

Medicinal Plants of Sewa River Catchment Area in the Northwest Himalaya and its Implication for Conservation

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Abstract

Himalaya is known as an abode of medicinal plants. Climate and topographic diversity of the Sewa catchment area provides a variety of habitats for the luxuriant growth of potential medicinal plant species. Many of these are used by locals in remote and inaccessible areas. Continuous overexploitation, revival of the use of herbal drugs and degradation of the habitats has brought medicinal plants on priority for conservation. Keeping in view these aspects, the medicinal plant wealth of Sewa catchment has been explored and assessed by interaction with the local inhabitants and after surveying the literature. The results have been compiled in 182 plant species along with the families, common and local names, altitudinal range and their medicinal use.

Keywords: Medicinal plants, Sewa catchment, Northwest Himalaya, Conservation

Introduction

The tribal people and ethnic races throughout the world have developed their own cultures, customs, cults, religious rites, taboos, totems, legends and myths, folk tales and songs, foods and medicinal practices, etc. Numerous wild and cultivated plants play a very important and vital role among these cultures and this interrelationship has evolved over generation of experience and practices. The modern civilization is penetrating into most regions of the world still held by primitive societies. There is a steady decline in human expertise capable of recognizing the various medicinal plants.

On account of the hilly and inaccessible terrain, the local populace has been utilizing plant resources for their sustenance since early times. Some plants are used as fuel, some prove helpful in providing raw food material, and vegetables, fruit and some are used as curatives for various ailments. The observations are based on local folklore and interview of various communities and tribes of the catchment.

Himalayas are known to provide life support system to human beings, particularly due to fact that on account of remoteness and inaccessible terrain, the local populace has largely depended on local plants. Northwest Himalaya is a distinct Himalayan region with a characteristic climate, geology and flora. The

floristic diversity is fascinating because of species richness and diverse community structure. The diversity has evolved in time and space due to various geological and ecological changes, accompanied by speciation, isolation and competition. Ethnomedicinal assessment of have been made by several workers in different pockets of Himalayas (Kaul et al., 1985, 1986, 1989, 1990; Gurung, 1988; Kapur, 1989; Sharma and Singh, 1989; Amatya, 1996; Kiran et al., 1999; Samant and Dhar, 1997; Samant et al., 1998; Kiran and Kapahi; 2001; Samant and Pal, 2003; Beigh et al., 2004; Borthakur et al., 2004; Gupta et al., 2004; Kant and Dutt, 2004; Samant et al., 2007). Besides Himalaya, many workers have made notable contribution to ethnomedicinal studies of various parts of India and abroad (Brahmam and Saxena, 1990; Aswal, 1994; Brahma and Boissya, 1996; Mahatto et al., 1996; Rajendran et al., 2003; Augustine and Sivadasan, 2004; Haul and Pei, 2004; Hermans et al., 2004; Ji et al., 2004).

Study area

The Sewa catchment area is spread over 384 Km² located between latitude 32°26'38" - 32°41'00" N and longitude 75°48'46" - 75°55'38" E forming a part of Northwest Himalaya in district Kathua of Jammu and Kashmir state (India). Altitudinal gradient of the catchment varies from 578m at Mashka to 4300m at Kaplash peak. The climate varies from sub-tropical to temperate and extremely cold at higher altitudes. Depending upon the altitude, summer temperature varies from 18° - 35°C and winter temperature oscillates between 1° - 15°C.

Materials and Methods

Exploration of the study area was made fortnightly, during 2004-2006. The area was surveyed during all seasons of the year and care was taken to cover all the possible watersheds. Plant identification was done from various local, regional and national floras besides consulting taxonomic expertise of Botanical Survey of India, Northern-Circle, Dehradun and Centre for plant taxonomy, University of Kashmir. Ethnobotanical information was obtained by interacting with the local populace during exploration trips to the area and also from published literature on the plants inhabiting the study area.

Results and Discussion

The paper provides comprehensive information of the diversity, distribution and uses of medicinal plants in the study area. The study revealed that the local inhabitants of the area have sound knowledge about the use of medicinal plants available in the region. Unfortunately, they are not interested to share their traditional knowledge with others and their lore ends with the end of their life. However, after developing intimacy with some knowledgeable and experienced medicine men and other traditional healers, some information on medicinal use of the less known or the plants that have not been reported earlier, has been documented. Although, a brief account of 182 ethnomedicinal uses (Appendix-1) of plant species have been documented and verified by cross checking with the local healers, knowledgeable persons and experienced informants of the region, even then further investigation on pharmaceutical, therapeutic as well as safety aspects are very much desired for their use in human health care. The plants

used are found growing wild and cases are immediately available for therapeutic use. Nevertheless, plant species having medicinal value for a variety of disorders form constituents of a variety of formulation available in the market for treatment of a number of diseases.

