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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) with 1018 km^2 lies in the outer western Himalayan region of Sirmour District of Himachal Pradesh in western Himalaya. The entire tract of RFD is mountainous and varies in elevations from 620 to 3647 m asl. The present study is focused on the traditional use of medicinal trees in the study area, which was gathered through questionnaire survey and also from relevant literature. A total of 30 medicinally important tree species are reported, of which 30% trees were used for their bark, 26.67% for fruits, 16.67% for leaves, 10% for roots, 10% for seeds and 3.3% trees each for flowers and whole plant by the local people. The present study can serve as baseline information on medicinal trees and would be helpful in conservation of these important resource as well as traditional knowledge of the area.

Keywords: Medicinal trees, Renuka Forest Division, Traditional knowledge, Himalaya.

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]. However, organized studies in this direction were initiated in late fifties [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 people. Regions with less accessibility and a comparatively slow rate of development in mountainous areas like the Himalayas are excellent examples [5,6]. The documentation of traditional knowledge is of utmost priority because of the fast acceleration of market demand for herbal medicines, and recent controversies related to access, benefit sharing and biopiracy [7-11]. In lower altitudes the knowledge about medicinal tree species is declining comparatively 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 of mountain communities. Therefore, the people have to resort to alternative methods for earning their livelihood. A sizeable number of people work in

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civil armed forces and in other parts of the country, while the women perform house hold duties. In general women support their men by taking care of cattle, cutting fuel wood as well as in hill agriculture.RFD is a less developed region, 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 traditional knowledge of the mountain people and document their traditional knowledge from the villages of RFD in Western Himalaya.

MATERIALS AND METHODS

Study area

RFD lies in Sirmour District of Himachal Pradesh in Western Himalaya between 30° 52' 16" to 30° 31' 11" N latitudes and 77° 17' 34" to 77° 47' 38" E longitudes. It is bounded in north by Chopal and Rajgarh Forest Divisions, in south by Nahan Forest Division and in west by Paonta Forest Division, while in east by Chakrata Forest Division of Uttarakhand state (Anonymous 1999).

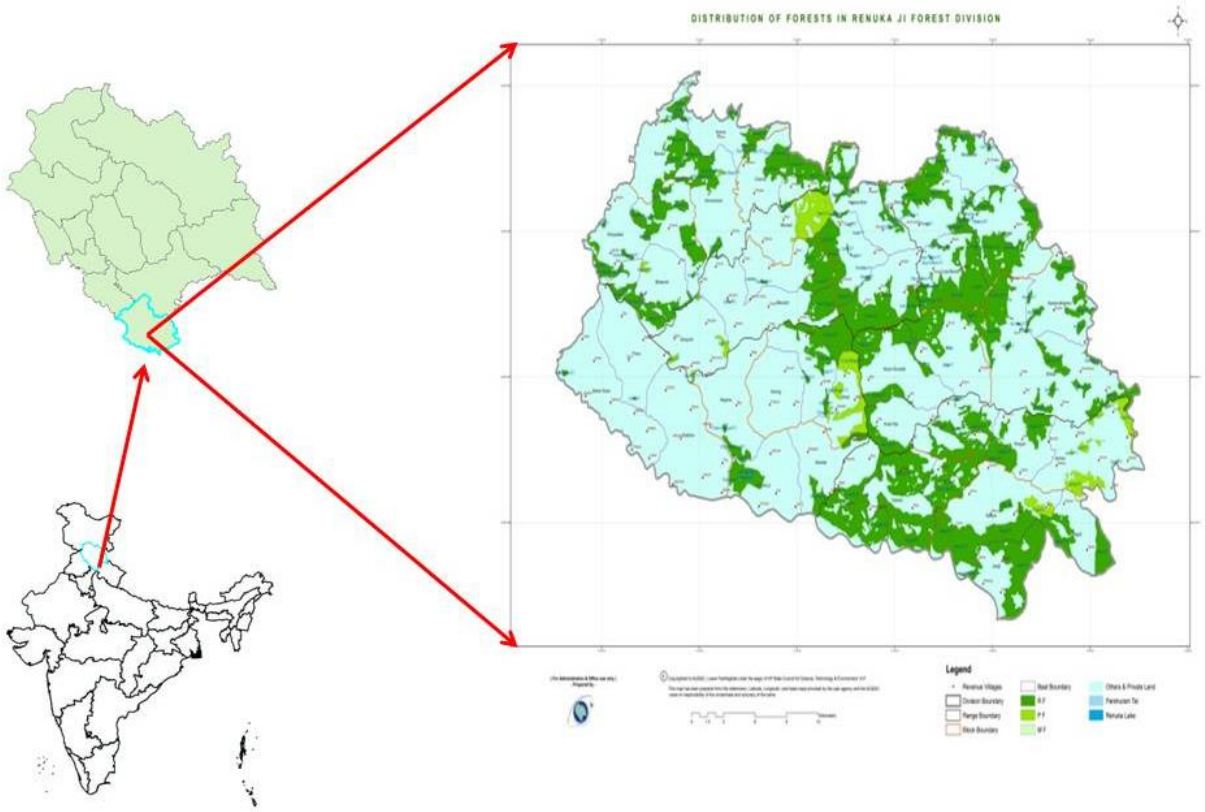

Figure 1: Map of Renuka Forest Division (Not to Scale)

