

Traditional knowledge on medicinal plants among rural women of the Garhwal Himalaya, Uttaranchal

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The present paper deals with traditional knowledge of medicinal plants among rural women of Garhwal. Seventy women of 11 villages were interviewed on the basis of their traditional knowledge on the various uses of medicinal plants found in the adjoining forest and agricultural areas. A total of 113 medicinal plant species were recorded during the intensive surveys and discussions held with the rural women.

Keywords: Traditional Knowledge, Medicinal Plants, Garhwal, Ethnomedicine

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Traditional medicine has been defined 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 maintenance of health as well in the prevention, diagnosis, improvement or treatment of physical and mental illness¹. In many developing countries, a large part of the population, especially in rural areas, depend mainly on traditional medicine for their primary health care. The indigenous knowledge of medicinal plants has been well documented in ancient *Hindu* literature. Traditional knowledge on medicine since the time of Great sage *Charak* has led to the discovery of many important drug of modern age². Today about 65% of the Indian population depend on the traditional system of medicine³.

Plants have traditionally served as man's most important weapon against pathogen. 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^{4,5}. Himalayan forests are endowed with high floral diversity; of these most of the plants have high medicinal properties. The knowledge of utilization of medicinal plants is very high among Himalayan people. Economically weaker section of the community collects medicinal plants from the forests

for commercial use as livelihood option. Women in the Himalayan region have an intimate and long time association with the surrounding forests for fulfilling their daily needs of fuel, fodder and other forest produce. Rural women in the Himalayas are the only ones who play a vital role having knowledge about the properties of plants and how they can best be utilized. Thus, their knowledge must be considered as an essential component of all efforts to conserve and develop in rural areas. Failure to document this indigenous ethnobotanical knowledge would result in perpetual loss of this knowledge to humanity.

Viewed from the fact that there is a serious threat to the medicinal plant diversity in this region, it is reissuing to know that various research institutions and individuals have suggested cultivation practices and documentation of traditional knowledge of medicinal plants prevalent in Himalayan region for their long term conservation^{2,6,7,8}. The main aim of the present study was to document the indigenous ethnobotanical knowledge of rural women and to suggest appropriate conservation practices.

Study area

Uttaranchal is well known for its biodiversity richness and diverse cultural mosaic (Fig. 1). The state comprises of 13 districts and lies between 28° 43' -31° 8' N and 77° 35' -81° 2' E. The present study was confined to 11 different villages (9 from Rudraprayag

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and 2 from Chamoli district), viz., Moth, Dhamas, Bhanigram, Ghagora, Manpur, Maikoti, Bamoli, Malkoti, Kandhar, Devtaoli and Guar (Table 1). All villages are situated between 700 to 2,800 m altitudes surrounded by sub-tropical to temperate forest and agricultural fields. Rudraprayag district is totally covered with different types of forest (Fig. 2). Dominant plant species of the region are pine, deodar, oak and rhododendron. Large grasslands with variety of herbaceous plant species occur in alpine region (Fig. 3, 4). The inhabitants of the area have agro lifestyle and partially depend on traditional agricultural practices. Most of the women of the study area have some indigenous knowledge of medicinal plants and they make use of the knowledge as primary healthcare. The inhabitants of this region have become familiar with the economic properties of the existing plants species. This has become the traditional system of medicinal use⁹.

Table 1—Study villages and respondents

Villages	Altitude (m)	Number of respondents
Moth	2,800	2
Dhamas	2,500	7
Bhandigram	2,500	6
Ghagora	2,500	6
Manpur	2,500	7
Maikoti	1,500	4
Bamoli	1,400	11
Malkoti	1,400	9
Kandhar	1,300	6
Guar	800	6
Devtaoli	700	6
Total		70

Methodology

The methodology adopted for the study was based on interviews of women having knowledge of medicinal plants of their area (Fig. 5). The documentation was done based on interview, informal discussion and observation. Group discussion among women of different age groups was also taken into consideration for generating the information. The information thus collected and documented as local name of the plant, parts used in disease, habitat and status in the area. Field trips were made to the villages from December 2002 to June 2003. Two to three attempts were undertaken in each village for the interview and discussion,

to gather maximum information of the plants used in the local medicine.

