



Research Article

USE OF HERBAL DRUGS IN LOCAL HEALTH TRADITIONS IN PURNAGIRI HILLS, DISTRICT CHAMPAVAT, UTTARAKHAND

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ABSTRACT

The state Uttarakhand is rich with floral and faunal diversity including plants used by local inhabitants to cure health problems. Himalayan region always has been the treasure of herbs from ancient time. Himalayan herbs are highest in quality and potency. There are numbers of side effects noted using allopathic medicines which leads towards reuse of medicinal plants available locally. Keeping this in view an attempt has been made to enumerate the common medicinal plants used in traditional therapeutic system of Uttarakhand, India. Results reveal that 29 plant species are used for primary healthcare.

Purnagiri hills located in Champavat district of Uttarakhand is reservoir for a large number of medicinal herbs during the field survey large number of medicinal plants like *Adina cordifolia* (Roxb.) Hook. (Rubiaceae), *Asparagus adscendence* Roxb. (Liliaceae), *Artemesia nilgirica* (Clarke) Pamp. (Asteraceae), *Berberis aristata* DC. (Berberidaceae), *Colebrookea oppositifolia* Sm. (Lamiaceae), *Elephantopus scaber* L (Asteraceae), *Pinus longifolia* Roxb. (Pinaceae), *Tamarix gallica* L. (Tamaraceae), *Urtica dioica* L. (Urticaceae) and many more with their use in local health traditions by local habitants were recorded. One of the serious challenges to biodiversity and ecological functioning is climate change. Climate change and global warming are well known issue that has had an impact on the biodiversity. Second thing over exploitation of Himalayan forest leads these valuable herbs in endangered category. Some of the plants recorded are critically endangered and rare. We have to pay attention towards the conservation, cultivation of these herbs.

INTRODUCTION

Ayurveda is a research oriented medical science, which focused on curing disease and keep health at its optimum simultaneously. *Dravyaguna* is the complete science of medicinal plants.

Every plant tells a story of fighting for survival of fittest and medicinal herbs are the mirror of human health till now. Interest of man about his environment especially about plants and animals is as old as human race and its civilization.

During the last two to three years, disease outbreak has increased. In this pandemic situation, the world moves on towards the Ayurvedic medicine and getting advantages of holistic approach and alternative medicine and realizes better work of complementary medicine without any side effect.

In spite of regular change in the life style of people, there are a large number of tribal communities/native people still utilizing the plant resources as medicine occurring in their surrounding vegetation. They are well equipped with the folklore of vegetable drugs. WHO has estimated that 80% of the people in the world rely on traditional medicine including Ethno-medicine for primary health care needs.

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Health Concerns in Current Scenario

The saga of evolution and development of civilization is the story of enhancing performance and efficiency of mankind. A long healthy life has been the cherished goal of man since antiquity. A number of human and prayers are in Indian Scriptures including *Vedic* texts devoted to healthy living and longevity. There are prayers to promote rejuvenation, healing and regeneration of tissues i.e., *Dhatus* in the body. In addition to the rejuvenation of tissues, mention is made to the important nature of the *Jiva* or soul and its eternal transformation and rebirth. The *Vedic* concepts of rejuvenation, longevity and immortality are the basic philosophical concepts in Ayurveda. These concepts are embodied in *Naisthiki cikitsa*, *Rasayana* and *Vajikaran*, the procedures and the drugs meant for promotion of health in otherwise healthy persons.

In current scenario the gap created between the reservoir of plant and the holistic approach of Indian system of medicine is increasing day by day. This is need of the hour to form close connection between man and alternative system of medicine.

Area of Study

Purnagiri Hills, District Champawat, Uttarakhand.

