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Traditional Uses of Medicinal Tree Species in Renuka Forest Division, Western Himalaya

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ABSTRACT

Himalayan forests are the most important source of medicinal plants, which are used by local people. Renuka Forest Division (RFD) lies in Sirmaur District of Himachal Pradesh in western Himalaya between 77° 17' 34" to 77° 47' 38" E longitudes and 30° 52' 16" to 30° 31' 11" N latitudes. It is situated in the outer western Himalayan region. The geographical area of the division is 1018 km^2 and forest area is of 273.65 km^2 (26.88% of the total area). Reserved forest and protected forest covers are 244.64 and 28.43 km^2, respectively. The entire tract is mountainous and varies in elevations from 620 to 3647 m msl. The present study is focused on the traditional use of medicinal trees in the study area. Information on medicinal trees of the present study has been gathered through questionnaire survey and also from relevant literature. A total of 30 medicinally important tree species were reported viz., *Emblica officinalis (Amala), Rhododendron arboretum* (Burans), *Terminalia bellirica* (Bahera), *Pinus roxburghii* (Chir) etc. are the commonly used species. Out of which about 37% trees were used for their bark, about 30 fruit part of trees were used, about 17% for leaves, 13% for roots, 10% for seeds and 3.34% trees for both flowers and whole plant were used by local people. The present study document the traditional uses of medicinal tree species of RFD. This study can serve as baseline information on medicinal trees and could be helpful in conservation of this important resource as well as traditional knowledge of the area.

Keywords: Medicinal plants, Renuka Forest Division, Traditional knowledge, Himalayan, Survey.

Introduction

India is rich in its ethnic diversity of which many aboriginal cultures have retained traditional knowledge concerning the medicinal utility of the flora [1]. Over 8000 plant species are used in traditional and modern medicine in India, and 90-95% collection of medicinal plants is from the wild [2]. In ancient literature utilization of plants for medicinal purposes in India has been documented long back [3].

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However, organized studies in this direction were initiated in 1956 [4] and off late such studies are gaining recognition and popularity due to loss of traditional knowledge and declining plant population. A great amount of traditional knowledge about the use of medicinal plant species is still carried and orally transmitted by indigenous peoples. Regions with less accessibility and a comparatively slow rate of development, such as and mountainous areas like the Himalayas are excellent examples [5,6]. Because of the fast acceleration of market demand for herbal medicines, and recent controversies related to access, benefit sharing and biopiracy, the documentation of indigenous knowledge is of urgent priority [7-11]. In lower altitudes the knowledge about medicinal tree species is declining comparative to higher altitudes [12]. Indigenous knowledge, supplemented by the latest scientific insights, can offer new holistic models of sustainable development that are economically

viable, environmentally benign and socially acceptable [13].

The people of the Renuka Forest Division (RFD) in Himachal pradesh are mostly depended on agricultural products for their subsistence. However, agricultural products are too less to meet the expenditure mountain communities. Therefore, the people have to resort to alternative methods for earning their livelihood. A sizeable number of people work in civil armed forces and in other parts of the country while the women perform house hold duties. It is a large hilly area and women support their men by taking care of cattle, cutting fuel wood as well as in the fields.