Results and discussion

A total of 70 women were interviewed in 11 different villages on the basis of their indigenous knowledge of the surrounding medicinal plants. A total of 113 medicinal plant species were recorded after conducting the survey and having discussion with women of different age groups. During the survey it was found that most of the women of the study area use medicinal plants for various therapeutic purposes in their day-to-day life for primary healthcare. The respondents were 20-65 yrs of age. A large number of (63%) respondents were educated and remaining (37%) were illiterate and they were keen to provide the information and transferring the indigenous knowledge of medicinal plants from one generation to other. It was found that the young women had less information on indigenous knowledge but they were most sensitive to conserve their knowledge and biodiversity of this area.

The study reveals that local people still depend on a number of plants for their daily needs specially medicines. Among 113 identified medicinal plants most of them are commonly found near village surroundings, wasteland, and forest area. The community near village surroundings plants some tree species, which are chiefly used for curing stomach pain, fever, cold & cough, bleeding & wounds, fungal infection, burns, rheumatic pain, and insect bite. Plants used by the respondents are tabulated in alphabetical order of plant name, local name and uses (Table 2).

Uttaranchal has tremendous potential for medicinal plants cultivation and it can become one of the important options for sustainable livelihood for the hilly area. About 300 medicinal plants species have been documented from Uttaranchal, indicating its potential as a herbal state and for strengthening herbal-based industry in this region⁹. New approaches of biotechnology and conservation strategy can help preserve and utilize the indigenous knowledge of medicinal plants for humankind.

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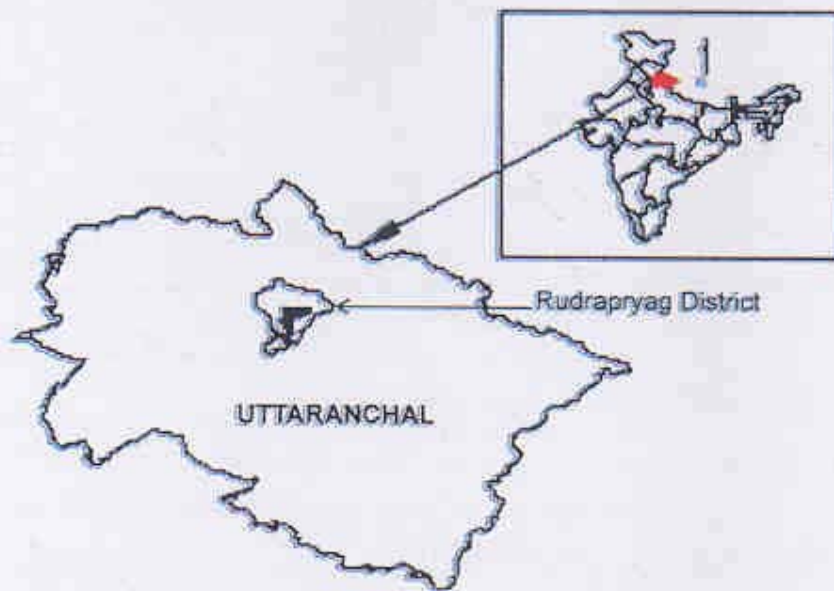


Fig. 1 Location Map of Rudrapur District, Uttarakhand



Fig. 2 Study area landscape



Fig. 3 *Aconitum heterophyllum* Wail. ex Royle



Fig. 4 *Asparagus adscendens* Roxb.