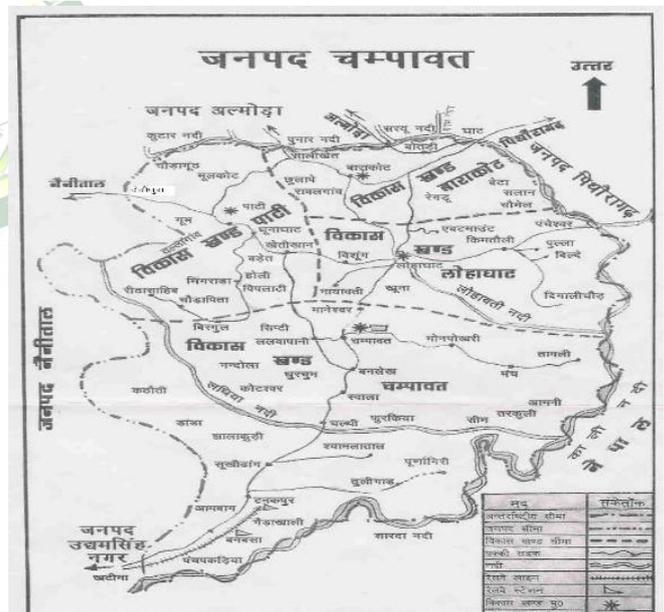
Purnagiri is a Tehsil of district Champawat of Uttarakhand state in Northern India. Tanakpur is the Tehsil head quarter. This Tehsil consists of about 80 villages of eastern Kumaon division. *Purnagiri* is located at 29.816° N, 80.115° E. It has an average elevation of 776 meters. Main *Purnagiri* village is 20km from Tanakpur where famous *Purnagiri Mata Mandir* is situated on the river side of Kali Nadi.

Forests of Purnagiri, District-Champawat

Uttarakhand is one of the youngest states of India which was carved of Uttar Pradesh on 9th Nov 2000. It is situated 28°43'N to 31°8'N latitude & 77°35'E to 81°02'E longitude. It is surrounded by Himachal Pradesh in West, Uttar Pradesh in South, Nepal in East and China and Tibet in the North. Its total geographical area is 53,484.00sqkm. *Purnagiri* hill range in *Purnagiri* tehsil forms an enclosure for the various flora and fauna that thrives in this range. *Kali/Sharda* is the main river of *Purnagiri* Hills which separates Champawat from Nepal.

Region / Teshil	<i>Purnagiri</i>
Dist.	Champawat
Area Total	471 sq km
Total villages	79
Population (2011)	73143
Male	37819
Female	35324
Rural	47527

Urban	25616
Density	155 per sq.km
Language (Official)	<i>Hindi</i>
Precipitation	1571mm
Avg. Summer temp.	31.3°C
Avg. winter temp.	15.5°C
River	<i>Sharda, Kali</i>



METHODOLOGY

Field visits were undertaken in and around the proposed study area. Systematic and frequent field visits and surveys were carried out to the study area at regular intervals from May 2019 to March 2021. Surveys were conducted in the villages of the study area for collection of data regarding the drugs used in local health traditions.

The informants were identified and interviewed. Information's were also counter checked with different people having knowledge of traditional healthcare. Selected informants were asked to name

medicinal plants, local names, habitat, mode of administration, route of administration, ethno-medicinal uses in human being and animals at the time of collection. In order to rule out dubious outcomes, the plant specimens (fresh plant species) were collected in flowering and fruiting stage.

Two basic approaches were carried out to study the traditional knowledge. The first approach, which was called 'Inventory including survey of study area, collection of plant specimens and the second approach which is called 'Interview involves asking questionnaire about the local name and medicinal uses of plants by the local dwellers of Purnagiri hills of Uttarakhand. The collected specimens of plant species were shown to the local peoples and asked for their knowledge about the plants. Both the approaches were repeated with traditional healers, knowledgeable persons and elders.

Plant Identification

All plants specimens were photographed and collected. The local people were also requested to accompany the scholar for in situ identification of plants in the forest and collection of specimens for herbarium preparation. Specimens were collected, numbered, documented and pressed. Herbaria were prepared following usual methods of herbarium preparation (Jain & Rao)' and preserved. Collected plant specimens were identified with the help of Supervisor, Co-supervisor and regional floras.

