

## Traditional and ethnobotanical uses of medicinal trees in district Tehri Garhwal (Western Himalayas)

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### Abstract

Uttarakhand state of India is divided into two divisions Garhwal and Kumaon with total 13 districts. District Tehri Garhwal is among them which was selected for the present investigation to assess the distribution of medicinal trees and their medicinal uses for human being. Area under study was visited in several times in different season. Most of the plant collection was done during the spring season, when maximum trees were sprouted and booming. Collected specimens were deeply observed to notice the effect of different season on plants species and their medicinal uses. *Pinus roxburghii*, *Cedrus deodar*, *Quercus leucotrichophora*, *Rhododendron arboreum*, *Melia azedarach*, *Bombax ceiba*, *Prunus sp.*, *Pyrus phasia* etc. are common growing trees found in study area.

**Keywords:** Vegetation, Medicine, Himalayas, *Melia azedarach*.

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### Introduction

The Garhwal Himalaya is one of richest floristic zone of India and provides more than 300 species of medicinal plant (Gaur, 1999). From prehistorically time, the Himalayan flora has been in use for various purposes including some scientific therapeutic uses. The old Indian literature such as Rig-veda, Atharveda, Charka Sanhita, included various uses of plants of Himalaya region (Sharma et. al. 2011). Most of the plant products are being used by traditional healers as traditional medicine usually collected from the wild and hilly remote area. Plant parts are directly used as medicine by a majority of community people in all over world and have no side effect like allopathic medicine (Gangwar et. al. 2010). Basic ingredients in the traditional medicine are the medicinal plants, which are depleting at a faster rate due to the increase in consumption and indiscriminate drawl of resources from the wild (Kumari et. al. 2012). In addition to the requirement for conservation of medicinal plants it has also become essential to protect and patent the traditional knowledge (Raghupathy 2011). The survey and study of the medicinal trees in district Tehri Garhwal, Uttarakhand is being proposed for the different objectives i.e. identification, documentation, preserve and maintain of all the collected specimen and knowledge about the medicinal uses of the collected specimens.

### Materials and Methods

The survey of the district Tehri Garhwal, Uttarakhand was conducted during 2015-2016 with a view to study of medicinal trees and their ethno botanical and medicinal importance. The information was collected with the help of questionnaire from the local peoples. For the collection of plants standard

methodology has been followed according to literature. Periodic field trips were made up to once a month during the flowering and fruiting season. The periodic field trip is done with few things. Containers such as polythene bags are used for packing of collected plant material. Knife, blades or forceps are used for cutting plant parts. Newspapers are used for pressing the collected plant materials and specimens. Labels, notebook, pen and pencil are required for labelling of the specimens. All the specimens are dried, pressed and identified properly with the help of available literature, monographs (Gaur, R.D 1982) and matching with the authentic specimens of Herbarium and plant systematic laboratory Department of Botany at HNBSGU University, Campus Badshahithaul, Tehri, Garhwal. All the dried specimens were poisoned with 1% chloride of mercury in ethyl alcohol and then denatured specimen mount on the herbarium sheets. All the specimens are then submitted in the plant systematic laboratory of Botany Department in HNBSGU University, Campus Badshahithaul, Tehri Garhwal.

**Area description:** Uttarakhand is a newly born state in the northern part of India. It was a part of Uttar Pradesh and often referred to as the Devbhumi due to the many Hindu temples and pilgrimage centres present throughout the state. Tehri Garhwal (30.3<sup>0</sup> and 30.53<sup>0</sup>N, 77.56<sup>0</sup> and 79.04E Latitude and longitude) is the part of Uttarakhand state and comprises with 10 blocks. Total forest division of Tehri Garhwal is divided into the five ranges viz Bhilangna, Pukhal, Balganga, Lambgoun and Tehri.

