



**A STUDY ON DIVERSITY OF MEDICINAL TREES IN KARWAPANI FOREST
AREA OF DOON VALLEY**

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ABSTRACT

The present study deals with the diversity of medicinal trees at Karwapani forest area which is situated in the Dehradun district of Uttarakhand. Based on the extensive survey 49 species of trees belonging to 22 families were found. The trees were identified with the help of available literature and local people. The families such as Fabaceae, Moraceae, Combretaceae were represented by higher number of species. The trees are extensively used by local inhabitants for various health ailments such as stomachache, fever, cold and cough, bleeding wounds, rheumatic pains and insect bite.

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INTRODUCTION

From the time immemorial plants have been serving the mankind for curing numerous health ailments. Himalayan region has always been a potent source of medicinal and aromatic plants. The region is blessed with a variety of medicinal plants and the forest in the region is dominated by the plant species of medicinal importance (Mohammad Shahid et al., 2017). Uttarakhand, the state in the lap of Himalayas is endowed with a rich variety of medicinal plants, many of which are in great demand in the domestic and export markets (Government of India, 2000). Medicinal plants are important resources which constitute one of the potential sources of new products and bioactive compounds for drug development (Gangwar et al., 2010). Essential ingredients in the traditional medicine are the medicinal plants, which are depleting at a faster rate from the nature, due to the increase in consumption and indiscriminate exploitation of resources from the wild (Kumari et al., 2012) Due to the increasing national and international demand, the medicinal plants are facing continuous exploitation from their natural pockets (Tiwari et al., 2011). Owing to the significance of medicinal plants for treating human ailments, the present papers deals with the documentation of medicinal tree species in the Karwapani Forest area in Doon Valley.

MATERIAL AND METHOD

Study Site

The area selected for the present study, Karwapani forest area is located at about Shimla road 15 Km North of Dehradun occupying an area of about 3-4 Sq. Km. . It area is located in the latitude 30°2' to 30° 26' (N) and Longitude 77°52' to 78°-19' (E). The forest forms the border line of Uttarakhand state. Sal (*shorea robusta*) is the dominant species of the forest. *Mallotus philippensis*, *Ageratum conyzoides*, *Eupatorium adenophorum*, *Ardisia solanacea*, *Aerva sanguinolenta*, *Mangifera indica*, *Melia azedarach* etc. are some of the commonly founded dicot species of the area. *Cynodon dactylon*, *Cyperus rotundus*, *Kyllinga nemoralis*, *Arundo donax* are few of the commonly founded monocotyledons species of the area.

METHODOLOGY

The present study was undertaken in the karwapani forest area of Doon Valley. For the study extensive survey of the area was undertaken from January to May 2017. During the field surveys, attempts were made to cover all the forests. The specimens were collected, preserved and maintained in the herbarium. Herbaria were prepared following dry method. The dried specimens were mounted on the herbarium sheets following the standard herbarium techniques, according to Jain and Rao (1978). These materials were identified with the help of Botanical survey of India (NRC) Dehradun and by using flora of Kanjilal and Gupta (1969), Babu (1977) and Gaur (1999) to examine the description, distribution and taxonomic position of plants.

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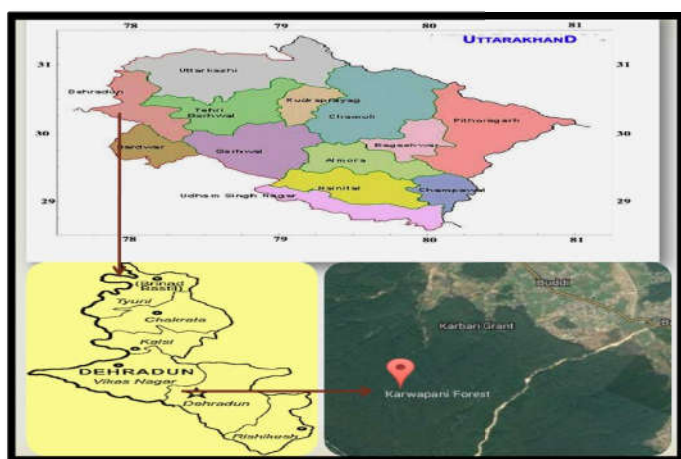


