



Medicinal plants of Lamberi forest range, Rajouri, J&K, India

Jyoti Sharma and Anil K. Raina ✉

Received: 15.03.2016

Accepted: 10.05.2016

Abstract

Enumeration of plants with medicinal properties in Lamberi Forest Range, Rajouri J&K revealed 56 plant species belonging to 50 genera and 36 families that can be used to cure different kind of diseases like jaundice, pyorrhoea, cough, cold, skin diseases etc. Plant part(s) used to cure these diseases include whole plant (15 spp.), leaves (14 spp.), underground parts comprising of root, rhizome or tuber (11 spp.), fruit (8 spp.), bark (6 species), flower (5 spp.) and seeds (5 spp.). Family Asteraceae (6 spp.) has the maximum number of species followed by Euphorbiaceae (5 spp.) and Lamiaceae (3 spp.). Threats faced by plants in the study area include anthropogenic activities like over-grazing, clearing of forests for agricultural practices, timber extractions, construction of roads and forest fires. The common name, parts and purpose for which these are used and their status has also been presented.

Keywords: Lamberi Forest Range, Shiwaliks region, medicinal use, wild plants, threat status

Introduction

Plants constitute one of the major raw materials for drugs used for treatment of various ailments of human beings, although there has been a significant development in the field of synthetic drug chemistry and antibiotics. Approximately 85% of the world's population depends on traditional medical treatments based on plant remedies and approximately 25% of the world's pharmaceutical medicines are derived from plants (Rai *et al.*, 2000). According to the World Health Organization (WHO), approximately 3.5 billion people in developing countries believe in the efficiency of plant remedies and use them regularly (Gera *et al.*, 2003) as herbal medicines have been considered to be comparatively safer than synthetic drugs. The Western Himalaya, known for its unique flora with a bulk of endemic medicinal and aromatic germplasm, has not been explored to the extent required to fully utilize its potential for the medicinal plants. Until recently, little was known about traditional medicine of the Indian Himalayan Region (IHR) which is one of the richest reservoirs of biological diversity in the world and is considered as a store house of the valuable medicinal plant species (Samant *et al.* 2007). People of local area are not aware about importance

Author's Address

Department of Environmental Sciences, University of Jammu,
Jammu - 180006

E-mail: anilkraina@yahoo.com

of medicinal plants. Lack of information has also resulted in over/under utilization of this resource of immense importance. In most of the cases over exploitation has resulted in decreasing their population in nature. Moreover, different developmental activities in these sensitive regions also contribute, directly or indirectly, for the dwindling population of these resources. Keeping these facts under consideration, the present study deals with various common plants which have medicinal values depicting the potentiality of vegetation wealth of Lamberi Forest Range, Jammu & Kashmir. Study area falls under inner Shiwaliks region in Nowshera Forest Division that lies between 33° 06' N to 33° 13' N and 74° 08' E to 74° 18' E of district Rajouri, J&K, India. The area falls mostly in sub-tropical zone with an average maximum and minimum temperature of 37.4° C to 7.42° C, respectively. Average annual rainfall in the area is 500 mm. Most of the rainfall occurs during monsoon season. The area has not been explored for its floristic elements and their associated values. However, few studies have been carried out in adjoining areas by different workers like Dutt (2005), Jhangir (2004), Kesar (2002), Kour (2001), Kumar (1987), Kumar (1997), Rai (2007), Sharma (2003) and Singh (2002).

Materials and Method

Thorough field visits were conducted from May 2011 to June 2012 to survey all the possible habitats and plants species were photographed for their identification. Majority of the plants were identified on the spot by their vernacular or common names. Further identification of plants have been carried out using various local and regional floras besides consulting taxonomic experts of the region. Inhabitants of the study area were interviewed to know the local uses of the plants and the data obtained was validated using the relevant literature. Medicinal uses of plants were also ascertained by consulting the relevant literature and works of some authors in adjoining areas like Samy *et al.*(2008), Samant *et al.* (2011) Azad and Shah (2012), Bhellum and Shah (2012), Kumar and Bhagat (2012), Kumar and Sharma (2013). Threat status of plants was determined by consulting IUCN Red list of Threatened species (Version 2014.3).

Results and Discussion

The list of the medicinal plants depicting their habit, habitat, common name along with their family, medicinal uses and part (s) of the plant used has been depicted in table 1.