Assessment has revealed 182 phanerogamic and cryptogamic species, belonging to 159 genera distributed over 84 families in the Sewa catchment. This rich diversity may be due to mild climatic conditions and diverse habitats together with large number of human habitations with diverse cultures and communities that utilize this diversity for the treatment of various ailments (Samant and Dhar 1997, Samant *et al.*, 1998). Based on the number of species within families, Asteraceae is the most dominant with 17 species; Ranunculaceae with 10 species occupies the 2nd place, followed by Lamiaceae (9), Fabaceae (7), Euphorbiaceae (6), Pinaceae, Polygonaceae and Solanaceae having five species each. All other families are represented by either three, two or one species. Asteraceae is notably the largest family not only in Northwest Himalaya, but also the largest and most wide spread family of flowering plants in the world (Good, 1974). This can be attributed to their high reproductive potential, wide ecological range of tolerance, and to their high seed dispersal capability.

Altitudinal distribution of the Sewa flora has revealed that 46 plant species exclusively inhabit areas below 1500m, 89 species between 1500-2500 m, 38 species between 2500-3500 m and 9 species grow in areas above 3500 m, indicating that maximum plant species are distributed in the temperate region. The richness of the species in this zone seems to be on account of the fact that most part of the Sewa catchment experiences temperate climate besides heterogeneity in physiognomy, aspect and other temporal or spatial factors. The areas above 3500 m support mostly those species having underground perenating organs during unfavourable winter.

Utilization of leaves (41), roots (39), whole plant (30) bark (15), latex (11), tuber (8), fruit (8), seeds (7), flower (6), gum and resin (4), rhizome (3) etc. of various plant species indicated a high degree of threat to these medicinal plants. These species are used in the plant based pharmaceutical industries in traditional systems of medicine and most are extracted from natural habitats. If the over exploitation of entire medicinal plant and their various parts continues, many species may decrease in, and ultimately disappear from their natural habitats. This implies particularly to medicinal plants with multiple uses (Samant *et al.* 1998; Samant and Pal, 2003). These medicinal plants are used against cuts, cough, fever, gout, rheumatism, stomach ailments, sinusitis, boils, headache and as antihelminthic etc. Thus, the area serves as a primary source of extraction and people need to be encouraged to cultivate all these species which form ingredients of many medicinal products. Moreover, diverse climatic as well as altitudinal variation in the area, provide suitability for their cultivation, which in turn will be fruitful in maintaining the phytodiversity of the region, besides improving economy and lifestyle of the people.

Table 1: Medicinal plants along with their local names, family, altitudinal range and their indigenous uses

in Sewa catchment

Botanical Name	Local Name	Altitude	Indigenous uses
Acanthaceae			
<i>Justicia adhatoda</i> Linn.	Benkar, Brehankar	544-1400	Roots and leaves are used in cough, asthma, chronic bronchitis, leaf extract is having insecticidal and antirheumatic properties, flowers, leaves and roots are antiseptic.
<i>Alternanthera sessilis</i> (L.) R. Br. ex DC.		700-1400	Plant galactagogue and febrifuge. Young shoots rich in protein and iron.
<i>Barleria cristata</i> Linn.	Jhinti, Tadrelu	1300-2100	Leaves and roots are used for reducing swellings and their infusion in cough.
<i>Dicliptera bupleuroides</i> Nees.	Kalu Ghu	1200-1800	Plant used as tonic debility.
Adiantaceae			
<i>Adiantum capillus-veneris</i> L.	Hansraj, Dhumtuli	1300-2100	Plants demulcent, expectorant, diuretic, emmenagogue and febrifuge. The paste of rhizome and fronds mixed with curd is applied locally for 3-5 days for curing herpes, plants fried in butter if used as a tonic.
<i>Adiantum venustum</i> D.Don.	Kali kakeie	1300-1800	Fronds used as tonic, resolvent, expectorant, diuretic, astringent, emetic and emmenagogue. The water extract of fronds is given in fever. The oil is applied cures piles & wounds.
Amaranthaceae			
<i>Achyranthes aspera</i> Linn.	Putkanda	600-1200	Leaf juice gives relief to blisters of mouth, plant used in dropsy, colic, snake bites and skin eruption.
<i>Amaranthus spinosus</i> L.	Kandiari chaleri	700-1400	Boiled roots and leaves are given to children as laxative and applied as emollient. Poultice of leaves is applied to abscesses, boils and wounds.
<i>Deeringia amaranthoides</i> (Lamk.) Merr.	Parigya	700-1500	Roots used as a sternutatory, leaf antiseptic, applied on boils and sores.
Anacardaiceae			