The geographical area of Renuka Forest Division is 1018 km^2 with forest area *ca.* 273.65 km^2 (26.9% of the total area), of which Reserved forest and Protected forest covers 244.6 and 28.4 km^2, respectively. RFD consists of five ranges viz., Renuka, Sangrah, Nohra, Shillai and Kafota. The entire tract is mountainous and varies from 620 to 3647m asl. 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. Jalal khad and Nait ka *Khala* are the 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

Information on 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 elevation gradient were selected between 543 to 2364m at various climatic zones, viz. sub-tropical, temperate, sub-alpine and alpine. These zones are mainly dominated by Chir pine (*Pinus roxburghii*), Deodar (*Cedrus deodara*) and different Oaks (*Quercus* spp.) along with various under canopy species like *Rhododendron* and *Lyonia*. 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 traditional knowledge of medicinal plants and they make use of this knowledge as primary healthcare.

Table 1: Location and number of respondents in each village of RFD

Village	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. A total of 82 formal interviews including filling of open ended questionnaires were conducted to collect the information on traditional knowledge about medicinal trees. For cross verification, priority was given 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 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 from various sexes 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.

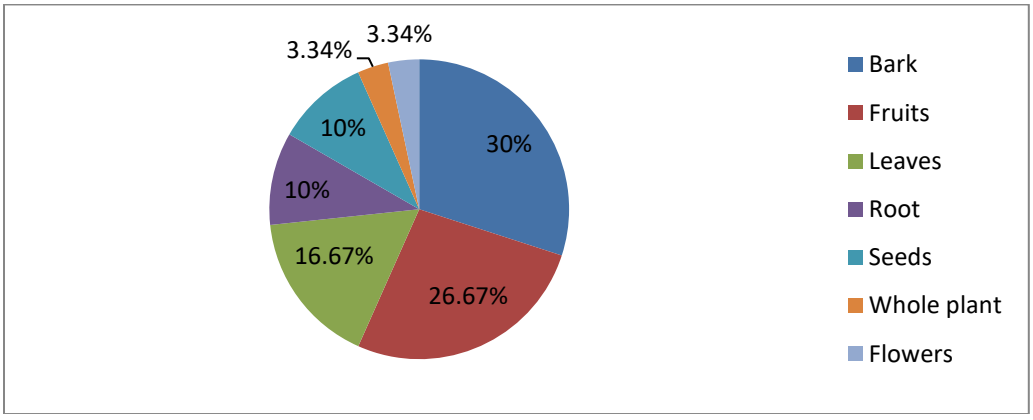

Figure 2: Percent use of different parts of trees for various ailments

Medicinal remedies of 30 tree species were recorded (Table-2) 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 flowers are utilized by local mountain people. Among different parts the bark is commonly used (30%) followed by fruits (26.67%), leaves (16.67%), seeds (10%), roots (10%) flowers (3.34%) and whole tree is not commonly used due to big size of tree as 3.34% (Figure 2).A total of 13.4% tree species are used to treat diarrhoea and equal quantity of trees are used for swelling followed by 10% species for cough. Ten percent species are used for the treatment of dysentery followed by 6.7% species for Asthma, 6.7% species for night blindness and equal number of trees is used for skin diseases (Figure 3). More commonly used trees were *Rhododendron arboreum* (Burans), *Terminalia bellirica* (Bahera), *Pinus roxburghii* (Chir pine) etc. as these trees commonly occur in the study area. The present study reveals that the local people of the study area are rich in their traditional knowledge of plants and cure many diseases. During the study period, we found that all the information on the use of medicinal trees were gathered from various age groups, 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.