Perusal of the table revealed the presence of 56 species belonging to 50 genera and 36 families. Family-wise distribution of different genera have been represented in Table 2 depicting that Asteraceae is the largest family in the list of medicinal plants contributing 6 species, followed by Euphorbiaceae with 5 species and Lamiaceae with 3 species. Asteraceae was also recorded to be the dominant family by some other workers like Kala (2006), Samant *et al.* (2007), Singh *et al.* (2009) and Kumar and Sharma (2013) while exploring the medicinal values of plants in other areas. The medicinal plants dominantly comprised of herbs followed by trees, shrubs and climbers. The percentage of herbs (33 species), shrubs (10 species), trees (12 species) and climbers (1 species) having the medicinal value across the study area has been recorded to be 58.93%, 17.86%, 21.43% and 1.78%, respectively. Teklehaymanot and Gidey (2007) also indicated the dominance of herbs (52%) in the list of identified medicinal plants in Northwest Ethiopia.

The parts used for medicinal purpose varies from species to species. Perusal of table 1 revealed that underground parts (roots/rhizome/tuber) of 11 plants like *Punica granatum*, *Gentiana argentea*, *Rubia cordifolia*, *Rubus ellipticus* and *Taxacum officinale* etc. are used against treatment of various ailments. Leaves of 14 plants including *Mentha longifolia* *Ipomea carnea*, *Justicia adhatoda*, *Colebrookia oppositifolia*, *Duchesnia indica* and *Verbascum thapsus* etc. are used in curing various gastric and other disorders. Bark of plants like *Punica granatum*, *Melia azedarach*, *Grewia optiva* and *Populus ciliata* has also been used medicinally. In some plant species like *Cichorium intybus*, *Dalbergia sisoo*, *Datura stramonium*, *Gentiana argentea*, *Hedera nepelensis*, *Melia azedarach*, *Morus alba*, *Olea cuspidata*, *Oxalis corniculata*, *Punica granatum*, *Vitex negundo* and *Zanthoxylum armatum* more than one plant part has been exploited for different medicinal purposes. Overall, the parts having the medicinal value include whole plants (15 species), followed by leaves (14 species), underground parts (11species), fruit (8 species), bark (6 species), flowers (5 species) (Table1).

Threat status of plants was evaluated consulting IUCN Red list of Threatened species Version 2014.3 (www.iucnredlist.org). It was observed that most of the species (50 spp.) have yet not been evaluated while 6 species fall under least concerned category. Various threats faced by plants in the study area include anthropogenic activities like over-grazing(Cattle of villagers and goats of nomadic “Bakkarwals”), clearing of forests for agricultural practices, timber extractions, construction of roads under PMGSY and forest fires (which may be natural or man-made). The present study not only have enumerated the medicinal plants of the study area but the knowledge about the medicinal properties related to uses of plant parts thus gathered can be used by the people of the area to cure some minor diseases. Further, the specific information and knowledge about the medicinal utility of the plant part can also help in the utilization of resources in sustainable way, thereby, helping in conservation of plant resources.



Table 1: Medicinal plants of Lamberi Forest Range, Rajouri and their utilities.

S. No.	Botanical Name	Family	Common name	Occurrence	Part of plant used	Habit	Medicinal Uses	Threat Status (IUCN)
1	<i>Achyranthes aspera</i> L.	Amaranthaceae	Putta kanda	Agricultural fields and road sides	Whole plant	Herb	Plant is used for many medicinal purposes especially in obstetrics and gynecology including abortion, induction of labour and cessation of postpartum bleeding.	NE
2	<i>Artemisia</i> sp.	Asteraceae	Sisri	Forest	Whole plant	Herb	The oil is antimalarial, antifungal, antibacterial and antioxidant.	NE
3	<i>Anagallis arvensis</i> L.	Primulaceae	Dhari	Forest	Whole plant	Herb	Its use has been advised in mania, epileptic attacks, dropsical affections and other derangements of the nervous system.	NE
4	<i>Berberis lyceum</i> Royle.	Berberidaceae	Kavelli	Forest	Whole plant	Shrub	Used during acute conjunctivitis and in chronic ophthalmia. A simple decoction of the plant roots is used in jaundice.	NE
5	<i>Bidens biternata</i> Linn.	Asteraceae	Khumber	Forest	Leaves	Herb	Infusion of plant is taken against cough. Leaf juice is used in eyes and ears to cure pain. Leaves are antiseptic and applied to ulcers and swollen glands	NE
6	<i>Cannabis sativa</i> Linn.	Cannabaceae	Bhaang	Waste land and road side	Leaves, buds, flowers	Herb	Plant is analgesic and sedative.	NE
7	<i>Calotropis procera</i> R.Br.	Asclepiadaceae	Maddar	Wasteland and road side	Flower/ latex	Shrub	Flowers are used to cure cold, asthma and cough. Latex used for skin ailments.	NE
8	<i>Cassia fistula</i> L.	Caesalpinaceae	Amaltas	Forest and agricultural fields	Pods	Tree	Used against urinary troubles, cough and constipation. Fruits are used in curing asthma, chest infection, constipation, cough, diarrhea and dysentery.	NE
9	<i>Cassia tora</i> L.	Caesalpinaceae	Chakramard	Waste land and road side	Whole plant	Herb	Used against headaches and skin diseases.	NE
10	<i>Celtis australis</i> Linn.	Ulmaceae	Khidik	Forest	Fruit	Tree	Decoction of leaves and fruit is used in the treatment of amenorrhoea, heavy menstrual, intermenstrual bleeding and colic.	NE