Fig. 5 Group meeting and documentation

Table 2—List of medicinal plant species used against various human ailments

Botanical Name	Local Name	Uses
<i>Abrus precatorius</i> Linn.	<i>Rattidana</i>	Roots used to cure ulcer and rheumatic pain.
<i>Acacia catechu</i> Willd	<i>Kher</i>	Root paste is applied for curing ulcer.
<i>Aconitum heterophyllum</i> Wallich ex Royle	<i>Aatis</i>	Root is useful for high fever and other stomach problem.
<i>Acorus calamus</i> Linn.	<i>Baj</i>	Rhizome is used in the treatment of stomachache, fever, asthma, epilepsy and dysentery. Rhizome extract is also used as nervine tonic.
<i>Adhatoda vasica</i> Nees	<i>Basingu</i>	Flowers with honey are useful for the treatment of bronchitis, asthma, cough and cold.
<i>Aegle marmelos</i> (L.) Correa	<i>Bel</i>	Fruit pulp is useful in chronic cases of stomachache and dysentery.
<i>Aloe vera</i> Linn.	<i>Patvaar</i>	Leaf paste is applied on burns.
<i>Amaranthus spinosus</i> Linn.	<i>Kadya sagoti</i>	Warm root paste, peach seed and salt are applied on unhealthy ulcers.
<i>Angelica glauca</i> Edgew.	<i>Chora</i>	Root is used in toothache, stomachache and gastric problem.
<i>Argemone mexicana</i> Linn.	<i>Kandaru</i>	Root paste is applied for insect bite and useful in fever.
<i>Arisaema intermedium</i> Blume	<i>Bagmungari</i>	Roasted fruit paste is useful for burns.
<i>Arisaema tortuosum</i> (Wallich) Schott.	<i>Nagdaman</i>	Tuber paste is applied in rheumatism. Dry tuber is used for breathing problems.
<i>Artemisia wallichiana</i> Besser	<i>Kundju</i>	Leaf paste is useful for skin infection, ringworm and wound. Leaf juice is used for earache.
<i>Asparagus adscendens</i> Roxb.	<i>Ghirunu</i>	Root extract is used as tonic in dysentery and general debility. Plant paste is applied for cooling the body temperature.
<i>Barleria cristata</i> Linn.	<i>Kularkattya</i>	Leaf paste is applied on cuts as antiseptic.
<i>Bauhinia vahlii</i> W. & A.	<i>Malu</i>	Root is used as toothbrush in pyorrhoea.
<i>Bauhinia variegata</i> Linn.	<i>Kachnar</i> <i>Kurail</i>	Leaf paste is used in skin diseases. Bark powder is useful in blood pressure.
<i>Berberis lycium</i> Royle	<i>Kingod</i>	Rootstock is used as antiseptic, blood purifier, in conjunctivitis and urogenital disorders.
<i>Bergenia ciliata</i> (Haw.) Sternb.	<i>Silphodi</i>	Root extract is used for the treatment of kidney stone, diabetes and heart problem. Root paste used for swelling and body pain.
<i>Bistorta affinis</i> (D.Don) Greene	<i>Kukdi</i>	Root paste is applied on forehead to control fever. Root stock is used in stomachache.
<i>Boerhavia diffusa</i> Linn.	<i>Pundari</i>	Root is applied on wounds and swelling.
<i>Butea monosperma</i> (Lamk.) Taub.	<i>Dhak /Plash</i>	Seeds, flowers and gum are used in the treatment of dysentery, roundworm and ringworm. Gum mixed with water is useful for body swelling and wounds.
<i>Callicarpa macrophylla</i> Vahl	<i>Daiya</i>	Leaves are used for rheumatic pain.
<i>Cannabis sativa</i> Linn.	<i>Bhang</i>	Leaf paste is used for cuts, skin ulcer and insect bite.
<i>Cassia tora</i> Linn.	<i>Chakunda</i>	Seed powder decoction is given as tea in stomachache, cough and cold.
<i>Celastrus paniculatus</i> Willd.	<i>Malkangi</i>	Oil is applied in arthritis.
<i>Centella asiatica</i> (L.) Urban	<i>Brahmi</i>	Plant paste and juice are used in mental weakness and skin diseases.