As most of the traditional healers were illiterate, structural interviews were conducted using a series of predetermined semi structured and close ended questionnaire (Annexed). About 30 local informants were interviewed (List annexed). The recorded plant species have been tabulated in the chapter Enumeration of Herbal Drugs in alphabetical order of their botanical names. Plants have been described in the chapter observation under following headings.

- Local name, Hindi name, Sanskrit name/Ayurvedic name, botanical name and their family
- Distribution
- Habits
- Medicinal and dietary uses.
- Ethno-veterinary uses
- Parts used therapeutic and dietary properties.
- Pharmaco-therapeutic properties and indication of plant drugs as per Ayurveda
- Modern therapeutic indication (if available).

RESULTS

The study area is rich in ethno-biodiversity and traditional knowledge regarding use of plants in local health traditions due to their close affinity with the nature. Medicinal plants form the basis of traditional system of healthcare and majority of remotely located people maintained it. The proposed study reported and documented 29 plants species. The plant have been presented with local name, botanical names, family, habit, part used, therapeutic preparations, route of administration and indication in disease (Table 1).

Table 1: Therapeutic Use of Plants Reported in LHTs

S.N.	Local Name	Botanical Name	Family	Habit	Part Used	Therapeutic preparations	Route	Disease indications in LHTs
1	Kanghi	<i>Abutilan indicum</i> ¹ Sw. Hort.	Malvaceae	Sh.	Rt, Lf, Rt-Bk, Sd	Decoction, paste, powder, as vegetable	Oral, local	Uterine Haemorrhage, Hydrocele, penile ulcer, fever, gout, bronchitis, piles
2	Basa	<i>Adhatoda vasica</i> ² Nees.	Acanthaceae	Sh.	Lf, Wp	Decoction, paste, hot infusion, powder	Oral, Local	Chronic cough, dermatitis, fever, hyper acidity.
3	Haldu	<i>Adina cordifolia</i> ³ (Roxb.) Hook. f.	Rubiaceae	T.	Lf, St-Bk	Decoction, paste, oil, powder	Oral, Local	Dysentery, diarrhoea, body ache, boils, abscess, otitis media, hypertension, dermatitis
4	Douna	<i>Artemesia nilgirica</i> ⁴ (Clarke) Pamp	Asteraceae	H.	Lf, Fl, Rt, Wp	Decoction,	Oral	Asthma, dysmenorrhoea, intestinal worms, malarial fever
5	Dholi Musli	<i>Asparagus adscen-denes</i> ⁵ Buch.Ham. Ex Roxb	Lilaceae	U. Sh.	Rt	Decoction, powder	Oral	General debility, as galactogouge, nourishing & aphrodisiac, dyspepsia
6	Katsaraiya	<i>Barleria</i>	Acanthaceae	U. Sh.	Rt, Wp	Decoction, paste	Oral,	Dysuria, inflammation, wounds, burns, gingivitis,