11	<i>Centella asiatica</i> L.	Apiaceae	Brahmi	Forest	Whole plant	Herb	Used for curing skin diseases, like chronic eczema, chronic ulcers etc.	LC
12	<i>Cichorium intybus</i> L.	Asteraceae	Chicory	Forest	Seeds and leaves	Herb	As tonic, in fevers, vomiting, diarrhea and enlargement of spleen.	NE
13	<i>Colebrookia oppositifolia</i> Smith.	Lamiaceae	Chitti suhali	Forest	Leaves	Shrub	Paste of leaf is applied over wounds to fasten healing.	NE
14	<i>Cynodon dactylon</i> Pers.	Poaceae	Khabbal	Road side, agricultural land, forest	Whole plant	Herb	Juice of plant is antiseptic. Root decoction is used in dropsy and secondary syphilis.	NE
15	<i>Dalbergia sissoo</i> Roxb.	Fabaceae	Taali	Forest land	Roots and wood	Tree	Root and wood astringent, used in leprosy, boils eruptions of skin and against vomiting.	NE
16	<i>Datura innoxia</i> Mill.	Solanaceae	Datura	Waste land, road side	Whole plant	Herb	The alkaloids of the plants are used cautiously for effective pain relief in antiquity	NE
17	<i>Datura stramonium</i> L.	Solanaceae	Datura	Waste land, road side	Leaves, seeds and flowers	Herb	Used to treat asthma	NE
18	<i>Duchesnea indica</i> (Andrews) Focke.	Rosaceae	Indian strawberry	Forest	Leaves	Herb	Leaves are diuretic	NE
19	<i>Euphorbia helioscopia</i> Linn.	Euphorbiaceae	Dudhli	Forest, Scrubland	Whole plant	Herb	Root considered anthelmintic; herb cathartic, milky latex applied to eruptions, seeds given in cholera.	NE
20	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Lal Dudhli	Forest	Whole plant	Herb	Used for Colic troubles, dysentery, cough asthma, worms and vomiting. Decoction of dry herbs is used for skin diseases.	NE
21	<i>Erythrina indica</i> Lam.	Fabaceae	Thubb	Forest	Leaves	Tree	Used to cure constipation	LC
22	<i>Fumaria indica</i> Pugsley.	Fumariaceae	Pit-papra	Forest, Agricultural fields	Whole plant	Herb	Antipyretic. Used in liver complaints and skin infections.	NE
23	<i>Gentiana argentea</i> L.	Gentianaceae	Hetley pattar chaddey	Forest	Roots and rhizome	Herb	Used to treat indigestion, rheumatism and also as tonic for nervous distress.	NE
24	<i>Gloriosa superba</i> L.	Liliaceae	Kukar sira	Forest	Tuber	Herb	Used to cure asthma, piles, gout, snake bite and fever	LC
25	<i>Grewia optiva</i> J.R. Drumm.	Tiliaceae	Dhaman	Forest, agricultural fields	Bark	Tree	Bark extract is given for smooth delivery and constipation.	NE
26	<i>Hedera nepelensis</i> K. Koch.	Araliaceae	-	Forest	Leaves and berries	Herb	Used as a stimulant, diaphoretic and cathartic.	NE
27	<i>Ipomoea carnea</i> Jacq.	Convolvulaceae	Akk	Scrubland, roadside	Leaves	Shrub	Leaves are used with oil to cure wounds. Soluble extract of the plant is	NE