(Contd)

Table 2—List of medicinal plant species used against various human ailments—Contd

Botanical Name	Local Name	Uses
<i>Centipeda minima</i> Benth.	<i>Nakh-chhiki</i>	Seed is put in the nose to sneeze to clear blocked nose. Plant paste taken with butter is useful in gastric problem.
<i>Cinnamomum tamala</i> (Ham.) Nees ex Eberm	<i>Kikhudu/ Dalcheenee/ Tejpatra</i>	Leaf is useful in blood pressure and digestion.
<i>Cleome viscosa</i> Linn.	<i>Jakhiya</i>	Seeds are used as carminative and are useful in high blood pressure.
<i>Cocculus hirsutus</i> Linn.	<i>Pahari</i>	Root, stem and leaf juice is given in fever.
<i>Colebrookia oppositifolia</i> Sm.	<i>Bindu</i>	Leaf juice is useful for eye injury.
<i>Coriandrum sativum</i> Linn.	<i>Dhaniya</i>	Leaf and fruits are used as condiment. Leaf paste is applied in skin disease.
<i>Cucumis sativus</i> Linn.	<i>Kakdi</i>	Seed paste mixed with water is useful in urinary problem.
<i>Cuscuta europaea</i> Linn.	<i>Akashbail</i>	Plant juice is used in skin disease.
<i>Cynodon dactylon</i> (L.) Pers	<i>Dhoob</i>	Plant juice is used for fever and burning sensation.
<i>Cynoglossum lanceolatum</i> Forsk.	<i>Lichkuru</i>	Root is useful in ulcers.
<i>Cynoglossum zeylanicum</i> Thub. Ex Lehm.	<i>Rajpatti</i>	Leaf paste is applied on wounds and ulcer. Juice is useful for the treatment of earache.
<i>Cyperus rotundus</i> Linn.	<i>Morya</i>	Root powder is useful to control fever.
<i>Datura stramonium</i> Linn.	<i>Dhatura</i>	Leaves, flowers and seeds are used for the treatment of bronchitis, asthma and cough. Seed paste with hot Leaf is applied to control body swelling.
<i>Dioscorea bulbifera</i> Linn.	<i>Genthe</i>	Tuber is used as tonic, for diabetes, skin diseases and burns.
<i>Diplocyclos palmatus</i> L. Jeffrey	<i>Shivlingi</i>	Fruit is used for cooling body temperature.
<i>Emblica officinalis</i> Gaertn.	<i>Amla</i>	Fruit are useful for digestive system, cough, high blood pressure and asthma.
<i>Equisetum debile</i> Roxl.	<i>Sarsyot</i>	Plant paste is used in gums to control pyorrhoea.
<i>Eupatorium adenophorum</i> Spr.	<i>Basya</i>	Leaf paste is applied on cuts and wounds. Paste mixed with mustard oil is useful for ulcer.
<i>Euphorbia royleana</i> Boiss	<i>Surae</i>	Latex is used for earache.
<i>Evolvulus nummularis</i> Linn.	<i>Harajhaad</i>	Leaf paste mixed with oil is applied for skin infection.
<i>Ficus bengalensis</i> Linn.	<i>Bad/Bargad</i>	Bud paste mixed with curd is applied on burns.
<i>Ficus glomerata</i> Roxb.	<i>Umaru/Gular</i>	Latex mixed with milk is prescribed in rickets.
<i>Ficus palmate</i> Forsk.	<i>Bedu</i>	Latex is used to control bleeding wounds.
<i>Ficus religiosa</i> Linn.	<i>Pepal</i>	Ash of the bark is applied on swelling. Fruits are beneficial in leucorrhoea.
<i>Ficus cuneata</i> Wall.	<i>Khaino</i>	Ripe fruits are useful in fever.
<i>Fumaria indica</i> (Hausk.) Pugsley	<i>Pitphapara</i>	Leaf paste is useful for headache and fever.
<i>Galium aparine</i> Linn.	<i>Kurighass</i>	Plant juice is applied on cuts and wound.
<i>Galium pauciflorum</i> Bunge.	<i>Kumaya</i>	Leaf paste is useful in cuts.
<i>Gentiana kurroo</i> Royle	<i>Neilkanthi</i>	Leaf powder mixed with oil is applied on ulcer and fungal infection.
<i>Geranium wallichianum</i> Don. Ex Sw.	<i>Mundailo</i>	Leaf and root paste is applied as antidandruff.