Figure 1 Map showing the Karwapani forest area

RESULTS

As a result of present study 49 tree species belonging to 22 families were recorded in the Karwapani Forest area of Dehradun, Uttarakhand. The most represented families were Fabaceae (8 genera), Moraceae (7 genera) and Combretaceae (4 genera), with higher number of representatives. The other recorded families were Euphorbiaceae (3 genera), Malvaceae (2 genera), Meliaceae (2 genera), Rutaceae (2 genera), Boraginaceae (2 genera), Myrtaceae (3 genera), Proteaceae (1 genera), Lythraceae (1 genera), Anacardiaceae (2 genera), Ericaceae (1 genera), Lauraceae (1 genera), Pinaceae (1 genera), Salicaceae (2 genera), Rosaceae (2 genera), Dipterocarpaceae (1 genera), Verbenaceae (1 genera), Rhamnaceae (1 genera),

Table 1 Medicinal Trees with Their Botanical Name, Common Name, Family, Part used and Medicinal Values

S.no	Botanical name	Common name	Family	Part used	Medicinal values
1	<i>Acacia nilotica</i> (L.) Delile	Gum Arabic	Mimosaceae	Leaves, pods, bark and gum.	Used in treatment of mouth ulcers, tooth degradation and bad breath.
2	<i>Albizia chinensis</i> (Osbeck) Merr	Chinese Albizia	Fabaceae	Bark, Aerial parts.	Cuts, Scabies and other Skin diseases. Aerial parts are spasmogenic and diuretic.
3	<i>Albizia procera</i> (Roxb.) Benth.	White Siris	Fabaceae	Bark and leaves	Used in anti-cancer activity, rheumatism, hemorrhage.
4	<i>Anogeissus latifolia</i> (Roxb. ex Dc.) Wall ex Bedd.	Axlewood	Combretaceae	Whole plant and bark.	Used in spleen enlargement, urinary disorders, scorpion sting and snake bite.
5	<i>Bauhinia variegata</i> L.	Mountain Ebony	Fabaceae	Bark, leaves and flowers	Anthelmintic, skin diseases & antidote to snake poison
6	<i>Bombax ceiba</i> L.	Semal, Red silk Cotton	Malvaceae	Roots and stem	Aphrodisiac, leucorrhea, digestive disorder.
7	<i>Butea monosperma</i> (Lam.) Taub	Bastard Teak	Fabaceae	Bark, flowers and seeds	Diarrhea, anthelmintic & antifungal. It is also used in the treatment of liver disorders
8	<i>Cassia fistula</i> L.	Golden Rain Tree	Fabaceae	Roots, bark and leaves	Fruit pulp used as laxative. Pods remedy for malaria. Bark or leaves are widely applied to skin problems. .
9	<i>Cedrela toona</i> Roxb	Red cedar, Toon	Meliaceae	Bark and flower.	Bark used in dysentery, fever, antiseptic, Flower used as emmenagogue useful in menstrual disorder.
10	<i>Citrus maxima</i> Merr.	Pomello	Rutaceae	Leaves, flowers, fruits and rind.	Lowers chances of atherosclerosis, heart attacks. Boost the strength of gums and oral surfaces