<i>Pistacia chinensis</i> Steward ex Brandis	Kikar singhi	600-1500	Galls expectorant, tonic, used in asthma, phthisis, cough and other diseases of respiratory tract, galls powdered and fried in ghee given internally in dysentery & also contain essential oil, used as carminative.
<i>Lannea coromandelica</i> (Houtt.) Merr.	Jhingan	700-1500	Bark astringent, used as a lotion in eruption of skin and ulcers, decoction of bark is used in tooth ache.
Apiaceae			
<i>Ferula jaeschkeana</i> Vatke		1300-2500	Resinous gum applies to bruises and wounds.
<i>Heracleum candicans</i> Wall.		800-1500	Roots are extracted to prepare lotions for the skin to cure leukoderma. Locals used the roots to cure skin diseases.
<i>Hydrocotyle javanica</i> Thunb.	Pantrala	1400-1700	Leaves are blood purifier, digestive, and used to treat dysentery. Leaves stalk is used for relief from toothache.
Apocyanaceae			
<i>Holarrhena pubescens</i> Wall. ex G. Don	Kurchi, Kogar	600-1000	Bark used in dysentery, dried bark made into powdered is rubbed over the body in dropsy, diarrhea and intestinal worms.
<i>Nerium indicum</i> Mill.	Karner	600-900	Roots resolvent and attenuant, oil extracted from root-bark used in skin diseases of scaly nature and in leprosy.
Araceae			
<i>Acorus calamus</i> Wall.	Bachh	700-1240	Antispasmodic, carminative, used in bronchitis. Leaf paste is applied locally to wound. Rhizome fed to horses to increase their stamina.
<i>Arisaema jacquemontii</i> Bl.	Kirala, Sarap	1400-1800	Tubers are given to sheep as remedy for colic and also as wormicide.
<i>Phoenix sylvestris</i> (Roxb.) Linn.	Kajure	600-1460	Juice of the tree is a refreshing drink, it is good source of vitamin B and C, roots used for tooth ache, fruit tonic, aphrodisiac and restorant, kernels with <i>Achyranthus aspera</i> made into powered form and taken in a betel leaf, is believed as a remedy for ague.
Araliaceae			
<i>Hedera nepalensis</i> Koch.	Banda, Karmora	900-2600	Dry leaves used in stimulate sores, berries purgative and useful in febrile disorders.

Asclepidaceae			
<i>Calotropis procera</i> (Aiton) W. T. Aiton	Chita, Akk	500-1400	Root bark is used in dysentery and also as diaphoretic, expectorant and emetic. Root paste applied locally to cure elephantiasis. Tincture of leaves is used in intermit fevers. Powdered flowers are used in cold, cough, asthma and indigestion.
Aspleniaceae			
<i>Asplenium trichomanes</i> Linn.	Malakondei	1100-2100	Plants used as laxative and expectorant, leaves are smoked in cold and chest pain.
Asteraceae			
<i>Achillea millifolium</i> Linn.	Rajmori, Saijun	1300-1860	Infusion of species is diuretic, stimulant and homeostatic. Decoction of the leaves and flowers are carminative, tonic and aromatic stimulant. Locals of the area use leaves and flowers for vapors bath in cold and fever. The tea from the leaves of the plant is given in cold.
<i>Artemisia scoparia</i> D.Don.	Bano, Jahu	900-1800	Leaves are anthelmintic and used in other stomachic complaints like indigestion and liver infections powder of leaves mixed with oil or ghee is massaged on joints to get relief from joint pains.
<i>Bidens tripartita</i> Linn.	Kumber	1400-2500	Infusion of plant is taken against cough. Leaf juice is dropped in eyes and ear to cure pain. Leaves are antiseptic and applied to ulcers and swollen glands.
<i>Blumea lacera</i> DC.	Nimrudi, Machhal	700-1000	Used as antipyretic. Leaf juice astringent, febrifuge, diuretic and anthelmintic. Roots are used in cholera.
<i>Chrysanthemum coronarium</i> Linn.	Guldhodhi	1300-2600	Flowers are used as insecticidal.
<i>Cirsium arvense</i> (L.) Scop.	Kandiara, Boban	2700-3400	Plant is diaphoretic, emetic and tonic. Seeds are emmenagogu, aromatic and the oil is antiseptic.
<i>Gnaphalium leutoalbum</i> Linn.		1400-2200	Plant species is medicinal and used as astringent to control bleeding from wounds.
<i>Inula royleana</i> DC.	Zahelnikohee	1300-1800	Used as disinfectant and insecticidal.
<i>Siegesbeckia orientalis</i> Linn.	Chachera	1500-2300	Herb is considered diaphoretic, cardiotoxic, antiscorbutic, also used in rheumatism and renal colic.