(Contd)

Table 2—List of medicinal plant species used against various human ailments—*Contd*

Botanical Name	Local Name	Uses
<i>Girardinia diversifolia</i> (Link.) Fries	<i>Dhond kandali</i>	Root and Leaf paste is applied on ulcers.
<i>Gloriosa superba</i> Linn.	<i>Langali/ Kukadmakri</i>	Rhizome and seeds are used for the treatment of chronic ulcer and parasitic skin disease.
<i>Glycine max</i> (L.) Merr	<i>Kala bhatt</i>	Seed paste is useful for eyesores.
<i>Gnaphalium polycaulon</i> Per.	<i>Bukhlu</i>	Plant ash mixed with coconut oil is applied on burns.
<i>Hedychium spicatum</i> Ham. Ex Smith	<i>Jangali haldi</i>	Rhizome is used in blood purification and rheumatic pain.
<i>Hordeum vulgare</i> Linn.	<i>Jau</i>	Leaf juice is useful for cataract.
<i>Impatiens balsamina</i> L. Ed.	<i>Balsam/Majethi</i>	Leaf paste is externally applied in burns.
<i>Jatropha curcas</i> Linn.	<i>Pahari arand/ Lankabel</i>	Seeds are used to check vomiting but taken in large quantity is harmful.
<i>Juglans regia</i> Linn.	<i>Akhrot</i>	Root bark and branches are used for cleaning of teeth. Fruit peel is useful for the treatment of ringworm.
<i>Leucas mollissima</i> Wall ex Benth.	<i>Upanya</i>	Leaves are used as insect repellent.
<i>Lyonia ovalifolia</i> (Wall.) Drude	<i>Aiyaar</i>	Leaf paste is applied in allergy and fungal infection.
<i>Mallotus philippensis</i> (Lamk.) Muell.Arg.	<i>Ruenau</i>	The red outer layer of fruits is used for the treatment of intestinal worms and parasitic skin diseases.
<i>Melia azedarach</i> Linn.	<i>Dainkan</i>	Leaf, seeds, bark and root boiled in oil are applied for treating skin disease.
<i>Mentha longifolia</i> Linn.	<i>Ban Pudina</i>	Leaves are used in indigestion, vomiting, cough and cold.
<i>Micromeria biflora</i> (Don.) Benth.	<i>Gorkapaan</i>	Leaf power mixed with oil is useful in ulcer and fungal infection.
<i>Mucuna pruriens</i> (L.) DC.	<i>Kaunch</i>	Root is used in nervous disorder and paste used in skin disease.
<i>Murraya koenigii</i> Spreng.	<i>Currypatta/ Gandalu</i>	Leaves are used as condiment, in high blood pressure and diabetes.
<i>Musa paradisiacal</i> Linn.	<i>Kaila</i>	Soft part of stem is useful to control abortion.
<i>Myrica esculenta</i> Ham.ex D.Don	<i>Kafal</i>	Stem bark powder is used for cough.
<i>Origanum vulgare</i> Linn.	<i>Jungali tulsi</i>	Leaf paste is applied for skin diseases, insect bite and earache. Leaf with hot water is useful for cough and cold.
<i>Oxalis corniculata</i> Linn.	<i>Khatibuti/ Tipati</i>	Leaf paste is applied on skin ulcer and wound.
<i>Paeonia emodi</i> Wall.	<i>Dhandura</i>	Leaf as vegetable is used for high fever.
<i>Perilla frutescens</i> Linn.	<i>Bhangzeera</i>	Leaf juice is used in earache.
<i>Pinus roxburghii</i> Sarg	<i>Kulai/Cheer</i>	Resin is used as crack cream. Pollen dust and resin with water is useful for cancer and tuberculosis.
<i>Plantago major</i> Linn.	<i>Esabgol</i>	Used for digestion.
<i>Pongamia pinnata</i> (L.) Pierre	<i>Karanjua</i>	Root and stem paste is used for curing ulcer.
<i>Potentilla fulgens</i> Wall. Ex Hk.F.	<i>Bjardanti</i>	Leaf paste is used in mouth ulcer.
<i>Prunus armeniaca</i> Linn.	<i>Choole</i>	Seeds paste mixed with water is given to children in stomachache.
<i>Prunus cerasoides</i> Don.	<i>Painya</i>	Boiled bark in water is useful for swelling.
<i>Pyracantha crenulata</i> (Don) Roem	<i>Ghangara</i>	Leaf paste is applied on burns.

