



ETHNO-MEDICINAL DOCUMENTATION OF PLANTS USED BY THE RURAL FOLK OF PAURI AND KOT BLOCKS IN DISTRICT GARHWAL, UTTARAKHAND

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Received: 16.10.2020; Revised: 23.11.2020; Accepted: 20.11.2020

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Abstract: The Garhwal Himalaya is rich in medicinal plant diversity. Several medicinal plants are used to cure various ailments since time immemorial. The present study is an attempt to enumerate the ethno-medicinal use of some rare plants by the rural folk of Pauri and Kot block around the Randi stream catchment area, district Pauri Garhwal. Elderly people and Vaidyas (local herbal healers) were interviewed for their knowledge on the various uses of the medicinal plants found in the adjacent areas. A total of 89 medicinal plants species were recorded and documented along with their botanical name, family, vernacular name, parts used etc. The study emphasizes the herbal potential of Uttarakhand and will also provide a base line for conservation and further scientific investigation.

Key words: Folklore Medicinal plants, Traditional health care, Vaidyas, Himalayas

Introduction

The current pandemic has huge effect on the human civilization in many ways. It has impacted each and every aspect of life be it the field of education, lifestyle, psychological or spiritual wellbeing. It has challenged the idea of so called supremacy of human brain over the nature and taught to live in harmony with nature and respect the cultural heritage and traditional modes of living life. However, the concept of being in harmony with nature is not a new concept. Increasing demand for the herbal medicines, organic products and interest towards traditional wellbeing techniques are a reflection of the fact that there is a constant realization of importance of nature. Uttarakhand has a rich assortment of spices, medicinal and aromatic plant species. Garhwal Himalaya is blessed with repository of cultural and botanical diversity owing to its diverse geological area and moderate to cool climatic conditions. According to Gaur (1999) more than 300 species of medicinal plants are found in the Garhwal region. The natural

resources and the floral assets assume a significant part in the livelihood of the local communities. The rich variety of the zone is used by the neighborhood occupants in different structures as medication, food, grub, fuel, wood, agrarian executes, and so forth. Garhwal Himalaya has been the store of enormous natural resources including vegetation richness and conventional therapeutic information of medicinal plants. The traditional life style and cultural affluence of the indigenous and tribal people are still unparallel. There is lot of experience and knowledge hidden in their antique structure to offer to the developed world. Many plants are used as folklore-medicinal plants to cure various ailments since time immemorial (Pathak and Naithani, 2016; Joshi and Sekar, 2018; Chamoli and Saran, 2019). However, the conventional information on the utilization of plant assets is contracting due to shift towards a more western lifestyle, expanded use and accessibility of allopathic drugs alongside declining enthusiasm of more youthful ages to



convey forward the custom and in addition lack of proper documentation of the indigenous knowledge. In this way, a need is over and over felt to archive such important data on the utilization of plant species before it disappear totally. The present study is mainly drafted with the theme to investigate, identify and document the traditional information about the various plant species employed by the local people. The data collected from the study will be used for conservation and further scientific investigations.

Material and Methods

The present study was based on a field survey conducted in 2017 to 2019 in Pauri and Kot block around the Randi stream catchment area, district Pauri Garhwal, to find the plants of medicinal, perfumery and spice values. Data was collected by semi structured, structured interviews and questionnaire methods coupled with group meetings, field discussions on different topics with the people especially local people, rural folk, farmers and Vaidyas (Herb Healers) and pastoralists. The plants with medicinal values, as known from local people and rural persons were collected and studies were made to know their medicinal and other uses by consulting relevant literature.

For the collection of plants standard methodology has been followed (Jain and Rao, 1977). Periodic field trips were made during the flowering and fruiting season. All the specimens were dried, pressed and identified properly with the help of Gaur, (1999). All the dried specimens were poisoned with 1% chloride of mercury in ethyl alcohol and then denatured specimen mount on the herbarium sheets.

Study Area

Pauri Garhwal, a district of Uttarakhand state encompasses an area of 5230 Sq.Km and situated between 29^o45' to 30^o15' Latitude and 78^o24' to 79^o23' longitude. The district is administratively divided into nine tehsils, viz. Pauri, Lansdown, Kotdwar, Thalissain, Dhumakot, Srinagar, Satpuli, and Yamkeshwar and fifteen developmental blocks, viz. Bironkhal, Dugadd, Dwarikhal,

Ekeshwar, Jaiharikhal, Kaljikkhal, Khirsu, Kot, Nainidanda, Pabo, Pokhra, Rikhanikkhal, Thalissain, Yamkeshwar and Pauri. Randi stream originates from the Ransi and Jhandidhar Peak in the Pauri Garhwal region. A 20 km long stretch of the stream located upstream from Alaknanda River was chosen as the study area.