S.N.	Local Name	Botanical Name	Family	Habit	Part Used	Therapeutic preparations	Route	Disease indications in LHTs
		<i>cristata</i> ⁶ L					Local	Urolithiasis, whooping cough, liver disease.
7	Kilmode	<i>Berberis aristata</i> ⁷ DC	Berberidaceae	Sh.	Lf, Wp	Decoction, water extract, paste	Oral, Local	Inflamed eye, stye, rhinitis, common cold, leucorrhoea, piles, burn, psoriasis, diabetes.
8	Gadpurn	<i>Boerhaavia diffusa</i> ⁸ L. nom. Cons	Nyctaginaceae	H.	Lf, Rt, Wp	Decoction, juice, paste, powder	Oral, local	Generalized oedema, jaundice, anemia, fractured bone, urticaria, asthma
9	Patha	<i>Cissampelos pareira</i> ⁹ L.	Menispermaceae	Sh.	Lf, Rt, Wp	Decoction, paste	Oral, local	Dysentery, joint inflammation, fever, diarrhoea, cholera, cough
10	Morebel	<i>Clematis gouraina</i> ¹⁰ Roxb. ex. DC.	Ranunculaceae	Cl.	Rt, Lf, Wp	Decoction, paste	Oral, local	Blood borne diseases, splenomegaly, conjunctivitis, headache, muscular pain, pimples, wounds
11	Binda	<i>Colebrookea oppositifolia</i> ¹¹ Sm.	Lamiaceae	Sh.	Rt, Lf,	Decoction, poultice, paste, juice	Oral, local	Epilepsy, muscular pain, check bleeding, (haemostatic), wound, headache, fractured bone, cataract, sore throat.
12	Nimbu ghas	<i>Cymbopogon citratus</i> ¹² (DC) Stapf.	Poaceae	H.	Lf, Fl	Decoction	Oral	Cholera, common cold, rheumatism, diarrhoea, stomachitis.
13	Sissam	<i>Dalbergia sissoo</i> ¹³ Roxb	Fabaceae	T.	Lf,	Powder,	Oral	Bleeding piles, bleeding gums, chronic cough.
14	Bishri	<i>Elephantopus scaber</i> ¹⁴ L.	Asteraceae	H.	Rt, Lf, WP	Paste, powder, decoction	Oral, local	Wound healing, aphrodisiac, liver disease, Oliguria, chronic cough
15	Dudhi	<i>Eurphobia hirta</i> ¹⁵ L.	Euphorbiaceae	H.	Lf, Wp, Rt	Decoction, juice; paste powder, poultice	Oral, local	Dysentery, abdominal cramps, asthma, bronchitis, warts, piles, fissure, nausea and vomiting, abscess, boils.
16	Kurchi	<i>Holarrhena antidysenterica</i> ¹⁶ (L.) R.Br.	Apocynaceae	S.T.	St-Br, Fl, Fr, Lf	Decoction, powder	Oral, local	Amoebic dysentery, colic, dyspepsia, leprosy, worm infestation, erysipelas diarrhoea, pyorrhea, bleeding gums
17	Dudhibel	<i>Ichnocarpus frutescens</i> ¹⁷ (L.) R.Br.	Apocynaceae	Cl.	Rt, Lf	Paste, powder, decoction,	Oral, local	Scabies, bleeding gums, urticaria, rheumatism
18	Guma	<i>Leucas cephalotes</i> ¹⁸ (Roth) Spreng.	Lamiaceae	H.	WP	Decoction, juice, paste	Oral, local	Malarial fever, acid eructations, infertility, snake bite
19	Katnimb	<i>Murraya koenigii</i> ¹⁹ (L.) Spreng.	Rutaceae	L. Sh.	Lf, St-Bk,	Decoction, powder, paste, juice	Oral, local	Piles, wound healing, orodental hygiene, dental pain, dysentery, diarrhoea, renal pain, blood purifier
20	Sarala	<i>Pinus longifolia</i> ²⁰ Roxb	Pinaceae	T.	Sd, Lf, oil	Powder, oil, decoction,	Oral, local	Physical strength, bronchitis, asthma, csom, scabies, sciatica, joint inflammation, intestinal worms, bloating of stomach