Medicinal plants of Lamberi forest range

							purgative	
28	<i>Ipomoea nil</i> Roth.	Convolvulaceae	Kala dana	Agricultural fields	Seeds	Climber	The seeds are purgative, vermifuge, ant inflammatory, carminative and used in constipation.	NE
29	<i>Justicia adhatoda</i> Nees.	Acanthaceae	Barenkar	Waste land, road side	Leaves	Shrub	Leaves constitute the drug "Vasaka" used in bronchial troubles. Leaf juice is used in diarrhoea, dysentery and glandular tumors	NE
30	<i>Mallotus philippines</i> Muell. Arg.	Euphorbiaceae	Kameela	Forest	Fruit	Tree	Used against constipation and skin ailments	NE
31	<i>Melia azedarach</i> L.	Meliaceae	Drank	Wasteland, forest, agricultural fields	Bark and leaves	Tree	Bark is used for skin troubles; leaves are antiseptic and applied to boils as poultice. Decoction of leaves is used to cure ulcers and eczema.	NE
32	<i>Mentha longifolia</i> Huds.	Lamiaceae	Jungli pudna	Forest, agricultural fields	Leaves	Herb	Leaves and young twigs are carminative and stimulant, leaf juice is cooling and used for digestive problems	LC
33	<i>Morus alba</i> Linn.	Moraceae	Toot	Forest, Agricultural fields	Fruit and bark	Tree	Fruit refrigerant, also used for sore throat and dyspepsia and purgative	NE
34	<i>Olea cuspidata</i> Wall. ex G. Don	Oleaceae	Kouw	Forest	Leaves and fruit	Tree	Leaves are medicinally important and used against inflammation of tongue.	NE
35	<i>Oxalis corniculata</i> L.	Oxalidaceae	Khatti bhuti	Forest, Grassfield	Leaves and roots	Herb	Plant is used to cure scurvy and is a good appetizer. Leaves and roots are used to treat dysentery and diarrhoea	NE
36	<i>Phyllanthus emblica</i> L.	Euphorbiaceae	Amla	Forest, scrubland	Fruit	Tree	Used in preparing <i>triphala</i> powder which act as laxative. Also used to cure anemia, heart and urinary troubles.	NE
37	<i>Populus ciliata</i> Wall ex royle.	Salicaceae	-	Forest	Bark	Tree	Used as stimulant, tonic and blood purifier.	NE
38	<i>Prinsepia utilis</i> Royle.	Rosaceae	-	Forest	Seed kernel	Herb	Oil derived from kernel is used in rheumatism and to relieve pains from fatigue.	NE
39	<i>Punica granatum</i> Linn.	Punicaceae	Dhaadmanar	Forest, agricultural fields	Root, bark and fruit	Shrub	Root and stem bark is astringent and anti-helminthic especially for tapeworm; also used in Diarrhea, dysentery and as astringent.	LC
40	<i>Ranunculus arvensis</i>	Ranunculaceae	-	Grassfields	Whole plant	Herb	Plant has antibacterial property and is used in	NE