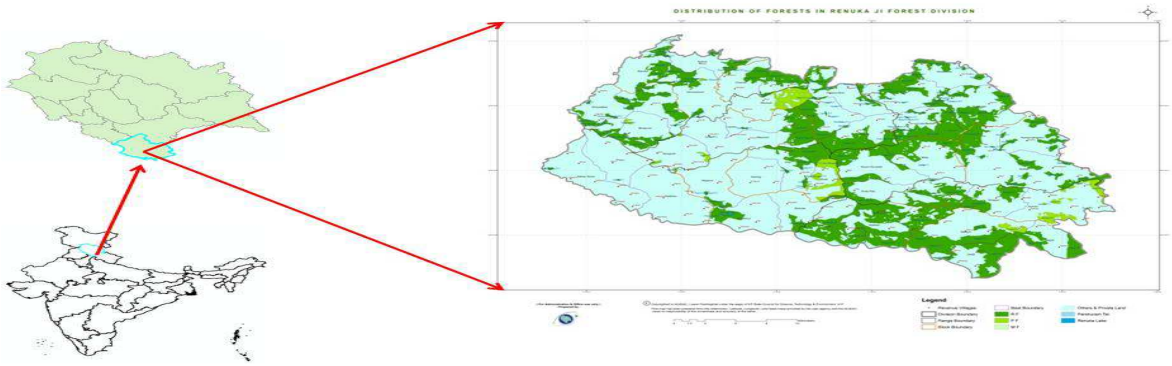
RFD is a less developed region that harbors larger number of medicinal plants and is therefore one of the best study sites to document the information on the medicinal trees used by the local mountain people. Hence the aim of the present study is to assess the ethno-botanical knowledge of the mountain people and documentation of this knowledge from some villages of RFD of Western Himalaya.

Materials and methods

Study area

RFD lies in Sirmaur District of Himachal Pradesh in Western Himalaya. RFD sprads between 30° 52' 16" to 30° 31' 11" N latitudes and 77° 17' 34" to 77° 47' 38" E longitudes. It is bounded in the north by Chopal and Rajgarh Forest Divisions, in the east by Chakarata Forset Division of Uttrakhand, in South by Nahan Forest Divisions and in the west by Paonta Forest Division[15].

Figure-1 Map of Renuka Forest Division (Not to Scale)



The geographical area of the division is 1018 km^2 and forest area of 273.65 km^2 (26.88% of the total area). Reserved forest and protected forest cover 244.64 and 28.43 km^2, respectively. There are five ranges in Renuka Forest Division namely Renuka, Sangrah, Nohra, Shillai and Kafota. The entire tract is mountainious and varies in elevation from 620 to 3647 m msl. The slopes are generally steep to precipitous with deep khalas and springs.The entire region of Renuka Forest Division falls within the catchments of Giri, Sainj and Tons rivers. The Jalal khad and Nait ka Khala are two important khalas, which drains into Giri at Sieun and Khairi, respectively. The study area reflects a complex diversity in climate and topography, thereby, characterizing a variety of forest types.

Methods of study

Information on the traditional uses of trees found in RFD was gathered through formal and informal interviews and questionnaires from local people [14]. For survey work thirteen (13) villages (Table-1) along altitude gradient selected. All villages are situated between 543 to 2364 m altitudes surrounded by sub-tropical, temperate, sub-alpine and alpine forests with agricultural fields. Dominant plant species of the region are pine, deodar, oak and rhodendron. The inhabitants of the study area have agro lifestyle and partially depend on traditional agricultural practices. Most of the people of study area have some indigenous knowledge of medicinal plants and they make use of the knowledge as primary healthcare.

Table-1 Study villages along altitude and Number of respondents

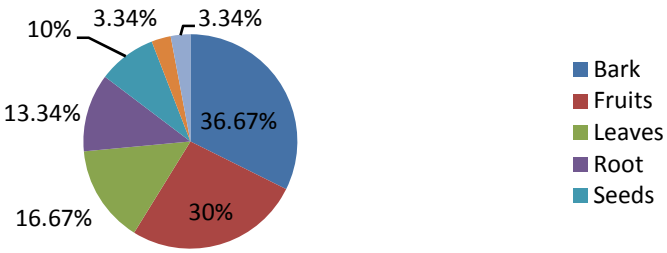
Village Name	Altitude (m)	Number of respondent
Satun	547	7
Trimali	740	6
Palar	1053	7
Debar	1175	4
Jarang	1312	7
Baunal	1387	3
Garari	1568	6
Shamra	1653	8
Dhiraina	1800	10
Sangaraha	1817	6
Kandakothi	1906	5
Nohradhar	2212	4
Haripurdhar	2364	9

The interviews were based on informal small talks with individuals and groups and 82 formal interviews including filling of open ended questionnaires was conducted. We collected traditional knowledge about medicinal trees. For a cross verification, we gave priority to local elder people and two herbal practitioners of the area. Voucher herbarium specimens of medicinal tree species were collected, identified and submitted to Forest Research Institute Herbarium, Dehradun.