Results and Discussion

Folk in the region of selected area are partially dependent on forest resources for medicine, food and fuel. The information about the medicinal trees and their ethno medicinal uses was obtained from the local peoples. Asthma, cough, common cold, flu dysentery, diarrhea, diabetes, tuberculosis and skin diseases etc. are usually found in the area. Ethno-medicinal botanical survey in the Pauri block of Garhwal district indicates that still traditional phyto remedies are preferential first aid and mode of cure.

During the survey it was found that most of the peoples inhabiting in nearby forest areas used a range of medicinal plants on a daily basis for their primary healthcare purpose like curing stomach pain, fever, cold and cough, bleedings and wounds, fungal infection, burns, rheumatic pain, and insect bites. Economically weaker section of the community also collects medicinal plants from the forests for commercial use as livelihood option. Taxonomic identification of the voucher specimens was confirmed with help of the regional flora.

During the present investigation 89 plant specimens belonging to 36 families were sampled (Table 1). Asteraceae family dominated in its utility as ethno medicinal plant with a total of 10 representatives, followed by Rosaceae family (9) and Lamiaceae (8). Poaceae family also marked its presence with a total of 7 plant specimens. Specimens of Rubiaceae (5), Urticaceae (4), Araceae (3), Berberidaceae (3) and Solanaceae (3) were also noted along with other families represented by one or two genus. Collection was mainly in herbaceous form. Nearly 58.43% herbs, 22.47% shrubs, 7.87% grasses and 11.23% tree life forms were noted.