	Linn.						gout, asthma and intermittent fever.	
41	<i>Ricinus communis</i> L.	Euphorbiaceae	Aren, arand	Road side, Waste land	Whole plant	Shrub	Oil regarded as classical purgative. Used in treating rheumatic disorders.	NE
42	<i>Rubia cordifolia</i> L.	Rubiaceae	-	Forest, Scrubland	Roots	Herb	As astringent, anti-dysenteric, and antiseptic.	NE
43	<i>Rubus ellipticus</i> Smith.	Rosaceae	Akhre	Forest grassfields	Fruit	Herb	Berry used to quench thirst in fever, promotes perspiration and urination	NE
44	<i>Rumex dentatus</i> Linn.	Polygonaceae	Bhilmora	Forest	Leaves	Herb	Rubbed over areas affected by stings of stinging nettles.	NE
45	<i>Rumex hastatus</i> D. Don.	Polygonaceae	Badi ammi, Malhori	Scrubland	Roots	Herb	Decoction of root administered to cure venereal diseases.	NE
46	<i>Saussurea heteromalla</i> (D.Don) Hand.-Mazz.	Asteraceae	Lehi	Forest, Shrubland	Leaves and seeds	Herb	Leaves applied over wounds, seeds are used to cure horse bite.	NE
47	<i>Solanum nigrum</i> Linn.	Solanaceae	Kaan kothi	Forest	Whole plant	Herb	Plant juice given in ulcer and skin diseases. Infusion used to cure dysentery, fever and asthma.	NE
48	<i>Solanum surattense</i> Burm.f	Solanaceae	Kandiari	Forest	Fruit and root	Herb	Used in cough, asthma and fever and as a carminative and diuretic.	NE
49	<i>Stellaria media</i> (L.) Vill	Caryophyllaceae	Koku	Agricultural fields	Whole plant	Herb	Whole plant used as plaster on swelling and broken bones.	NE
50	<i>Taraxacum officinale</i> Weber.	Asteraceae	Bathur	Agricultural field	Root	Herb	Root is diuretic and tonic, also used in chronic disorders of kidney and liver.	NE
51	<i>Verbascum thapsus</i> Linn.	Scrophulariaceae	Giddad Thamhaku	Agricultural field	Leaves	Herb	The crushed leaves are made into a pill and given in constipation and allied stomach pains	NE
52	<i>Viola</i> spp	Violaceae	Banaksha	Agricultural fields	Flowers	Herb	Flowers are demulcent, astringent, diuretic, diaphoretic and laxative. Also used for treatment of cough, sore throat, kidney diseases and liver disorders.	NE
53	<i>Vitex negundo</i> Linn.	Lamiaceae	Bana	Forest, Grassland	Roots, flowers and leaves	Shrub	Roots used as tonic, febrifuge, diuretic; used in rheumatism and dyspepsia, also as an anthelmintic; flowers astringent, used in diarrhoea, fever and liver complaints; leaves aromatic, tonic and vermifuge.	NE



Medicinal plants of Lamberi forest range

54	<i>Woodfordia fruticosa</i> Kurz.	Lythraceae	Lal bhuti	Forest	Flowers	Shrub	Used in liver infections, leucorrhoea and piles	LC
55	<i>Xanthium strumarium</i> Linn.	Asteraceae	Jhojde	Waste land, Forest, Agricultural field	Roots	Shrub	The root is bitter tonic, useful in cancer and scrofula. Decoction of roots is used locally over ulcers, boils and abscesses	NE
56	<i>Zanthoxylum armatum</i> DC.	Rutaceae	Timru	Forest, Scrubland	Bark, fruit and Seeds	Tree	Used as carminative, stomachic and anthelmintic, they are also used as mouth fresheners and in toothache	NE

NE-Not evaluated; LC-Least concern

Table-2: Number of ethno-medicinal species per family

S.No	Family	No. of Species	S.No	Family	No. of Species	S.No	Family	No. of Species
1.	Acanthaceae	1	16.	Lamiaceae	3	31.	Salicaceae	1
2.	Amaranthaceae	1	17.	Liliaceae	1	32.	Solanaceae	4
3.	Apiaceae	1	18.	Lythraceae	1	33.	Scrophulariaceae	1
4.	Araliaceae	1	19.	Meliaceae	1	34.	Tiliaceae	1
5.	Asclepiaceae	1	20.	Moraceae	1	35.	Ulmaceae	1
6.	Asteraceae	6	21.	Oleaceae	1	36.	Violaceae	1
7.	Berberidaceae	1	22.	Oxalidaceae	1			
8.	Caesalpinaceae	2	23.	Poaceae	1			
9.	Cannabaceae	1	24.	Polygonaceae	2			
10.	Caryophyllaceae	1	25.	Primulaceae	1			
11.	Convolvulaceae	2	26.	Punicaceae	1			
12.	Euphorbiaceae	5	27.	Ranunculaceae	1			
13.	Fabaceae	2	28.	Rosaceae	3			
14.	Fumariaceae	1	29.	Rubiaceae	1			
15.	Gentianaceae	1	30.	Rutaceae	1			

Acknowledgement

The authors are highly thankful to the local people residing in nearby villages of Lamberi Forest range especially elders for sharing invaluable information about the local names of plants and indigenous uses of the plants.

