Careful and sustainable utilization of such highly important plant species require integrated efforts for policy makers to the end user.

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