**Table 1:** Details of different species collected from the study area during the study period

S. No	Family	Specimen	Common Name	Life Form	Parts Used
1	Acanthaceae	<i>Adhatoda zeylanica</i> Medikus	Basinga	Shrub	Leaves
2	Amaranthaceae	<i>Achyranthes aspera</i> L.	Laatjeera	Herb	Roots, Leaves
		<i>Achyranthes bidentata</i> Blume.	Chicheera	Herb	Roots, Leaves
3	Apiaceae	<i>Bupleurum falcatum</i> L.	Jangli-jeera	Herb	Fruits
		<i>Pimpinella diversifolia</i> DC.	Terai	Herb	Whole plant
4	Araceae	<i>Arisaema tortuosum</i> Wallich.	Ban-Mungri	Herb	Whole plant
		<i>Gonantanthus pumilus</i> (D. Don) Engler & Krause	Ban-pindalu	Herb	Roots
		<i>Acorus calamus</i> L.	Vaach	Shrub	Whole plant
5	Asteraceae	<i>Anaphalis busua</i> Buch-Ham. DC.	Bugla	Herb	Leaves
		<i>Artemesia nilagirica</i> (C.B. Clarke) Pamp.	Kunjha	Herb	Leaves
		<i>Bidens pilosa</i> L.	Kumar	Herb	Leaves
		<i>Conyza canadensis</i> L.	Weed	Herb	Leaves
		<i>Echinops cornigerus</i> DC.	Kantela	Herb	Roots
		<i>Sonchus asper</i> L.	Pili-dudhi	Herb	Whole plant
		<i>Sonchus oleraceus</i> L.	Dudiya	Herb	Whole plant
		<i>Taraxacum officinale</i> Weber.	Kanphuliya	Herb	Stem, Leaves
		<i>Eupatorium adenophorum</i> Sprengel.	kalabansa	Shrub	Stem, Leaves
<i>Inula cappa</i> (Buch.-Ham. Ex D. Don).	Athhu	Shrub	Roots		
6	Begoniaceae	<i>Begonia picta</i> Smith, Exot.	Patharchatta	Herb	Whole plant
7	Berberidaceae	<i>Berberis asiatica</i> Roxb. Ex DC.	Kilmoda	Shrub	Root
		<i>Berberis lycium</i> Royle	kingoda	Shrub	Fruit, Root
		<i>Berberis aristata</i> DC.	Kingore	Shrub	Roots
8	Boraginaceae	<i>Cynoglossum glochidiatum</i> Wallich ex Benth.	Lichkura	Herb	Roots
		<i>Cynoglossum zeylanicum</i> (Vahl ex Hornem.)	Andhahuli	Herb	Leaves
10	Commelinaceae	<i>Commelina benghalensis</i> L.	Kanjura	Herb	Whole plant
11	Cyperaceae	<i>Cyperus niveus</i> Retzius.	Murya-ghas	Shrub	Whole plant
12	Daphniphyllaceae	<i>Daphniphyllum himalayense</i> L.	Rathendu	Tree	Leaves, Fruit
13	Fabaceae	<i>Crotalaria albida</i> Heyne ex Roth.	Chunchuni	Herb	Roots
		<i>Indigofera heterantha</i> Wallich ex Brandis.	Sakina	Shrub	Leaves
		<i>Desmodium microphyllum</i> (Thunb.) DC.	Sunsuni	Herb	Whole plant
		<i>Flemingia fruticulosa</i> Wallich ex Benth.	Churan	Shrub	Roots, Leaves
14	Fagaceae	<i>Quercus leucotrichophora</i> A. Camus.	Banj	Tree	Fruits
15	Hypericaceae	<i>Hypericum oblongifolium</i> Choisy.	Chitroi	Shrub	Stem, Leaves
16	Juglandaceae	<i>Engelhardia spicata</i> Leschenault ex Blume	Mahwa	Tree	Stem
17	Juglandaceae	<i>Juglans regia</i>	Akhrot	Tree	Leaves, Fruit
18	Lamiaceae	<i>Prunella vulgaris</i> L.	Prunella	Herb	Leaves, Fruit
		<i>Ajuga bracteosa</i> Wallich ex Benth.	Neelkanthi	Herb	Leaves
		<i>Ajuga reptans</i> Host.	Bugleweed	Herb	Leaves
		<i>Clinopodium vulgare</i> L.	Wild basil	Herb	Whole plant
		<i>Lamium album</i> L.	Tilka/Henbit	Herb	Whole plant
		<i>Leucis Kanata</i> Benth.	Bis-kapara	Herb	Whole plant
		<i>Origanum vulgare</i> L.	Bantulsi	Herb	Whole plant
<i>Salvia lanata</i> Roxb.	Ghanyajhar	Herb	Leaves, Flower		
19	Linaceae	<i>Reinwardtia indica</i> Dumortier.	Phinuli	Shrub	Flower
20	Malvaceae	<i>Triumfetta annua</i> L.	Orange Burr-bush	Herb	Stem
		<i>Urena lobata</i> L.	Chatkura	Shrub	Roots, Flower
21	Moraceae	<i>Ficus racemosa</i> L.	Gular	Tree	Leaves, Fruits
22	Myricaceae	<i>Myrica esculenta</i> (Buch-Ham. Ex .D. Don)	Kaaphal	Tree	Fruits
23	Oxalidaceae	<i>Oxalis corniculata</i> L.	Bhilmora	Herb	Leaves
24	Papaveraceae	<i>Argemone mexicana</i> L.	Pili Kateli	Herb	Roots, Seeds
25	Pinaceae	<i>Pinus roxburghii</i> Sargent.	Chir	Tree	Stem, Fruits
26	Poaceae	<i>Agrostis pilosula</i> Trin.	Ghass	Grass	Whole plant
		<i>Apluda mutica</i> L.	Tachula	Grass	Whole plant
		<i>Chrysopogon gryllus</i> L.	Khus	Grass	Roots
		<i>Cynodon dactylon</i> (L.) Pers.	Doobh	Grass	Roots
		<i>Eleusine indica</i> (L.) Gaertner.	Kodu	Grass	Seeds
		<i>Poa annua</i> L.	Ghas	Grass	Whole plant
<i>Themeda anathera</i> (Nees ex Steudel) Hackel.	Ghatira	Grass	Leaves		
27	Polygonaceae	<i>Persicaria capitata</i> (Buch.-Ham. Ex D. on)	Kaflya	Herb	Leaves
		<i>Rumex dentatus</i> L.	Jangli-palak	Herb	Leaves
28	Primulaceae	<i>Anagallis arvensis</i> L.	Jonkmari	Herb	Leaves
		<i>Androsace lanuginosa</i> Wallich.	Rock Jasmine	Herb	Leaves
		<i>Primula floribunda</i> Wallich	Yellow primose	Herb	Whole plant
29	Ranunculaceae	<i>Thalictrum javanicum</i> Blume.	Kirmoli	Herb	Roots