References

- Azad S.A. and Shah, A. 2012. Some ethno-medicinal plants of district Rajouri (Jammu province). *Indian J.L.Sci*, 1(2) : 47-49.
- Bhellum B.L and Singh, S. 2012. Ethnomedicinal Plants of District Samba of Jammu and Kashmir State (List-II). *International Journal of Scientific and Research Publications*, 2 (9):1-9.
- Dutt, H. 2005. Ecological studies and conservation of medicinal plants of Neeru watershed, J&K. Ph.D. Thesis submitted to University of Jammu, Jammu, J&K, India.
- Gera, M., Bisht, N. S., & Rana, A. K. 2003. Market information system for sustainable management of medicinal plants. *Indian Forester*, 129(1): 102-108.



- Jhangir, M. 2004. Phytodiversity characterization of district Kathua using remote sensing and G.I.S. Ph.D. Thesis submitted to University of Jammu, Jammu, J&K, India.
- Kala, C.P. 2006. Medicinal plants of the high altitude cold desert in India: Diversity, distribution and traditional uses. *International Journal of Biodiversity Science & Management*, 2(1):43-46.
- Kesar, R.K. 2002. Phytosociological and community studies of Patnitop forests and their management. Ph.D. Thesis submitted to University of Jammu, Jammu, J&K, India.
- Kour, I. 2001. Phytodiversity and impact of tourism on the vegetation of Trikuta Hills (J&K). Ph.D. Thesis submitted to University of Jammu, Jammu, J&K, India.
- Kumar, A. 1987. Phytosociological and productivity studies of Bhaderwah forests, Jammu (J&K). Ph.D. Thesis submitted to University of Jammu, Jammu, J&K, India.
- Kumar, K. 1997. Studies on plant diversity of Patnitop and adjoining area and impact of biotic activities. Ph.D. Thesis submitted to University of Jammu, Jammu, J&K, India.
- Kumar, R. and Bhagat, N. 2012. Ethnomedicinal plants of district Kathua (J&K). *International journal of medicinal and aromatic plants*, 2(4): 603-611.
- Kumar, S. and Sharma, S. 2013. Species diversity, uses and distribution of medicinal plants along an altitudinal gradient in Paddar valley, Northwestern Himalaya. *International journal of medicinal and aromatic plants*, 3(3): 343-351.
- Rai, Anirudh. 2007. Studies on Phanerogam Diversity of Mansar-Surinsar Wild-life Sanctuary, J&K. Ph.D. Thesis submitted to University of Jammu, Jammu, J&K, India.
- Rai, L. K., Prasad, P. and Sharma, E. 2000. Conservation threats to some important medicinal plants of the Sikkim Himalaya. *Biological Conservation*, 93: 27-33.
- Samant, S.S., Vidyarthi, S., Pant, S., Sharma, P., Marpa, S. and Sharma, P. 2011. Diversity, Distribution, Indigenous Uses and Conservation of the Medicinal Plants of Indian Himalayan Region Used in Cancer. *J Biodiversity*, 2(2): 117-125
- Samant. S. S., Pant, S., Lal, M., Singh, A., Sharma, A. and Bhandari, S. 2007. Diversity, distribution pattern, indigenous uses and conservation prioritisation of medicinal plants of Himachal Pradesh, India. *International journal of Biodiversity and Science Management*, 3, pp. 234-251
- Samy R.P., Pushparaj, P.N. and Gopalakrishnakone, P. 2008. A compilation of bioactive compounds from Ayurveda. *Bioinformation*, 3 (3): 100-110
- Sharma, N. 2003. Biodiversity characterization at landscape level in district Jammu using R.S. and G.I.S. Ph.D. Thesis submitted to University of Jammu, Jammu, J&K, India.
- Singh, S.P., Tripathi S and Shukla,R.S. 2003. Ethnomedicinal heritage for Bio-prospecting and Drug development in North-Eastern States of India. *Journal of Economic and Taxonomic Botany* 26: 384-395.
- Singh, A., Lal, M. and Samant, S.S. 2009. Diversity, indigenous uses and conservation prioritization of medicinal plants in Lahaul valley, proposed Cold Desert Biosphere Reserve, India. *International Journal of Biodiversity Science & Management*, 5(3): 132-154
- Singh, J. 2002. Phytodiversity of Kalakote Range (Rajouri, J&K) and impact of mining and nomadism on the vegetation. Ph.D. Thesis submitted to University of Jammu, Jammu, J&K, India.
- Teklehaymanot, T. and Gidey, M. 2007. Ethnobotanical study of medicinal plants used by people in Zegie Peninsula, Northwestern Ethiopia. *J. Ethnobiol. Ethnomed*, 3: 12.
- www.iucnredlist.org. The IUCN Red List of Threatened Species. Version 2014.