(Contd)

Table 2—List of medicinal plant species used against various human ailments—Contd

Botanical Name	Local Name	Uses
<i>Pyrus pashia</i> Buch. Ham ex Don.	<i>Molu</i>	Fruit juice is used in eye injury.
<i>Quercus leucotrichophora</i> Camus	<i>Baanj/Bandalis</i>	Dry resin with water is taken for stomach pain.
<i>Rheum australe</i> D. Don	<i>Dolu/Archu</i>	Root paste is applied on swelling and wounds.
<i>Rhododendron arboreum</i> Sm.	<i>Burans</i>	Flower juice is useful for blood pressure.
<i>Ricinus communis</i> Linn.	<i>Arand</i>	Root and bark are used for asthma, bronchitis and skin diseases. Fruits are used to cure jaundice. Leaf with hot steam is applied for knee pain.
<i>Rubus ellipticus</i> Sm.	<i>Hisool</i>	Root paste is applied on ulcer and skin infection.
<i>Rumex hastatus</i> Don.	<i>Almoda</i>	Leaf paste is applied for fungal infection.
<i>Sapium insigne</i> (Royle) Benth.	<i>Khennu</i>	Leaf paste is used on burns.
<i>Sida rhombifolia</i> Linn.	<i>Bhuanlya</i>	Root juice is useful for children in stomachache.
<i>Solanum nigrum</i> Linn.	<i>Geahwai</i>	Leaf paste and branches are used in jaundice and high fever.
<i>Solanum surattense</i> Burm.	<i>Biskandaru/ Kantkari</i>	Root paste is applied on ulcer. Fruits are useful in jaundice.
<i>Stephania glabra</i> (Roxb.) miers	<i>Gindaru</i>	Root powder is used for cooling body temperature.
<i>Syzygium cumini</i> Linn.	<i>Jamun</i>	Seed powder is used in diabetes; bark with milk is used for curing of excessive menstruation. Ripe fruits are useful for stone.
<i>Tagetes minuta</i> Linn.	<i>Gainda</i>	Boiled Leaf juice is useful for earache.
<i>Taraxacum officinalis</i> Weber.	<i>Kadvae</i>	Rootstock is used in high fever.
<i>Terminalia arjuna</i> (Roxb. Ex Dc.)	<i>Arjuna/Aseen</i>	Stem bark mixed with honey is useful for high blood pressure and heart disease.
<i>Terminalia bellirica</i> (Gaertn.) Roxb	<i>Bahera</i>	Fruits are used in cough, fever, dropsy and stomach disorder.
<i>Terminalia chebula</i> (Gaertn.) Retz.	<i>Harad</i>	Fruits are used in urinary diseases, asthma, cough, enlargement of liver, worms, dysentery and fever.
<i>Tinospora cordifolia</i> (Willd.) Hook.f. & Th.	<i>Giloya</i>	Root powder is eaten for high blood pressure, fever and weakness. Root powder mixed with honey is prescribed in cough.
<i>Urtica dioica</i> Linn.	<i>Kandali</i>	Leaf is used for menstrual disorders, paralysis, diabetes and arthritis.
<i>Valeriana jatamansi</i> Jones	<i>Sumaya</i>	Root extract is given in nervous disorder and fits. Leaf juice is useful for stomachache.
<i>Verbascum thapsus</i> Linn.	<i>Hamaku</i>	Leaf paste is applied on ulcer.
<i>Viola pilosa</i> Blume	<i>Banfsha</i>	Flowers are used in the treatment of cough, liver disorders, kidney disease and sore throat.
<i>Vitex negundo</i> Linn.	<i>Siwali/Nirgundi</i>	Boiled leaf is applied on wounds. Leaf as vegetables is useful in paralysis. Stem paste is used to control fever and juice for gallbladder problems. Leaf with hot water is useful for rheumatic pain.
<i>Woodfordia fruticosa</i> (L.) Kurz	<i>Dhaua</i>	Dried flowers are used in dysentery.
<i>Zanthoxylum armatum</i> DC.	<i>Timru</i>	Bark, fruits and branches are used for toothache. Branches are used as toothbrush and in gum troubles.

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