<i>Sonchus arvensis</i> Linn.	Dudoli	900-1600	Roots used in cough, bronchitis, asthma and pertussis. Leaves applied to swellings and latex used in eye troubles.
<i>Sonchus asper</i> (L.) Hill	Dudhal	900-1650	Resinous product obtained from boiling of juice of plants cathartic, used for ascites and hydrothorax, leaves and roots used in indigestion and as febrifuge and vermifuge.
<i>Solidago virga-aurea</i> Linn.	Son-dandi	800-1500	Plant possesses diuretic and carminative properties.
<i>Solidago canadensis</i> Linn.		900-1700	Plant possess diuretic and carminative properties. Locally the root is used in stomach pains.
<i>Tagetes minuta</i> Linn.	Genda	1300-1500	Flower stomachic, aperient, diuretic, diaphoretic, it is volatile oil shows tranquellizing, spasmolytic, bronchodialator and inflammatory properties.
<i>Taraxacum officinale</i> F. H. Wigg. aggr.	Hindu, Dudli	600-1440	Root is aperient, diuretic and tonic, also used in chronic disorders of kidney and liver.
<i>Xanthium strumarium</i> Linn.	Lanetsuru	900-1900	The root is bitter tonic, useful in cancer and scrofula. Decoction of roots is used locally over ulcers, boils and abscesses. The fruits are used as tonic, diuretic, diaphoretic, sedative, cooling and demulcent and also given in small pox.
Balsaminaceae			
<i>Impatiens glandulifera</i> Royle		1450-1800	The roots of the plant species are used for cooling effect.
Berberidaceae			
<i>Berberis lyceum</i> Royle.	Simbloo, Kembal	500-2500	Fruit is cooling and digestive. Leaves and their juice given jaundice. Extracted obtained from the root is used to cure fever, bleeding piles and as a bitter tonic. Its external application on the eyelids is used in acute conjunctivitis.

<i>Bergenia ciliata</i> (Haw.) Sternb.	Zakhme hayat	1700-2500	Root is tonic, antisorbutic, diuretic, demulcent and astringent. Also used in fevr diarrhea & pulmonary infections. Powder of rhizome and root is dusted to heal wound.
Betulaceae			
<i>Betula utilis</i> D.Don.	Bhojpttar	3300-3900	Infusion of bark is used as carminative, antiseptic and used as carminative, antiseptic and used to curve hysteria. Peeling of bark is used for dressing of wounds and cuts.
Bombaceae			
<i>Bombax ceiba</i> Linn.	Simbal, Semul	600-1200	Root is used as stimulant, tonic and aphrodisiac, for overcoming sexual impotency, bark emotic, astringent & demulcent.
Boraginaceae			
<i>Cordia dichotoma</i> G. Forst.	Lasoor, Lasoori	1500-2100	Bark decoction is used in dyspepsia and fevers. Fruit is edible, astringent, anthelmintic, diuretic, expectorant, and demulcent, given in urinary infections and diseases of lungs and spleen, kernel used in ring worm infection.
Brassicaceae			
<i>Capsella bursa pastoris</i> Medik	Kralmond. Chhamso	800-1400	Plant is rich in vitamin C and shows properties against ulcers, tumors and uterine cancer. Locals of the area used decoction of the entire plant to treat bloody urine and diarrhea.
<i>Cardamine impatiens</i> Linn.		900-1600	Whole plant is used as stimulant, diaphoretic, stomachic, carminative and diuretic. The leaves are chewed for digestive process.
Caesalpinaceae			
<i>Bauhinia vahlii</i> Wt & Arn.	Kaliar, Karal	700-1100	Bark is astringent and given in diarrhea.
<i>Bauhinia variegata</i> Linn.	Kachnar, Kared	600-900	Dried buds are useful in dysentery, diarrhea & piles and decoction of root is used to treat dyspepsia.
Cannabinaceae			
<i>Cannabis sativus</i> Linn.	Bhang	600-1400	Plant used as intoxicant, tonic, analgesic, sedative, antiseptic and anodyne.

Caryophyllaceae			
<i>Stellaria media</i> (Linn.) Vill.	Mamiri	1000-1850	Whole plant used as plaster on swelling and broken bones.
Chenopodiaceae			
<i>Chenopodium album</i> L.	Bathu, Kunoh	1500-1900	Leaves cardiac, laxative, tonic in general debility and anthelmintic.
Commelinaceae			
<i>Commelina benghalensis</i> Linn.	Chhura	700-1400	Plant is demulcent, refrigerant, laxative and used in leprosy.
Convolvulaceae			
<i>Codonopsis ovata</i> Benth. ex Royle.	Ludut	2500-2900	Roots and leaves, pounded to make poultice, are used in bruises ulcers and wounds.
<i>Convolvulus arvensis</i> L.	Harangi	620-1100	Roots are purgative. Plant is also used as cathartic.
<i>Evolvulus alsinoides</i> Linn.	Sankhushpi	700-1000	Plant is bitter, febrifuge, tonic and vermifuge; used in dysentery. Leaves used in chronic bronchitis and asthma.
Costaceae			
<i>Costus speciosus</i> (J. Koenig) Sm.	Chamarghatha	1300-2100	Roots are bitter astringent, depurative, purgative, stimulant and also used in snake bite.
Cucurbitaceae			
<i>Citrullus vulgaris</i> Schrad. ex Eckl. & Zeyh.	Handwana, Ghana	600-1300	Seeds are cooling, aphrodisiac, diuretic and tonic.
<i>Momordica dioica</i> Wall.	Kokora	700-1800	Roasted root used to check bleeding from piles, bowel infections and urinary complaints.
Cyperaceae			
<i>Cymbopogon martini</i> (Roxb.) Wats.	Babra gha	1400-1700	Used as insect repellent, applied in skin diseases, also used in stiff joints and lumbago.
<i>Cyperus rotundus</i> Linn.	Deela, Motha	750-1540	Tuber is used as emmenagogue, diuretic, anthelmintic and in irritation of bowels.
Dioscoreaceae			