S.N.	Local Name	Botanical Name	Family	Habit	Part Used	Therapeutic preparations	Route	Disease indications in LHTs
21	<i>Sarpat</i>	<i>Saccharum munja</i> ²¹ Roxb	Gramineae	H.	Lf, Rt, Wp	Decoction	Oral	Headache, urine incontinence, renal stone.
22	<i>Kalyani bel</i>	<i>Sida cordata</i> ²² L.	Malvaceae	H.	Rt, St-Bk, Lf, Sd	Decoction, poultice powder,	Oral, local	Indigestion, stomach ache, pruritis, blood purifier, abscess and boils, leucorrhoea.
23	<i>Bala</i>	<i>Sida rombifolia</i> ²³ L.	Malvaceae	U.Sh.	Rt, Wp, Rt-Bk, Lf,	Decoction, Paste, powder, poultice, oil	Oral, Local	General debility, Spermatorrhoea, leucorrhoea, dub, bleeding piles, incised wound, frozen shoulder, rheumatism, joint pain
24	<i>Katelhi</i>	<i>Solanum viarum</i> ²⁴ Dunal.	Solanaceae	H.	Sd, Wp, Rt, Lf,	Powder, decoction, paste, juice	Oral, local	Intestinal worms, chronic cough, asthma, catarrhal fever, rheumatism.
25	<i>Sadhi</i>	<i>Sonchus arvensis</i> ²⁵ L.	Asteraceae	H.	Lf, Rt WP, Ltx	Decoction, paste, powder	Oral, Local	Renal stone, urine incontinence, liver disease, abdominal pain, acne, ringworm
26	<i>Jhabuk</i>	<i>Tamrix gallica</i> ²⁶ L.	Tamaricaceae	Sh.	Rt, Lf, Fl, WP	Powder, paste, decoction	Oral, Local	Diarrhoea, ringworm, leucoderma, dandruff, dental carries, premature ejaculation.
27	<i>Sadahari</i>	<i>Tridax procumbens</i> ²⁷ L.	Asteraceae	H.	Lf, Rt, WP	Juice, paste, decoction	Oral, local	Abrasion, pruritis/dermatitis, fungal infections, haematuria, wound healing.
28	<i>Kandali</i>	<i>Urtica dioica</i> ²⁸ Linn	Urticaceae	H.	Wp, Rt, Lf,	Powder, decoction paste, juice, dietary preparation	Oral, local	Menstrual pain, pregnancy pain, renal stone abdominal pain, bleeding piles, asthma.
29	<i>Jangali Chaulai</i>	<i>Amaranthus spinosus</i> ²⁹ L.	Amaranthaceae	H.	Lf, Rt, Sd, Fl, Wp	Juice, paste, decoction, powder	Oral, local	UTI, constipation, skin disorder, urine incontinence, renal stone, flatulence

Abbreviations: Rt-Root, Lf-Leaf, Wp- Whole plant, Fr- Fruit, Fl- Flower, Sd- Seed, Bk- Bark, Gm - Gum, St- Stem, H- Herb, Sh- Shrub, U. Sh- Under shrub, T-Tree, Cl- Climber





Field visits with Teachers & Traditional Healers

DISCUSSION

During the course of study, total of 29 plant species were reported to be used in local health traditions and maximum of them are herbs, which indicates that herbaceous plants are more popular medicine in local health traditions in Purnagiri hills and surrounding area. In the area of study, herbaceous plants grow luxuriously in forest as well as along Sharda River.

29 plant species reported to be used in local health traditions belong to 20 families and 29 genera. This finding gives the glimpse of floral bio-diversity in study area. Maximum number of herbal drugs used in local health traditions have been identified as classical drugs described in Ayurvedic texts. Maximum number of uses of these drugs in local health traditions have been mentioned in classical texts which indicate that either ethno-medicinal uses have been borrowed from classical texts of Ayurveda or they have been incorporated to the classical texts from local health traditions.

Out of 29 plant species reported to be used in local health traditions, maximum number were herbs, mostly occurring in the vicinity of habitation (villages) of traditional healers. Data reflects that plant, which are easily available with least effort are used for primary health care most frequently.

Family-wise analysis of the plant drugs reported to be used in L.H.Ts reveals that 29 plant species are distributed into 20 families. Maximum number of (04) plants belong to family Asteraceae, followed by Malvaceae (03). The data shows that Asteraceae is the predominant family in local flora.

Use of herbal drugs in primary health care in study area reveals that utilization pattern of herbs resembles with use of the drugs described in classical

text of Ayurveda. Therapeutic uses of the drugs have been supported by classical texts like Caraka Samhita, Sushruta Samhita, Astanga Hridaya, Dhanvantari Nighantu, Kaiyadev Nighantu, Bhav Prakash Nighantu and many more.

Some uses of medicinal plants in L.H.Ts have not been supported by classical texts and appear to be relatively new indications. These uses of herbal drugs in local health traditions have been experimented by local people and require further validation in clinical studies. These indications, if found effective may be incorporated in Ayurvedic Pharmacopeia.