11	<i>Cordia myxa</i> L.	Assyrian plum	Boraginaceae	Bark, leaves and fruits.	Bark, leaves used as diuretics, demulcents and in the treatment of stomach aches, coughs and chest complaints.
12	<i>Dalbergia sissoo</i> Roxb.	Indian rosewood	Fabaceae	Bark and leaves	Leaves are used for eye pain, swelling, painful urination, bark are used as astringent in bleeding disorders.
13	<i>Oogeinia oojainensis</i> (Roxb.) Hochr.	Sandan	Fabaceae	Root and bark.	bark is used against fevers
14	<i>Ehretia laevis</i> Roxb.	Chamror	Boraginaceae	Root and leaves	Stem bark used as diphtheria, Flowers used as aphrodisiac.
15	<i>Phyllanthus emblica</i> L.	Amla	Euphorbiaceae	Rind, flowers and seeds.	Amla fruit is a laxative, diuretic, antipyretic and rejuvenative.
16	<i>Eucalyptus grandis</i> W. Hill	Rose gum	Myrtaceae	Leaves and bark.	Leaves act as expectorants, helping to remove excess phlegm and mucus from the sinuses.
17	<i>Ficus auriculata</i> Lour.	Elephant Ear Fig	Moraceae	Stem, bark and fruits.	Fruit is used in the treatment of diarrhoea and dysentery. Crushed bark is taken for the relief of hydrophobia.
18	<i>Ficus bengalensis</i> L.	Banyan tree	Moraceae	Leaves, roots and latex.	Latex of the tree, when taken with milk, has a relieving effect on piles. Roots relieve female sterility.
19	<i>Ficus glomerata</i> L.	Cluster fig	Moraceae	Leaves, fruit, sap and roots	Leaves are used in the treatment of diarrhoea, Sap is a popular remedy to mumps.
20	<i>Ficus religiosa</i> L.	Sacred Fig	Moraceae	Leaves, sap and bark	Leaves and twigs are alterative, antidote, aphrodisiac and astringent.
21	<i>Ficus virens</i> Aiton	White Fig, Pilkhan	Moraceae	Bark and leaves	Bark used as an injection in the treatment of leucorrhoea, as a wash on skin ulcers, and as a gargle.
22	<i>Grevillea robusta</i> A. Cunn ex R.Br.	Silk Oak	Proteaceae	Leaves	It to cure sore throats, ear ache, chest problems.
23	<i>Grewia optiva</i> J. R. Drumm. ex Burret.	Bihul, Bhimal	Malvaceae	Bark and leaves.	Leaves applied on eruptions, bark used for indigestion
24	<i>Lagerstroemia parviflora</i> Roxb.	Small Flowered Crape Myrtle	Lythraceae	Roots and leaves.	Roots are used for stomach problems. Leaves are used to heal diabetes and for weight loss
25	<i>Lanena coromandelica</i> (Hout.) Merr.	Indian ash tree	Anacardiaceae	Bark and leaves.	Boiled leaves are applied as a fomentation for local swelling and pain.