### Results and Discussion

Garhwal Himalaya has diverse form of plants which is of high medicinal values. Total 33 genera and 39 species of growing medicinal trees have been

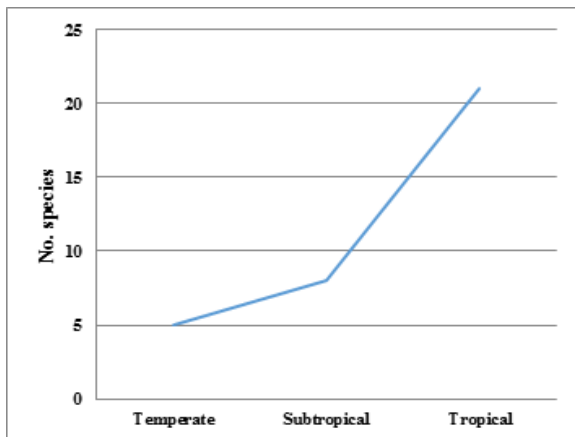
noticed from the study area (Table 1). Maximum collected specimens belong to tropical region and some special genera i.e. *Rhododendron arboretum* and *Myrica esculanta* are growing in the temperate region and they have high medicinal value (Fig. 1). The information about the medicinal trees and their ethnobotanical uses obtained from the local peoples. During the survey it was found that most of the peoples used medicinal plants for various therapeutic purposes in their daily life for primary healthcare. Tuberculosis, asthma, dysentery, diarrhoea, diabetes, wound and skin diseases are commonly found in the area. The Indian Himalayan region is also the habitat of major tribal communities such as Bhotias, Boaxas, Tharus, Jaunsaries, Shaukas, Kharvar and Mahigiri, which use medicinal plants for curing the diseases and ailments through the use of natural medicine (Singh et. al., 2007). It was found that the young women have less information on indigenous knowledge in comparison to old peoples but they were most sensitive to improve their knowledge and to conserve biodiversity. India has one of the oldest, traditional cultures called folk tradition associated with the use of medicinal plants based on indigenous belief traditional knowledge and skill (Samant et. al. 1998). The study reveals that local people still depend on a number of plants for their daily needs specially medicine. Among identified medicinal trees most of them are commonly found near the villages surrounding, wasteland, and forest area. Plants of scientific knowledge (700), which has been investigated pharmacologically and chemically, and their active principle are used in modern medicine or providing valuable leads for partial or total synthesis of new drugs (Parkash et. al. 2002). The community near village surroundings plants some tree species, which are chiefly used for curing stomach pain, fever, cold and cough, bleedings and wounds, fungal infection, burns, rheumatic pain, and insect. Despite their significance to rural livelihoods, the abundance and diversity of understory medicinal plants species are threatened by changes in the structural attributes of the cover story in native old-growth forest as a result of degradation (Galliam, 2007). Medicinal plants are widely used by

all section of the community, whether directly as folk remedies or the medicaments of the different indigenous system as well as in modern medicine (Alok SK, 1991). Therefore, the present communication deals with attempt to gather information on some traditional uses of medicinal plants from district Tehri Garhwal to document the medicinal uses of plants to cure the common diseases. People in this region are partially or completely dependent on forest resources for medicine, food and fuel. The plants pointed out by local inhabitants were collected, identified botanically with the help of flora-forest flora of the Chakrata, Dehradun and Saharanpur forest divisions' Uttar Pradesh (Kanjilal 1928), Herbaceous flora of Dehradun (Babu 1977). Economically weaker section of the community in district Tehri Garhwal also collects medicinal plants from the forests for commercial use as livelihood option. Several of these medicinal plants species have slow growth rates, low population densities, and narrow geographic ranges (Kala, 1998, Nautiyal et. al., 2002). Women in the Himalayan region have an intimate and longtime association with the surrounding forests for fulfilling their daily needs of fuel, fodder and other forest produce. Rural women in the Traditional medicine has been define as the sum of the knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different culture, whether explicable or not, used in the maintained of health as well in the prevention, diagnosis, improvement or treatment of physical and mental illness, (WHO, 2000). A great deal of traditional knowledge of the use of various plant species is still intact with the indigenous people, and this fact is especially relevant with the mountainous areas such as the Himalaya due to less accessibility of terrain and comparatively slow rate of development (Farooquee et al., 2004). Convention on Biological Diversity states that indigenous people play a vital role in environment management and development through their traditional practices. It require nation to protect the traditional knowledge and customary practices related to the use of biological diversity (Glowka et. al.1997).