Out of 29 plant species reported being used in local health traditions, 09 plant species either have not been described in classical texts or their classical identities could not be established. This needs thorough investigation of classical text and extensive efforts towards identification of unidentified/lesser known classical drugs.

In study area, 82 disease conditions have been reported to be treated with the use of 29 plants species. Maximum number of plant species (11) reported to be used for joint pain and inflammation reflects that predominance of joint pain and inflammation in the area due to changing lifestyle and consumption of spicy food articles followed by gut troubles (07) species, wound healing (07) species, asthma (06) species, chronic cough (06) species, oral hygiene (06) species, dysentery (06) species, diarrhoea (06) species, bleeding piles (05) species, fungal infection (05) species, Liver disease, rheumatism, and worm infestation each (04) plant species, abscess and boils, dermatitis, fever, headache, leucorrhoea, renal stone, urine incontinence each (03) plant species. This analysis also reveals the predominance of disease.

Analysis of the data from therapeutic indications of the plant drugs reveals that maximum of plant species have been used for the ailments of digestive system and integumentary system (19 species in each) which again authenticates classical concept of use of drugs which considers that diminished digestive power (*Jatharagni*) is the sole cause of all the ailments. Third largest number of herbs is being used in the treatment of eye & ENT, musculoskeletal system (11 species each), infectious diseases and respiratory system (09 species each), excretory/urinary system and reproductive system (female) (08 species each), blood vascular and hepatobiliary system (06 species each), reproductive system (male) (05) species, thermo regulatory system (04) species, general debility and nervous system (03 species each), endocrine system (02) species, and (01) species as alexipharmic.

Leaves root, leaf and whole plant are the preferred plant parts used in therapeutic indications in local health traditions. Leaves are the most frequently used plant parts for the preparation of therapeutic formulations followed by root and whole plants. Seeds of *Abutilan indicum*, *Amaranthus spinosus*, *Pinus longifolia*, *Sida cordata*, *Solanum viarum* are used for therapeutic purposes. Seeds of *Pinus longifolia* are famous with the name of Chilgoza and are used as general tonic for the treatment of general debility. Flowers (Inflorescence) of *Amaranthus spinosus*, *Artemesia nilgirica*, *Cymbopogon citratus*, *Holarrhena antidysenterica* and *Tamarix gallica* are used for therapeutic purposes. In clinical texts, therapeutically used plant parts of *Holarrhena antidysenterica* are bark and seeds. Use of flowers of *Holarrhena antidysenterica* in local health traditions is a new finding. Similarly, leaves of *Cymbopogon citratus* are therapeutically used plant parts. Use of flowers (inflorescence) of *Cymbopogon citratus* in therapeutics is new finding. Latex of *Sonchus arvensis* is being used in the treatment of Ring worm. Use of multiple plant parts of single drug has also been reported in local health traditions.

Analysis of therapeutic preparations used in treatment of various diseases in local health traditions reveals that most of the herbs are used in fresh form some seasonal herbs having limited availability are collected dried and kept for use in off season.

Decoction is the most commonly used therapeutic formulations followed by paste (*Kalka*) (21), powder (19), juice (*Swarasa*) (19), poultice (04), oil (03), vegetable (03), hot water infusion and solidify water extract (01). Mustard oil is being used as base for oil preparations. Oil obtained *Pinus longifolia* (Terpentine oil) is also being used for therapeutic purposes.

Analysis of the data regarding root of administration reveals that out of 151 therapeutic

formulations used for treatment of 82 disease conditions 116 are reported to be used by local route. 35 formulations have been reported to be used for local application which includes paste, poultice, oil.

Maximum numbers of plants preparations have been reported to be used internally followed by external uses of the drugs. Although local people are not familiar and have no appropriate system of education in their place but their knowledge is scientific and this fact is reflected from the amalgamation of the herbal preparations. Therefore, there is an urgent need of detailed investigation and documentation of indigenous knowledge about medicinal plants and therapies which have been passed orally from generation to generation.

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