<i>Dioscorea deltoidea</i> Wall ex Kunth.	Kins, kniss	1100-1600	Tubers used for washing hairs to kill lice, tubers also commercial source of dysgenic raw material for steroidal industry.
Dipsacaceae			
<i>Dipsacus inermis</i> Wall.	Wupalhak	1800-2300	Root diuretic, leaves used as vegetable, given to ladies after child birth.
Equisetaceae			
<i>Equisetum dubile</i> Roxb.	Trothnari	1380-1680	Plants used as refrigerant and in gonorrhoea.
<i>Equisetum arvense</i> Linn.	Nari. Troka	1400-2100	Herb diuretic, haemostatic, useful in dropsy and kidney troubles, ash of plant is used as antacid and in dyspepsia.
Ericaceae			
<i>Cassiope fastigata</i> D. Don	Solu	2700-3400	The leafy twigs are ground into a paste and applied in fire burn.
<i>Lyonia ovalifolia</i> (Wall.) Drude	Oon	1400-1800	Infusion of leaves applied in skin eruption and cutaneous troubles.
Euphorbiaceae			
<i>Phyllanthus emblica</i> Linn.	Amla	750-1870	Dried fruits useful in hemorrhages, dysentery and diarrhea, in combination with iron used to treat jaundice, anemia and dyspepsia.
<i>Euphorbia royleana</i> Boiss.	Thor	600-900	Milky latex is anthelmintic and cathartic.
<i>Euphorbia helioscopia</i> Linn.	Dudal	1400-2300	Root considered anthelmintic; herb cathartic, milky latex applied to eruptions, seeds given in cholera, seed oil are purgative.
<i>Euphorbia hirta</i> Linn.	Jatli-dodal	660-1230	Juice of the plant is colic, given in dysentery and cough, decoction of plant is given in bronchial infections and asthma, latex is applied locally in eczema and warts.
<i>Sapium sebiferum</i> (Roxb.) Linn.		1400-1600	Seed oil emetic and purgative, used for cutaneous troubles; decoction of root bark given in dyspepsia, used as a tonic; resin from bark purgative.
<i>Mallotus philippensis</i> (Lamk.) Muell.	Kamila	1400-1800	Reddish powder on fruit is bitter, anathematic, cataractic, styptic and useful for cutaneous infection.
Fabaceae			

<i>Butea monosperma</i> Taub.	Palas, Palah	600-900	Leaves are used as tonic, flowers diuretic, depurative and antiseptic, bark used to cure snake bite.
<i>Dalbergia sissoo</i> Roxb. Ex Dc.	Shisham, Tali	600-1450	Root and wood astringent, used in leprosy, boils eruptions of skin and against vomiting.
<i>Indigofera tinctoria</i> L.	Neel	900-1800	Extract of plant given in epilepsy and nervous disorders, also given in epilepsy and nervous disorders, also given in bronchitis and as ointment for boils, ulcers and hemorrhoids.
<i>Robenia pseudoacacia</i> Linn.	Kikar	1300-2700	Leaves are antispasmodic and laxative; an infusion is prescribed in digestive disorders. Flowers are boiled and used as powerful diuretic.
<i>Trifolium repens</i> Linn.	Chaptal	1300-1900	Tincture of the flowers is used in the rhematic pains due to gout.
Fagaceae			
<i>Quercus leucotrichophora</i> A.campus	Rein	1500-2300	A corns used as diuretic, in gonorrhea and as an astringent, cures indigestion and diarrhea, especially in children.
Flacourtiaceae			
<i>Flacourtia romontchi</i> Herit	Kakoa	1100-1600	Fruit is recommended in Jaundice, its gum is used in cholera.
Fumariaceae			
<i>Corydalis govaniiana</i> Wall.	Bhutkis, Nakpo	3000-3800	Roots are administered against muscular and gastric pians. These are used in syphilitic, scrofulous, and cutaneous infections.
<i>Fumaria indiacca</i> (Houssk.) Pugslay	Papra	600-950	Plant considered diuretic, aperients and diaphoretic.
Gentianaceae			
<i>Gentiana kuroo</i> Royle	Neelkunthu	1700-2100	Root febrifuge, stomachic and tonic, also used in urinary infection.
Gerinaceae			
<i>Geranium wallichianum</i> D.Don.	Koashud	1700-3500	Herb astringent, used in toothache, also applied externally is eyes in conjunctivitis.
<i>Geranium nepalensis</i> Sweet	Banda	1800-3200	Plant astringent, used in kidney troubles.