Results and discussion

A total of 82 stakeholders were interviewed in 13 different villages at various altitudes on the basis of their traditional knowledge about medicinal tree species. The native people of the study area use medicinal tree species for various therapeutic purposes in their day to day life for primary healthcare. The respondents were various sex and age groups from 15 to 60 yrs. 74% respondents were educated and remaining 26% were illiterate. It was found that the young generation had less information on then the old generation about medicinal trees.

Figure 2: Percentage of tree parts used in preparing medicines for various ailments



Medicinal remedies of 30 tree species (Table-1) were recorded. The trees are arranged alphabetically with tree botanical name, Local name, Altitude range, part use and folk medicinal use. Usually, all parts of the tree such as Bark, Fruits, leaves, Root, Seeds and flower are utilized by local mountain people. The common use of Bark 36.67% followed by Fruits 30%, Leaves 16.67%, Seeds 3%, Flowers 3.34% and whole tree is not

commonly used due to big size of tree as 3.34% (Figure 2).

A total of 13.40% tree species are used to treat Diarrhoea and equal quantity of trees are used for Swelling followed by 10% species for cough. 10% species are used for the treatment of Dysentery followed by 6.67% species are used for Asthma, 6.67% species for Night blindness and equal number of trees are used for skin disease (Figure 3). More commonly used trees are *Rhododendron arboretum* (Burans), *Terminalia bellirica* (Bahera), *Pinus roxburghii* (Chir) etc. Because these trees commonly occur in the study area. The present study reveals that the local people of the study area are rich in indigenous knowledge of plants and treat many diseases. During the study period, we found that all information on the use of medicinal trees were gathered from various age group persons who have better knowledge about the utilization of medicinal plants. The younger generation does not rely on traditional treatments due to modern cultural changes. It is, important to record the traditional knowledge of medicinal plants in the area before the information depleted.