**Table 1: List of medicinal trees and their medicinal uses occurred in study area**

SN	Botanical name	Local name	Family	Parts use	Uses form	Ethnobotanical uses in different diseases
1.	<i>Acacia catechu</i> Linn.	Khair	Mimosaceae	Bark	Liquid	Diarrhea, dysentery, Bronchitis, menstrual disorder.
2.	<i>Acacia nilotica</i> L.,	Kikar	Papilionaceae	Gum	Powder	Cough asthma, diarrhea, dysentery, seminal weakness, and hemorrhages.
3.	<i>Aegle marmelos</i> L.,	Bel	Rutaceae	Fruit	Juice	Digestive disorder
4.	<i>Albizia leebake</i> L., Benth.	Siras	Mimosaceae	Seeds, bark	Liquid	Diarrhea, dysentery, eye complaints, piles, ulcer.
5.	<i>Bauhinia purpurea</i> L.,	Guriyal	Caesalpiniaceae	Bark	Paste	Digestive disorder
6.	<i>Bauhinia variegata</i> L.,	Guriyal	Caesalpiniaceae	Leaves	Paste	Cough asthma.
7.	<i>Bombex ceiba</i> L.,	Semal	Bombacaceae	Root, stem	Liquid	Aphrodisiac, leucorrhea, digestive disorder.
8.	<i>Butea monosperma</i> Lam. Kuntze	Dhak	Papilionaceae	Flower, seed, gum	Paste	Blood purifier, antiseptic and thermionic, indigestion.
9.	<i>Cassia fistula</i> L.,	Simara	Caesalpiniaceae	Fruit, bark	Paste	Antiseptic, antidote of snake and scorpion bite, asthma, bronchitis and skin diseases.
10.	<i>Cedrus deodar</i> Roxb.ex D. Don, Hort.	Deodar	Pinaceae	Wood	Oil, rubbed liquid	Remittent, intermittent fever, diarrhea, dysentery, ulcer, skin disorders
11.	<i>Cinnamomum tamala</i> Buch-Ham	Dalchini	Lauraceae	Bark, leaves	Liquid	Dyspepsia and throat irritation.
12.	<i>Dalbergia oojeinensis</i> Roxb.	Sandan	Papilionaceae	Gum	Paste	Digestive trouble
13.	<i>Emblica officinalis</i> Gaertn.	Anwala	Euphorbiaceae	Fruit	Powder	Vitamin C, several disorder, diarrhea, dysentery and eye diseases.
14.	<i>Eucalyptus tereticornis</i> Smith	Safeda	Myrtaceae	Leaves, bark	Bubbed liquid	Chronic cough, asthma, bronchitis, pyorrhea, burns, dyspepsia, skin, insect repellent.
15.	<i>Ficus benghalensis</i> L.,	Bargad	Moraceae	Latex	Liquid	Diabetic.
16.	<i>Ficus palmate</i> Forsk	Bedu	Moraceae	Fruit	Rubbed liquid	Digestive disorder.
17.	<i>Ficus religiosa</i> L.,	Peepal	Moraceae	Bark	Liquid	Bronchitis and skin ailments.
18.	<i>Garcinia malabarica</i> Desroux	Gab, kala-tendu	Ebenaceae	Fruit, bark	Paste	Diarrhea and dyspepsia.
19.	<i>Grewia optiva</i> JR.D ex B	Bhimal	Tiliaceae	Stem, bark	Powder	Anti-fungal, Hair dandruff.
20.	<i>Holarrhena pubescens</i> Buch-Ham	Kuru, Kuri	Apocynaceae	Bark	Rubbed liquid	Dysentery, febrifuge.
21.	<i>Lyonia ovalifolia</i> Wallich Drude	Anyar	Ericaceae	Seed	Paste	Wounds and boils.