Hipocastanceae			
<i>Aesculus indica</i> Calebr. ex Camb.	Bunkhori, Handoon	1400-3200	Extract of leaves is useful in whooping cough; oil from seeds is applied to cure rheumatic pains. Powdered fruits made into paste in lukewarm water is applied locally for curing cracked heels and other skin eruptions.
Hypericaceae			
<i>Hypericum oblongifolium</i> Choisy	Basanti	1300-1700	Herb stringent, anathematic, emmenagogue & diuretic.
<i>Hypericum perforatum</i> Linn.	Basanti	800-1400	The species is used as astringent, expectorant, diuretic and anthelmintic. Whole plant is used in urinary troubles, diarrhea and in the therapy of depression state. The decoction of the leaves is used for the good flow of urine by locals.
Hypolipidaceae			
<i>Pteridium aquilinum</i> Linn.	Kekaie	600-2400	Rhizome astringent and anthelmintic, decoction of rhizome and fronds given in chronic disorders arising from obstruction of viscera.
Juglandiaceae			
<i>Juglans regia</i> Linn.	Akhrot	1280-2100	Bark anthelmintic and detergent, leaves are astringent.
Lamiaceae			
<i>Ajuga bracteosa</i> Wall. Ex Benth.	Kauributi	580-1500	Plant bitter, astringent and tonic. Leaf juice is given in fever as substitute for Cinchona.
<i>Colebrookia oppositifolia</i> Smith.	Binda, Pansra	500-1300	Roots used in epilepsy. Leaves used as poultice on bruises and wounds.
<i>Lamium album</i> Linn.		2100-2600	Root is astringent, its decoction used in hemorrhages of uterus and nose, leaves good source of carotene, edible.
<i>Mentha longifoilia</i> (Linn.) Huds.	Jangli pudina	600-1880	Dried leaves and young twigs are carminative and stimulant, leaf juice is cooling and stomachic, essential oil of the plant is used for flavorings confectionery.

<i>Origanum vulgare</i> Linn.	Sathra	1500-2500	Hot infusion of plant is used to promote menstrual flow if suppressed by cold; oil is aromatic, stimulant, rebeferent and tonic. Also useful in colic, diarrhea, rheumatism, toothache and hysteria.
<i>Salvia moorcroftiana</i> Wall.	Kali-jari	1400-1800	Roots are used in cold and cough. Leaves are used for guinea worm and are applied as poultice for boils. Wounds and chronic affections of the skin. Seeds are emetic and are used in hemorrhoids, colic and dysentery, Locally the root is used in stomach pains.
<i>Thymus linearis</i> Benth.	Bnajawan	1500-2300	Oil extracted from herb is applied to gums in toothache.
<i>Calamintha umbrosa</i> (M.Bieb.) Benth.	Kala Putu	600-2400	Root stocks are astringent. Decoction of plant mixed with honey is given to ladies after childbirth.
<i>Salvia plebia</i> R. Br.	Sathi	1300-1500	Seeds used in diarrhoea, gonorrhoea, menorrhagia and hemorrhoids.
Liliaceae			
<i>Colchicum luteum</i> Baker	Birnik Posh	700-900	Corms are carminative, laxative, aphrodisiac, alterative, rheumatism and diseases of skin.
<i>Tulipa stellata</i> Hook.	Kayalu	600-900	The bulbs of the plant are eaten during sinking of heart.
Lythraceae			
<i>Woodfordia fruticosa</i> (Linn.) Kruz.	Dhavi	800-1600	Dried flowers considered astringent and stimulant, also used in dysentery, menorrhagia, liver complaints and disorders of mucous membrane, hemorrhoids & seminal weakness.
Malvaceae			
<i>Kydia calycina</i> Roxb.	Poola	600-900	Leaves powdered, made into paste and applied in rheumatism.
<i>Sida cordata</i> Boiss-Waalkes	Bhiunli	1100-1800	Used in fever, urinary complaints; root bark used in leucorrhoea, micturition and gonorrhoea. Poultice of leaves applied to cuts & bruises, leaves given to pregnant women to treat diarrhoea.
Meliaceae			

<i>Melia azadarah</i> Linn.	Dharek	700-1650	Leaf juice anathematic, diuretic and emmenagogue, seed recommended in rheumatism; gum of the trees used in spleen enlargement and infusion of bark in ascariasis.
Menispermaceae			
<i>Cissampelos pareira</i> Linn.	Batbel, Buddibel	900-1400	Roots bitter, antiperiodic, stomachic, purgative, also used in diarrhea, cough, dyspepsia, dropsy and urinary complaints.
Mimosaceae			
<i>Acacia catechu</i> Willd.	Khair	600-700	Paste of bark called Katha cures ulcers of mouth.
<i>Acacia modesta</i> Wall.	Phulae	600-850	Bark is astringent.
<i>Albizzia chinensis</i> (Osbeck) Merrill	Siram, Ola, Lasri	700-1500	Infusion of bark is used for dressing cuts and wounds.
<i>Alibizzia lebeck</i> Benth.	Siris, Sri	700-1400	Used in piles and diarrhea. Root powder is excellent gum and aphrodisiac.
<i>Mimosa pudica</i> L.	Chui-Muie-Lajwanti	600-1300	Leaves and root used in piles, decoction of root is used in gravel and other urinary complaints.
Moraceae			
<i>Ficus benghalensis</i> Linn.	Bor	700-1300	Milky latex applied in rheumatism and lumbago, infusion of bark is considered astringent and tonic, used in diabetes, diarrhea and dysentery.
<i>Ficus palmata</i> Forssk.	Phagwara	900-1500	Fruit is considered demulcent and laxative used in constipation, diseases of lungs and gall bladder.
<i>Ficus religiosa</i> Linn.	Papal,	700-1000	Bark is astringent, given in gonorrhea, seeds are alternative, leaves and young shoots are purgative infusion of bark is given internally in scabies.
<i>Morus alba</i> Linn.	Toot, tut	1200-1900	Fruit refrigent, used also for sore throat and dyspepsia, bark anthelmintic and purgative.
Myrsinaceae			
<i>Mysine africana</i> (Linn.) Spreng.	Gugil	1260-1650	Fruit anthelmintic particularly for tapeworm and also used as a laxative in dropsy and colic, decoction of leaves employed as blood purifier.

