THREATENED MEDICINAL PLANTS OF JAMMU REGION-A PART OF NORTH WEST HIMALAYAS, J&K, INDIA

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Abstract: Jammu region of J&K State is bestowed with great diversity of medicinally important plants which are used frequently by the inhabitants to cure various common ailments in their daily life. A perusal of literature reveals that no study had been conducted so far pertaining to the diversity, ethnobotany, concern and status of the threatened plants of Jammu region in particular and J&K State in general. Therefore an attempt has been made to record the interesting indigenous medicinal uses of less known threatened plants of Jammu region of J&K State. A total of 30 threatened plat species belonging to 26 families and 30 different genera were reported from the region. The families Asteraceae and Apiaceae represented by 3 species each dominated the floral composition and remaining all 24 families represented by single species and genera each. Different plant parts such as roots/rhizomes/corms, leaves, bark, fruits, seeds, flowers, stem and whole plants are used for the treatment of various ailments. The four reported life forms were Herbs, trees, shrubs and climbers. Herbs make up the highest proportion of threatened medicinal plants with 24 species followed by trees with 4 species while shrubs and climbers contributed 2 species each. All the described 30 species have been categorized as critically endangered (4 spp.); Endangered (13 spp.) and Vulnerable (13 spp.) as per the new international Union of conservation of Nature and natural resources (IUCN) criteria. Appropriate strategy and action plan for conservation and management of threatened plants has been suggested.

Keywords: Ethnobotany, Threatened Plants, Indigenous, Life Forms, Conservation

INTRODUCTION

It is documented that 80% of the world population relies on traditional medicinal system, particularly plant drugs for their primary health care (Kala et al., 2006). As a result of the increasing demand of medicinal plants, most of which is still collected from the wild, and creating a constant pressure on existing resources, leading to continuous depletion of some of the species in the forest and at the same time forest land is losing its natural flora at the alarming rate-1.5mha every year and what is left at present is only 8% against a mandatory 33% of the geographical area (Sivarajan V.V. & Balachandran I. 1994).

As for as India is concern, the climatic and altitudinal variations, coupled with varied ecological habitats of the country, have contributed to the development of immensely rich vegetation with a unique diversity in medicinal plants which provide an important source of medicinal raw materials for tradition medicine system as well as for pharmaceutical industries in the country and abroad (Pant. S & Pant V.S. 2011).It is generally established that over 6000 plants in India are used for tradition,folk and herbal medicines, representing about 75% of the medicinal needs of the third World countries (Dubey et al.,2004) Indian Himalayan region (IHR) is extends from Jammu and Kashmir in the Northwest to Arunachal Pradesh in the East. Typical topography of the region supports the diverse habitat, species, population, communities and ecosystems. Such rich diverse plant resources is used by the inhabitants of IHR for medicine, wild edible, fuel, fodder, timber, making agricultural implements and for religious purposes.Among the various uses of the plant resources, medicinal use is prominent throughout the Himalayan region. The wild medicinal plants are one of the source of income generation due to their various traditional and modern therapeutic uses (Samant et al., 1998).

The J&K State of Indian Union is concerned, it lies $32^0$17' to 37^0 20' N latitude and $73^0$25' to 80^0 30' E longitudes in extreme north region of India in NorthWestren Himalayas. Area supports the vegetation from subtropical zone to alpine zone and form a complex habitat which support a number of rare, endemic and threatened plant species. Jammu region of J&K State, a part of NW Himalayas bestowed with great diversity of medicinally important plants which are used frequently by the inhabitants to cure various common ailments in their daily life. A perusal of literature reveals that no study had been conducted so far pertaining to the diversity, ethnobotany, concern and status of the threatened medicinal plants of study area except some stray references i.e.Koul, M.K. (1997),Srivastava et.al.,(2000) and Pant, S(2011). Therefore an attempt has been made to record the interesting indigenous medicinal uses of less known threatened plants of Jammu region of J&K State.

MATERIAL AND METHOD

Intensive collection trip were made to different study sites of Jammu region of J&K State which are densely inhabited by the tribal groups, based on the vegetation covers and altitudinal variations. The attempt was made to collect the information from medicine men/women or knowledgeable persons of the area. In every case effort has been made to record only those use, whose effectiveness has been

confidently claimed by the inhabitant. The information was gathered either by taking interviews of the informant or as witness of the uses during the period of studies in the field to identify the levels of present use of medicinal plants. Informants were also requested to accompany in the field to detect plants, once the information on particular plants was recorded it was repeatedly verified to record its local name and uses. Identification was made by using "Flora of Jammu and its neighbourhood by Sharma and Kachroo (1981), Flora of Udhampur by Swami and Gupta (1998), Flora of British India (1872-75), Flora of Simlensis (1900), An Encyclopedia, Medicinal Plants of India (2003).