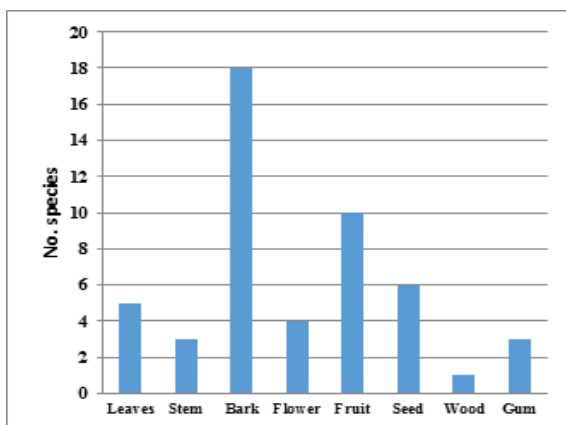
22.	<i>Melia azedarach</i> L.,	Dainkan	Meliaceae	Leaves, seeds	Oil, powder	Skin disease, blood pressure, in rheumatic pains, intermittent fever and antiseptic.
23.	<i>Moringa oleifera</i> Lam.,	Sunara	Moringaceae	Root , bark	Paste, powder	Rheumatism, cardiac and circulatory disorder, softens skin.
24.	<i>Morus alba</i> L.,	Sahtoot	Moraceae	Fruit, root	Juice, liquid	Astringent, purgative.
25.	<i>Murraya koengii</i> L.,	Gandela	Rutaceae	Flower, bark, root, leaves	Liquid, powder	Piles, skin diseases and bacterial infection. Increases digestion and control dysentery
26.	<i>Myrica esculanta</i> D. Don	Kaphal	Myricaceae	Fruit	Juice	Digestive disorder
27.	<i>Pinus roxburghii</i> Sargent	Chir	Pinaceae	Wood	Rubbed liquid	Antiseptic, and haemostatic, foul ulcers, asthma, gonorrhoea, epilepsy.
28.	<i>Pongamia pinnata</i> L.,	Karanj	Papilionaceae	Seed, root stem, oil	Rubbed paste	Scabies, herpes, leucoderma, coetaneous, gonorrhoea
29.	<i>Prunus cerasoides</i> D.Don	Payan	Rosaceae	Bark	Rubbed paste	Psycho trouble.
30.	<i>Prunus pashia</i> Buch Ham. ex D. Don.	Mol	Rosaceae	Fruit	Juice	Digestive disorder, diarrhea, cancer.
31.	<i>Quercus leucotrichophora</i> Ricd., Fran.	Baanj	Fagaceae	Gum	Rubbed paste	Gonorrhoeal, asthma, hemorrhages, diarrhea, dysentery etc.
32.	<i>Rhododendron arborium</i> Smith.	Burans	Ericaceae	Flower, bark	Juice	Digestive and respiratory disorder.
33.	<i>Robinia pseudoacacia</i> Nigel c. Veitch, Peter C. Elli	Black locust	Fabaceae	Flower, inner, root	Rubbed liquid	Antispasmodic, eye ailments, emetic, purgative, vomiting alloy, toothaches.
34.	<i>Sapindus mukorossi</i> Gaertner	Reetha	Sapindaceae	Fruit	Powder	Hair cleaner, dandruff.
35.	<i>Syzygium cumini</i> L.,	Phalenda	Myrataceae	Bark	Rubbed paste	Diabetes.
36.	<i>Taxus baccata</i> L.,	Thuner	Ephedraceae	Bark	Rubbed paste, liquid	Plaster on fractured bones, head ache, taxol-anticancer.
37.	<i>Terminalia bellirica</i> Roxb.	Bahera	Combretaceae	Seed, nut, fruit	Rubbed liquid	Dry prolonged cough, dropsy, diarrhea and leprosy.
38.	<i>Terminalia chebula</i> Retz.	Harra	Combretaceae	Fruit coat, fruit,	Rubbed liquid	Purgative, pathos problem, ulcer, skin disease, digestion, improving vision
39.	<i>Toona ciliata</i> M. Roem	Toon	Meliaceae	Bark	Rubbed tonic	Chronic infantile, dysentery, cough, bronchitis, intermittent fever, leprosy, skin, ulcer.



A



*Melia azedarach*



B



*Prunus cerasoides*

Fig. 1: A. Number of plant species is growing in different region, B. Number of plant species produced medicine from different parts



*Rhodhodendron arborium*



*Bauhinia purpurea*

*Prunus pashia**Bombax ceiba***Fig. 2: Some medicinal trees are growing in study area (Garhwal Himalayas)**

### Conclusion

During the present investigation various plant species were collected from the area. All these have medicinal value and provide comprehensive information on the medicinal plants and their indigenous uses to cure diseases in remote area of Garhwal Himalaya. Based on the results it can be concluded that the area has high potential of medicinal plants species. During field visits it is also noticed that there are serious threats to herbal medicinal plants in the area due to anthropogenic activities. Therefore there is an urgent need to educate and bring awareness in the local communities, through meetings, awareness and training programs about the importance of medicinal plants and their protection.

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