Myrtaceae			
<i>Syzygium cumin</i> Lim.	Jamun	600-2300	Decoction of bark and powdered seeds used in diabetes, bark astringent, also used in gargles and mouth washes; fresh juice of bark given with milk of goat for curing diarrhoea in children.
Nyctaginaceae			
<i>Boerhavia diffusa</i> Linn.	Itsit, Punarnava	600-900	Root is used as diuretic, expectorant, laxative, cures asthma, jaundice, eye disease and inflammations.
Oleaceae			
<i>Jasminum humile</i> Linn.	Peeli chameli	600-900	Flowers are tonic, root used in ringworms.
<i>J. multiflorum</i> Andr.	Jangli chameli	590-800	Root antidote to snake bite, leaves soaked in water and applied as poultice on ulcers, flowers are emetic.
<i>Olea cuspidata</i> Wall. ex DC.	Kahu	1100-1600	Leaves and bark are bitter, astringent, antipyretic, recommended in fever and debility, leaves considered useful in gonorrhoea and whooping cough; oil from seeds is used as rubefacient.
Oxalidaceae			
<i>Oxalis corniculata</i> Linn.	Peeli Khatti-booti	600-1530	Herb is used as cure as cure for scurvy, leaves refrigerant, antiscurbutic and stomachic; fresh juice of plant given in dyspepsia, piles and anemia; infusion of leaves used to cure opacity of the cornea.
Papaveraceae			
<i>Argemone mexicana</i> Linn.	Peeli kandyari	700-900	Seeds toxic. The oil is sometime mixed with mustard oil which causes dropsy epidemic.
<i>Meconopsis aculata</i> Royle	Panjali-post	3800-4300	Water extract of the herb is used to wash wounds.
Phytolaccaceae			
<i>Phytolacca acinosa</i> Roxb.	Kafal	2100-2900	Locals use the plant species as a substitute for <i>Atropa belladonna</i> . Ethno medically the root extract of the species is used in stomach cramps and dysentery.
Pinaceae			

<i>Abies pindrow</i> spach.	Tung	2700-3400	Leaves carminative, expectorant, tonic, antiperiodic and astringent. Also used in bronchitis and asthma. Juicy inner bark is taken in constipation. Cones are used as diuretic and purgative.
<i>Cedrus deodara</i> Roxb.	Diar, Deodar	1400-1800	Bark is astringent, useful in fevers, diuretic, carminative, antiplattulent, useful in pulmonary and urinary disorders.
<i>Pinus roxburghii</i> Roxb.	Chir, Chil	1100-1350	Resin expectorant, useful in chronic bronchitis, especially recommended for gangrene of lungs, carminative in flatulent colic, checks hemorrhages in tooth-sockets and nose.
<i>Pinus walliciana</i> Wall.	Bluepine, Kail	3200-3500	Oleo resin is applied locally on crack heels.
<i>Picea smithiana</i> (Wallich) Boiss.	Riar, Spruce	1700-2700	Oleo resin is applied on cracks of heels and wounds.
Plantaginaceae			
<i>Plantago lanceolata</i> Linn.	Baltanaga	700-1660	Leaves and roots astringent, used in cough.
<i>Plantago major</i> Linn.	Jangli isbghol	800-1760	The husk of the seeds yields colloidal mucilage which primary consists of xylose, arbinose and galacturonic acid. The seeds are used to cure gastric complaints, burning sensation in stomach and dysentery.
Poaceae			
<i>Arundo donax</i> Linn.	Naar, Baranal	1300-1900	Decoction of rhizome is used as amollient, diuretic and to stimulate menstrual discharge.
<i>Cynodon dactylon</i> (Linn.) Pers.	Khabal, Dub	700-2700	Infusion of root is given in bleeding piles and gleans. Juice of plant astringent, antiseptic, applied in wounds, cuts also given in hysteria, epilepsy, chronic diarrhea, dysentery.
<i>Dedrocalamus strictus</i> Bl.	Bans, Narbans	750-1100	White substances deposited at nodes is prized commercial medicine, used as tonic, astringent, given to children and ladies having calcium deficiency.
Podophyllaceae			
<i>Podophyllum hexandrum</i> Royle	Bankakri	2100-2900	The root paste is applied on ulcers, cuts and wounds. It is also used as purgative, for curing skin diseases and arresting tumors growth.