26	<i>Lyonia ovalifolia</i> (Wall.) Drude	Oval leaved Staggerbush	Ericaceae	Young leaves and buds.	Young leaves are used as an infusion to treat skin diseases and external parasites.
27	<i>Mallotus philippensis</i> (Lam.) Mull. Arg.	Red kamala	Euphorbiaceae	Whole plant and fruits.	It is used to treat tape worm infestations (ascarides, rectal worms) and constipation.
28	<i>Mangifera indica</i> L.	Mango	Anacardiaceae	Fruit, seeds, bark, root and pulp	Tree are used to relieve abscesses, tumor, snake bite, blisters, miscarriage, anthrax .
29	<i>Melia azedarach</i> L.	Chinaberry tree	Meliaceae	Leaves and seeds.	Skin disease, blood pressure, in rheumatic pains, intermittent fever, antiseptic, improving eyesight and uterus infection.
30	<i>Morus alba</i> L.	White mulberry	Moraceae	Leaves, stem and Fruit	Leaves are antibacterial, astringent and ophthalmic. They are taken internally in the treatment of colds, influenza.
31	<i>Morus nigra</i> L.	Black Mulberry	Moraceae	Root, bark, leaves and fruits	Leaves are antibacterial. Bark is anthelmintic and purgative, it is used to expel tape worms.
32	<i>Murraya koenigii</i> (L.) Spreng.	Curry Tree	Rutaceae	Leaves	Leaves are alkaline, bitter and pungent and has a distinct aroma. It is very good source of vitamin A and calcium.
33	<i>Peltophorum pterocarpum</i> (DC.) Backer ex K.Heyne	Copperpod	Fabaceae	Bark, leaves and flowers.	Bark is used for dysentery; Crushed leaves made into a paste are applied to cuts.
34	<i>Phoebe lanceolata</i> (Nees) Nees	Jhankri kath	Lauraceae	Root and leaves	It is used against wounds & sores.
35	<i>Pinus roxburghii</i> Sarg.	Chir pine	Pinaceae	Resin and wood	Wood is diaphoretic and stimulant. It is useful in treating cough, fainting and ulcers
36	<i>Populus ciliata</i> wall. ex Royle.	Himalayan poplar	Salicaceae	Bark	Bark is a blood purifier and tonic stimulant. It is used in treating rheumatism and fevers
37	<i>Prunus domestica</i> L.	Prune Plum	Rosaceae	Flowers, fruit and seeds	Fresh yellow plum contains vitamin A and beta carotene good for eyesight and skin.
38	<i>Psidium guajava</i> L.	Guava	Myrtaceae	Leaves and fruits	Leaves and fruits are used as a cure for diarrhea.
39	<i>Pterospermum acerifolium</i> (L.) Willd.	karnikara tree	Sterculiaceae	Bark and leaves	Bark and leaves are used in small pox. Flowers used for inflammation, ulcers.
40	<i>Pyrus pashia</i> (Buch.Ham. ex D. Don.)	Himalayan pear	Rosaceae	Bark and leaves	Astringent, laxative and sedative properties.
41	<i>Salix tetrasperma</i> Roxb.	Indian willow	Salicaceae	Bark and leaves	Bark is used to treat fever. Paste of both leaf and root used externally for scorpion stings, bug –bites, sores and warts.
42	<i>Sapium sebiferum</i> L. (Roxb.)	Chinese tallow tree	Euphorbiaceae	Bark, leaves and roots	Root bark is used in the treatment of snake bites and skin ulcers.
43	<i>Shorea robusta</i> Gaertn.	Sal	Dipterocarpaceae	Resin, heartwood, flowers	Resin exuded from the tree is used for dysentery, weak digestion, gonorrhoea.
44	<i>Syzygium cumini</i> (L.) Skeels	Jamun	Myrtaceae	Leaf, bark and fruits	It is also used for the treatment of lung associated disorders such as cough, asthma and bronchitis.
45	<i>Tectona grandis</i> L.f.	Indian-oak	Verbenaceae	Root, flowers and bark	Used for anuria, which is the absence of urine excretion from the body. Also used in Bronchitis.
46	<i>Terminalia alata</i> Heyne ex Roth	Indian laurel	Combretaceae	Bark and leaves	Bark is a cardiac tonic. Juice from the leaves is used traditionally to treat earache.
47	<i>Terminalia bellirica</i> (Gaetrn.) Roxb.	Aksa	Combretaceae	Bark, Fruit and seeds	It is an astringent, tonic expectorant and laxative.
48	<i>Terminalia chebula</i> Retz.	Chebulic Myrobalan	Combretaceae	Fruits	<i>T. chebula</i> benefits the whole digestive tract. It is said to increase appetite, improve digestion and absorption.
49	<i>Ziziphus mauritiana</i> Lam.	Indian jujube	Rhamnaceae	Roots, leaves and fruits	Jujube fruit works as an anti-depressant. It also cures insomnia.