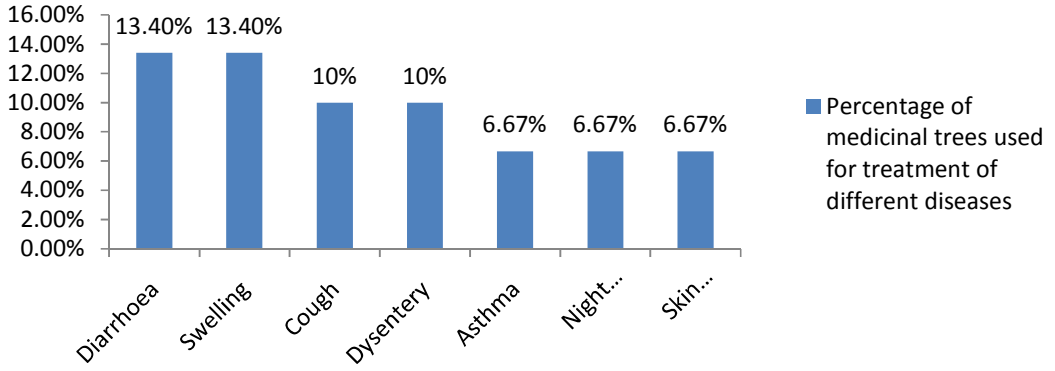


Figure 3: Percentage of medicinal trees used for treatment of different diseases

Table 1: Information on the medicinal trees of the study area

S. No.	Hindi name	Botanical name	Altitude range (m)	Tree part used	Medicinal use
1	Fir	*Abies pindrow* Royle	2300-3400	Bark extract	Cough & Bronchitis
2	Khair	*Acacia catechu*Willd.	383-1370	Bark	Stomachache, Diarrhoea
3	Siris	*Albizia lebbeck*(Benth.)	Upto 1000	seeds and leaf	Swelling and leafs are used for night blindness
4	Dhawa	*Anogeissus latifolia* DC.	Upto 1100	Bark extract	Diarrhoea, leprosy, cough and cold
5	Kachnar	*Bauhinia variegate* L.	300-1800	bark and root	Diarrhoea and roots for antifat remedy
6	Semul	*Bombex ceiba* L.	800-1500	root	aphrodisiac
7	Dhak	*Butea monosperma* (Lam.)	uptp 1000	seeds	antidote for snake-bite
8	Amaltas	*Cassia fistula* L.	upto 900	leaves	Chilbains ringworm, insect bites, eczema and for purification of blood
9	Shisham	*Dalbergia sissoo* Roxb.	upto 850	leaves	Gonorrhoea and breast swellings

10	Amala	*Emblica officinalis* L.	Upto 1500	fruits	Night blindness, dysentry
11	Safeda	*Eucalyptus tereticornis* (Sm.)	upto 900	leaves	Body pain
12	Pakar	*Ficus rumphii* (Blume)	Upto 1200	fruits	Asthma
13	Kancu	*Flacourtia indica* (Burm.f.) Merr.	600-1300	root, Leaves, Fruits	Skin diseases, Poisinous biting, Jaundice
14	Papri	*Holoptelia integrifolia* (Roxb.)	700-1400	bark	Skin diseases
15	Jhingan	*Lannea coromandelica* (Haultt.) Merr.	upto 800	Leaves	Sprains and local swelling
16	Lyonia	*Lyonia ovellifolia* (Wall.)	1900-3400	Seed paste	Wounds and Boils
17	Kamela	*Mallotus philippensis (Lam.)* Muell.Arg	Upto 1500	fruits	Stomachache
18	Aam	*Mangifera indica* (L.)	upto 800	bark	Dysentery, Piles
19	shiatut	*Morus alba* (L.)	upto 800	Fruits	Throat Diseases
20	Sandan	*Ougenia oojeinensis* (Roxb.) Hochr.	500- 1200	Bark	Swelling
21	Khajur	*Phoenix sylvestre* (L.)	upto 900	Fruits	Restorative remedy
22	Bhuian anvala	*Phyllanthus emblica* (L.)	uoto 850	whole plant	Jaundice
23	Chir	*Pinus roxburghii* (Sarg.)	Upto 1500	Saw Dust & Aerial parts	Asthma
24	Pear	*Pyrus pashia* (L.)	800-2400	Fruits & Bark	Digestive disorders
25	Burans	*Rhododendron arboretum* Smith	1500 to 2600	Flower, Bark & Young Shoots	Digestive and respiratory disorder, tonic for heart,
26	Jamun	*Syzygium cumini* L.	Upto 1500	Fruits	diarrhoea & dysentery, Headache, Diabetis
27	Thuner	*Taxus bacata* L.	1500-2500	Bark	Dysentery, Cancer
28	Bahera	*Terminalia bellirica Roxb.*	Upto 1200	Fruits	Coughs, Hoarseness, Sore throat
29	*Toon*	*Toona ciliate* (M. Roem.)	600-1600	Bark	Menstrual disorder
30	Pindara	*Trewia nudiflora* L.	upto 600	Root	Stomachache

Conclusion

Considering the medical and ecological importance and population status of important ethnomedicinal tree species, we recommend the robust conservation and plantation strategy for each important tree species. Harvesting for medicinal purpose should be in a appreciate scientific way which do not degrade this wealth. Additional ecological studies, including population assessments using standard ecological

methods are needed to effectively plan the conservation and management for threatened, rare and endangered species. In-situ and ex-situ conservation method can be practiced to avoid further depletion of rare plants. Local people can be involved to cultivate sustainable species, control regular grazing and to apply conservation strategies.

The increase of connectivity and communication allured the younger generation towards modern market economy, this attraction will have large implication. Thus, the present documentation of traditional knowledge from an area where novel information has been generated will not only provide recognition to this knowledge but will also help in its conservation vis-à-vis providing pharmacological leads for the betterment of human society and for the likelihood of local people.

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