RESULT AND DISCUSSION

The present study gathers the preliminary information pertaining to the diversity, ethnobotany and status of some threatened medicinal plants of Jammu region of NW Himalayas. A total of 30 threatened plant species belonging to 25 families and 30 different genera were reported from the region (Table 1). Of the 25 families, Asteraceae and Apiaceae are represented by 3 species each dominated the floral composition followed by Liliaceae comprised of 2 species and remaining all 22 families represented by single species and genera each. Most of the plant species are Angiospermic i.e. dicotyledons (25 species belongs to 21 families) and monocotyledons (4 species belongs to 3 families), only one plant species belong to gymnosperms. The four reported life forms were Herbs, trees, shrubs and climbers. Herbs make up the highest proportion of threatened medicinal plants with 22 species followed by trees with 4 species while shrubs and climbers contributed 2 species each. All the parts of plants i.e. leaf, flower, fruit, seed, root,bark and shoots were used as a source of drugs. All the described 30 species have been categorized as critically endangered (4 spp.); Endangered (13 spp.) and Vulnerable (13 spp.) as per the new international Union of conservation of Nature and natural resources (IUCN) criteria.

For the conservation of threatened taxa of the region both in-situ and ex-situ measures would be essential. Forest Department needs to raise the nurseries of high value medicinal and aromatic trees and execute population recovery programmes in various reserved forests. Volunteers and non-Govt. organizations can also be motivated to grow such species along the fringes of forests and cultivated fields. The Horticulture department can take up a few species for ex-situ conservation and genetic improvement. For example, some threatened plants are sold in the local market but they have poor regeneration in the forest such plants need to be grown as a Horticulture crop.State Forest Department can include several woody and herbaceous species for afforestation and reforestation programmes under Clean Development Mechanism to serve the dual purpose of biodiversity conservation and carbon sequestration. All Himalayan states should evolve uniform medicinal plants specific Policy. State policies need to be strictly in consonance with the central policy. The policy and related rules and regulations should be dynamic and people centric. Genetic and chemical characterization, development of agro-techniques, regeneration pattern and entomo-pathological problems of prioritized commercially important medicinal plant species needs to be studied. There is a strong need for generating awareness regarding the conservation, collection procedure, sustainable harvesting, cultivation technology, initial and post harvest handling and marketing through well defined awareness strategy at state level involving Panchayats and local communities.

CONCLUSION

Most of the threatened plants are used in pharmaceutical and Ayurvedic preparations and also in Unani and Tabeten system of medicine. These plants are also first choice in folklore remedies. According to the All India Trade survey conducted for the demand of medicinal plants it is found that the demand of some medicinal plants has increased 50% where as production and availability has decline by 26%. If the trend continues day is not far beyond when these medicinal plants would be lost from their natural habitat. Therefore, proper management strategies need to be evolved and executed by cohesive collaboration of various stakeholders like Govt. and non- Govt. organizations, Scientists and ruler folk.

Table 1: List of some threatened Plants of Jammu region a part of NW Himalayas, J&k, India

S. No.	**Botanical Name**	**Local Name**	**Family**	**Life form**	**status**	**Indigenous Uses**
1	*Allium stracheyi* Baker.	Jamboo/feren	Alliaceae	H	Vulnerable	They contain sulphur compounds (which give them their onion flavour) and when added to the diet on a regular basis they help reduce blood cholesterol levels, act as a tonic to the digestive system and also tonify the circulatory system.
2	*Angelica glauca* Edgew.	Chorah,Choru	Apiaceae	H	Endangered	Powder of roots is used to cure stomach disorder.
3	*Bunium persicum* (bioss) B.fedtsch.	Kala jeera	Apiaceae	H	Endangered	Plant commonly used as antispasmodic, carminative and ant obesity.
4	*Heraclum lanatum* Michx.	Kiandle	Apiaceae	H	Vulnerable	Roots of plants are exploited for the treatment of leucoderma and menstrual disorders.