Mimosaceae (1 genera) and Sterculiaceae (1 genera). The information regarding the medicinal uses of different tree species have been listed in table 1.

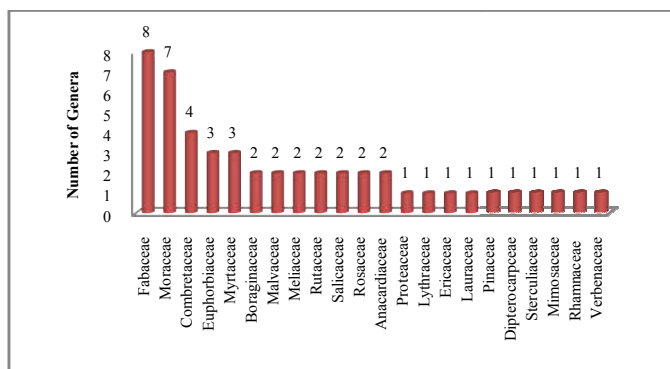


Figure 2 Graph showing the number of medicinal tree genera along with their representative families.

DISCUSSION

Curative and healing properties of medicinal plants has not been hidden from anyone.

It is predictable that 60% of the world population and 80% of the population of developing countries are dependent on traditional herbal medicines for treating several health ailments (Shrestha and Dhillon, 2003). Several studies have been undertaken to explore the medicinal plants diversity of Doon Valley. Bisht and Bhatt (2012) documented 58 medicinal plant species from the Sahasthrdharma region of Dehradun. Raut *et al.* (2013) have conducted the study on population status of commercially important medicinal plants in Dehradun Forest region and total 86 medicinal plants were analyzed from the entire division. Similarly Mohammad Shahid *et al.* (2017) documented 115 medicinal plants from Barkot forest in Doon valley. The present study represent that the karwapani forest area exhibits rich diversity of medicinal trees. Most of the information about the medicinal trees was obtained from the local people. During the survey it is found that mostly people using medicinal plants for curing stomach pain, fever, cold & cough, bleeding, wounds, rheumatic pain and insect bite etc. The study reveals that local people still depend on a number of plants for their daily needs specially medicines. Being a wealthy reservoir of medicinal trees, the Karwapani forest area

is facing threat due to various anthropogenic activities, pollution, climate change, grazing etc. which is ultimately putting the medicinal plant species of this area under extensive pressure. Therefore immediate conservation measures are required to save the natural reservoir of medicinal trees which is under tremendous pressure.

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References

- Babu, C.R. 1977. Herbaceous Flora of DehraDun. Publication and Information Directorate, CSIR, New Delhi.
- Gangwar, K.K., Deepali and Gangwar, RS. 2010. Ethnomedicinal plant diversity in Kumaun Himalaya of Uttarakhand, India. *Nature and Science*, 8(5): 66-78.
- Gaur, R.D. 1999. Flora of the District Garhwal North West Himalaya (with ethnobotanical notes). Transmedi Srinagar Garhwal, Uttaranchal. India.
- Government of India. 2000. "Report of the Task Force on Conservation and Sustainable Use of Medicinal Plants" (New Delhi: Planning Commission).
- Jain, K.K. and Rao, R.R. 1977. A Handbook of field and Herbarium methods. Today and Tomorrows printers and Publishers, New Delhi.
- Kanjilal, U. and Gupta, B.L. 1969. Forest Flora of Chakrata, Dehradun and Saharanpur Forest Divisions, Uttar Pradesh. Manager of Publications Delhi. Printed at FRI press, P.L.O. FRI&C, Dehradun.
- Kumari, P., Joshi, G.C. and Tewari, L.M. 2012. Indigenous uses of threatened Ethno-medicinal plants used to cure different diseases by Ethnic people of Almora District of Western Himalaya. *International Journal of Ayurvedic and Herbal medicine*, 2:4.
- Mohammad, Shahid., Verma, N. and Joshi, S.P. 2017. A contribution to medicinal plants of Doon Valley, Uttarakhand. *International Journal of Current Research*, 9(9): 57549-57554.
- Raut, N.B., Tiwari, U.I., Adhikari, B.S., Rawat, G.S. and Chandola, S. 2013. Population status of commercially important medicinal plants in Dehradun Forest Division, Uttarakhand (India), *Not. Sci. Bio.*, 5(2): 175-182.
- Shrestha, P.M. and Dhillon, S.S. 2003. Medicinal plant diversity and use in the highlands of Dolakha district, *Nepal. J. Ethnopharmacol.*, 86: 81-96.
- Tiwari, N., Purohit, M. and Nautiyal, A.R. 2011. Cultivation: A promising method for conserving *Picrorhiza kurrooa*. *Int. J. Med. Arom. Plants.*, 1(1): 14-17.

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