30	Rosaceae	<i>Potentilla vulgaris</i> Wall. Ex. Lehm.	Vajardanti	Herb	Whole plant
		<i>Agrimonia pilosa</i> Ledeb.	Lesukuria	Herb	Whole plant
		<i>Duchesnea indica</i> (Andrews) Focke.	Bhiun-kaphal	Herb	Leaves , Fruits
		<i>Cotoneaster rotundifolia</i> Wallich ex Lindley.	Rainshi	Shrub	Stem , Fruits
		<i>Rosa brunonii</i> Lindley.	Kunja	Shrub	Leaves
		<i>Rubus ellipticus</i> Smith	Hinssar	Shrub	Roots , Fruits
		<i>Rubus niveus</i> Wallich ex G.Don	Anchu	Shrub	Roots , Fruits
		<i>Pyracantha crenulata</i> (D. Don) M. Roemer.	Ghingaru	Shrub	Fruits
		<i>Pyrus pashia</i> Buch.-Ham ex D. Don.	Melu	Tree	Leaves
31	Rubiaceae	<i>Galium aparine</i> L.	Khuskusa	Herb	Leaves
		<i>Galium elegans</i> Wallich.	Kutub	Herb	Whole plant
		<i>Rubia manjith</i> Roxb. Ex Fleming.	Majethi	Herb	Roots , Stem
		<i>Himalandria tetrasperma</i> (Roxb.) Yamazaki.	Kamoli	Shrub	Stem , Flower
		<i>Lepodermis lanceolata</i> Wallich.	Padera	Shrub	Flower, Stem
32	Rutaceae	<i>Aegle Marmelos</i> L.	Bel	Tree	Fruits
33	Saxifragaceae	<i>Bergenia ciliate</i> (Haworth) Stemb.	Silpara	Herb	Roots , Leaves
34	Solanaceae	<i>Solanum incanum</i> L.	Banbhatuja	Herb	Leaves
		<i>Solanum nigrum</i> L.	Makoi	Herb	Whole plant
		<i>Solanum surratense</i> Burm. f.	Bhuiakhanderi	Herb	Leaves
35	Urticaceae	<i>Girardiana diversifolia</i> (Link) Friis.	Bhainsya-kandali	Herb	Stem
		<i>Pouzolzia zeylanica</i> L.	Kallukri	Herb	Leaves
		<i>Urtica dioica</i> L.	Kandali	Herb	Leaves
		<i>Debregeasia salicifolia</i> (D. Don) Rendle	Syanru	Tree	Whole plant
36	Violaceae	<i>Viola canescens</i> Wallich.	Vanfsa	Herb	Whole plant
		<i>Viola pilosa</i> Blume.	Vanfsa	Herb	Whole plant

India has one of the oldest, traditional cultures associated with the use of medicinal plants based on indigenous belief traditional knowledge and skill (Samant et. al. 1998). Many Tribal communities like Bhotias, Boaxas, Tharus, Jaunsaries, Shaukas, Kharvar and Mahigiri etc. inhabit the Indian Himalayan region (Singh et. al., 2007). The people of the area are exclusively dependent on medicinal plants using traditional knowledge that provide them the best therapeutic and economic benefits. Such traditional knowledge could be valuable for developing local and regional conservation strategies for these fragile ecosystems (Baluni, 2015). The acquaintance on medicinal plant and parts used, their distribution and method of preparation is indeed a prized ancient wisdom conserved within elders and women folk of the ethnic groups.

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. WHO (2000) also noted the role of rural women in the Traditional health care for the prevention, diagnosis, improvement or treatment of physical and mental illness as the sum of the knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures.

Being a remote hilly region, the use of various plant species remained intact in the study area for centuries. However, Regardless of their significance to rural livelihoods, loss of native biodiversity due to natural and anthropogenic pressures, advent of commercial interests and changes in traditional land-use practices altered the natural vegetation composition (Galliam, 2007). Several of these medicinal plants species have slow growth rates, low population densities, and narrow geographic ranges (Kala, 1998; Nautiyal et. al., 2002).

Decline Traditional herbal healing is also observed due to the decline in number of youth coming forward to learn this tradition in the state. It was found that in contrast to old peoples the young generation was least familiar with indigenous knowledge. Moreover, migration of youth from hills to metro cities is also a key factor in the decline in the age old traditional therapeutics. However; it was also found that youth were insightful enough to develop their knowledge and to conserve biodiversity.

According to Bhutani and Gohil (2010), ethno-pharmacological knowledge related to various plants and their parts are extremely useful as it reduces the time and effort wasted in screening herbs randomly for obtaining a particular active compound of interest. Along these lines



documentation of Indigenous information through ethno botanical investigations is significant for preservation of natural and social varieties just as maintainable use gets basic. Therefore, compilation of such valuable information through ethno botanical investigations is utmost essential to keep alive the traditional knowledge for the use of future generations. Scientific validation of this knowledge by isolation and purification of the phyto-constituents is also necessary for large scale use of the plants or their decoctions. It is recommended that the state Government must constitute a forum of experts, academicians and community representatives for creating awareness, knowledge insemination, farming and research about this valuable treasure of nature.

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