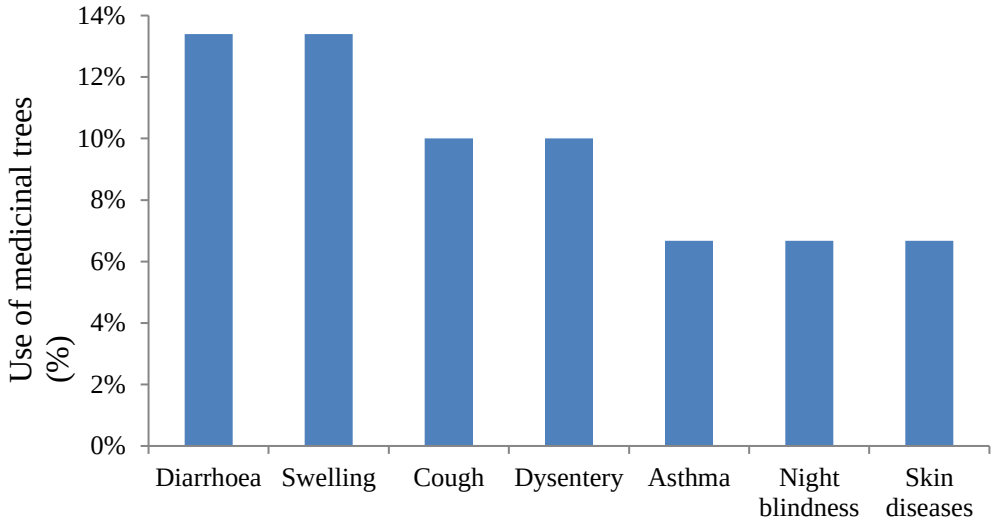

Figure 3: Percentage of medicinal trees used for treatment of different diseases

Table 2: Information on the medicinal trees of the study area

S. No.	Local 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.)	300-1000	Seeds, Leaf	Swelling and leafs are used for night blindness
4	Dhawa	*Anogeissus latifolia* DC.	300-1100	Bark extract	Diarrhoea, Leprosy, Cough and cold
5	Kachnar	*Bauhinia variegata* L.	300-1800	Bark, Root	Diarrhoea and roots for antifat remedy
6	Semul	*Bombex ceiba* L.	800-1500	Root	Aphrodisiac
7	Dhak	*Butea monosperma* (Lam.)	300-1000	Seeds	Antidote for snake-bite

8	Amaltas	*Cassia fistula* L.	300-900	Leaves	Chilbains ringworm, Insect bites, Eczema and for purification of blood
9	Shisham	*Dalbergia sissoo* Roxb.	300-850	Leaves	Gonorrhoea and breast swellings
10	Amala	*Emblica officinalis* L.	300-1500	Fruits	Night blindness, dysentery
11	Safeda	*Eucalyptus tereticornis* (Sm.)	300-900	Leaves	Body pain
12	Pakar	*Ficus rumphii* (Blume)	300-1200	Fruits	Asthma
13	Kancu	*Flacourtia indica* (Burm.f.) Merr.	600-1300	Root, Leaves, Fruits	Skin diseases, Poisonous biting, Jaundice
14	Papri	*Holoptelia integrifolia* (Roxb.)	700-1400	Bark	Skin diseases
15	Jhingan	*Lannea coromandelica* (Haultt.) Merr.	300-800	Leaves	Sprains and local swelling
16	Lyonia	*Lyonia ovalifolia* (Wall.)	1900-3400	Seed paste	Wounds and Boils
17	Kamela	*Mallotus philippensis (Lam.)* Muell.Arg	300-1500	Fruits	Stomachache
18	Aam	*Mangifera indica* (L.)	300-800	Bark	Dysentery, Piles
19	shiatut	*Morus alba* (L.)	300-800	Fruits	Throat Diseases
20	Sandan	*Ougenia oojeinensis* (Roxb.) Hochr.	500- 1200	Bark	Swelling
21	Khajur	*Phoenix sylvestris* (L.)	300-900	Fruits	Restorative remedy
22	Bhuian anvala	*Phyllanthus emblica* (L.)	300-850	Whole plant	Jaundice
23	Chir	*Pinus roxburghii* (Sarg.)	300-1500	Saw dust, Aerial parts	Asthma
24	Pear	*Pyrus pashia* (L.)	800-2400	Fruits, Bark	Digestive disorders
25	Burans	*Rhododendron arboreum* Smith	1500-2600	Flower, Bark, Young Shoots	Digestive and respiratory disorder, tonic for heart,
26	Jamun	*Syzygium cumini* L.	300-1500	Fruits	Diarrhoea & dysentery, Headache, Diabetes
27	Thuner	*Taxus wallichiana* L.	1500-2500	Bark	Dysentery, Cancer
28	Bahera	*Terminalia bellirica Roxb.*	300-1200	Fruits	Coughs, Hoarseness, Sore throat
29	*Toon*	*Toona ciliate* (M. Roem.)	600-1600	Bark	Menstrual disorder
30	Pindara	*Trewia nudiflora* L.	300-600	Root	Stomachache

CONCLUSION

Considering the medicinal and ecological importance along with the population status of important medicinal tree species through interviews, we recommend the robust conservation and plantation strategy for each important tree species. Harvesting for medicinal purpose should be in a sustainable and scientific way, which does not degrade this wealth. Additional ecological studies, including population assessments using standard ecological methods are needed to effectively plan the conservation and management through *in-situ* and *ex-situ* conservation to avoid further depletion of species. Local people can be involved to cultivate these species and control grazing may be regulated to conserve the species.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 livelihood of local people.

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