5	*Artemisia maritime* L.	Shamber	Asteraceae	H	Vulnerable	Roots extract of plants is taken in empty stomach in the early morning, one spoon daily for a week against intestinal worm
6	*Jurinea dolomiaea* Boiss.	doop	Asteraceae	H	Endangered	Roots extract of plant is used against colic problems, fevers and incense etc.
7	*Sausurea costus* (Falc.)Lispsch.	Kuth	Asteraceae	H	Critically endangered	Root extract of plant is used widely against acute cough and cold.
8	*Betula utilis* D.Don.	Bhojpatra	Betulaceae	T	Critically endangered	Extract of bark is used to cure eye diseases.
9	*Colchicum luteum* Baker	Suranjan	Colchicaceae	H	vulnerable	Corm made into paste and used externally against gout, wound and boils.
10	*Dioscorea deltiodae* Wall.		Dioscoreaceae	CL	Endangered	Tuber is used against liver complains, cold and cough etc.
11	*Rhododendron campanulatum* D.Don.Mem.Wern.	Nishni	Ericaceae	T	Vulnerable	Used traditionally to cure cold, cough, fever, rheumatism, headache and skin diseases.
12	*Gentiana kurrooa* Royale	Neelkhentu	Gentianacea e	H	Critically endangered	Whole plant is used to treat appetite, gastric problems, fever, urinary complaints etc
13	*Hypericum perforatum* L.	Basantu	Hypericaceae	H	Vulnerable	Flower extract is used to cure Rheumatism, applied externally on wounds, ulcers and swellings.
14	*Eremostachys superb* Royle ex.Benth	Gajjarmula	Labiatae	H	Vulnerable	Whole plant is used in veterinary practices for enhancement of lactation
15	*Cinnamomum tamala* T.Nees& Ebem		Lauraceae	T	Endangered	Bark and leaf are used against Heart and throat complaints.
16	*Gloriosa superba* L.	Kalhari	Liliaceae	CL	Vulnerable	The powder of tubers is used to expel worms from the stomach.
17	*Maconopsis aculeate*	Gul-e-neelam	Papaveraceae	H	Endangered	Whole plant is used against backache , colic and renal pain.
18	*Podophyllum hexandrum* Royle.	Kakkri	Podophyllaceae	H	Endangered	Powder of roots is given against colic pain and vomiting.
19	*Rheum emodi L.*	Khandool	Polygonaceae	H	Endangered	It is astringent, a powerful laxative, antibacterial and also used for treating appendicitis, constipation, dysentery, toothache, fever and swelling.
20	*Aconitum heterophyllum* Wall.	Atees	Ranunculaceae	H	Critically endangered	Root powder is used to remove gastric problems.
21	*Zanthoxyllum armatum* DC.	Timbru	Rutaceae	SH	Vulnerable	Dried leaves are made into powder mixed with mustard oil applied on teeth and gums to cure toothache. Seeds are used as a mouth freshener. Fruit powder is mixed with wheat flour and yeast to make dough for special chapattis locally called as khamira it enhances the digestion.
22	*Bergenia stracheyi* (Hook.f and Thoms) Engl.	Sargotri	saxifragaceae	H	Vulnerable	Paste of root is applied externally to heal the wounds and also taken to cure abdomen and joint pain.
23	*Picrorhiza kurrooa* Royle.Ex. Benth.	Karo	Scrophulariaceae	H	Endangered	Powder made from root is used against stomachache, jaundice and diarrhoea.
24	*Hyoscymus niger L.*	Fagun	Solanaceae		Vulnerable	Astringent, used against muscle pain, whooping cough and toothache.
25	*Taxaus bacatta* L. *subsp.* wallichiana	Barmi	Taxaceae	T	Endangered	Exploited extensively to extract anti carcinogenic compound taxol. It also used as tea substitute in the hilly regions.
26	*Rauvolfia serpentina* Benth.ex Kurz	Sarpgandh	Apocynaceae	H	Vulnerable	Used as an antihypertensive, rduce blood pressure
27	*Valeriana jatamansii* Jones	mushkbala	Valerianaceae	H	Vulnerable	Root extract is taken with water to cure gastric problems
28	*Acorus calamus* L.	Bach	Acoraceae	H	Endangered	Paste of rhizome is used for healing of wounds and cuts, also taken to cure dysentery, fever and mental problems.
29	*Berberis aristata L.*	Kambel	Berberidaceae	SH	Endangered	Root decoction is used directly to cure eye diseases. Root made into powder is taken with water 2 spoons twice a day to cure diabetes. Rasount a locally known product extracted from Bark is used against jaundice and ringworm.
30	*Nelumbo nucifera* Gaertn.	Kamal	Nelumbonaceae	H	Endangered	All parts of plants are used as astringent, cardiotonic, febrifuge and stomachic. Leaf juice is used against diarrhoea.

H-Herb, SH- Shrub, T-Tree, CL- Climber

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