Polygonaceae			
<i>Oxyria digyna</i> Hill Simthan		3000-3800	Leaves are considered as antiscorbutic and refrigerant.
<i>Polygonum amplexicaule</i> D.Don.		900-1400	Root stock constitutes the drug “anjubar” frequently used medicinally in both unani & Aryurvedic system of medicine.
<i>Polygonum barbatum</i> Linn.	Narri	900-1720	Roots astringent, refrigerant and their extract is used for washing ulcers, seed purgative, emetic, and tonic and also given in colic. s
<i>Rumex hastatus</i> D. Don.	Aammy	600-1800	Leaves are rubbed by the locals against stings by <i>Urtica dioica</i> .
<i>Rumex nepalensis</i> Spring	Wbal	600-1800	The sap of leaves and stem is applied on cuts for its astringent properties.
Portulacaceae			
<i>Portulaca oleracea</i> L.	Kulfa, Lunak	1300-2500	Herb is refrigerant, leaves antiscorbutic, aperient diuretic.
Primulaceae			
<i>Anagalis arvensis</i> Linn.	Kokoon, Dari	600-100	Herb is used for gout, cerebral infections, hydrophobia, dropsy, leprosy, epilepsy and mania.
Punicaceae			
<i>Punica granatum</i> Linn.	Dharu, Dharuna	600-1600	Root and stem bark is astringent and anthelminitic especially for tapeworm; dried and powdered rind of fruit is used in diarrhea, dysentery and as astringent.
Ranunculaceae			
<i>Aconitum heterophyllum</i> Wall. ex Royle	Patis, Ponkar	2800-3500	The tubers and flowers are valuable febrifuge, a better tonic especially in combating debility after material and other fevers. Powered rhizome is used in diarrhea and dysentery. The plant is poisonous and is used cautiously.
<i>Aconitum hookeri</i> Stapf.		3400-3800	Powdered tubers are mixed with mustard oil and applied on head to cure hair fall due to fungal infection.

<i>Anemone obtusifolia</i> D.Don.	Rattan jot	2800-3500	Root powdered mixed with milk is taken for contusions. Seeds are emetic and oil from the seeds is given inn rheumatism. The decoction of the root bark is used for sores in the mouth.
<i>Clematis buchananiana</i> DC	Barkelu	800-1400	Whole plant is used for scabies and eczema.
<i>Clematis gouriana</i> Roxb. Ex DC.	Johi, Chibro	900-1600	Leaves used in infections of spleen. Root paste is applied to cure pimples.
<i>Caltha palustris</i> Linn.	Panjali kanval	2500-3400	The leaves of plant are vesicant and very bitter. It is used as febrifuge.
<i>Clematis montana</i> Buch-Ham ex DC.	Chanda	900-1300	Locals of the area mix one black pepper with a pinch of leave's powder of the plant species and use as a remedy for the indigestion.
<i>Delphinium roylei</i> Munz.	Kastoori booti	1300-1500	Root extract is used for rheumatic pains.
<i>Ranunculus arvense</i> Linn.		1260-1900	Herb is used in gout, intermittent fever and asthma.
<i>Ranunculus scleratus</i> Linn.		1260-1900	Herb stimulant, vermifuge, diuretic and also used in cutaneous disorders, juice used in sciatica, rheumatism, dysuria, asthma and gripe, seed used as tonic and stomachic.
Rosaceae			
<i>Fragaria indica</i> Andr.	Punjakha	600-1400	The leaves are crushed and applied on skin diseases and also on wounds and cuts.
<i>Prinsepia utilis</i> Royle	Zehar	700-1400	Oil from seeds rubifacient, applied locally in rheumatism.
<i>Rose brunonii</i> Lindl.	Punjali gulab	1100-1600	Useful in bilious infections, root used in eye trouble and burning of skin.
Rubiaceae			
<i>Galium aparine</i> Linn.	Khorti	1100-1500	Juice of plant is aperients, diuretic and antiscorbutic.
Rutaceae			
<i>Boenninghausenia albiflora</i> Hook.	Pisumar	1400-1700	Shoots are kept under beds as insect repellent, especially for fleas. Root relieves toothache.

<i>Xanthoxylum alatum</i> Roxb.	Timber	600-1400	Bark, fruit and seeds used as carminative, stomachic and anthelmintic; they are also used as mouth freshners and in toothache.
Salicaceae			
<i>Populus alba</i> Linn.	Safeda	1400-1600	Bark antipyretic, diuretic, blood purifier, used as Substitute of quinine; paste of wood and leaves applied in rheumatism.
<i>Salix alba</i> Boiss.	Bisa	1260-1800	Bark antiperiodic, astringent and tonic; decoction is given in rheumatism, chronic skin infections like psoriasis.
Sapindaceae			
<i>Dodonaea viscosa</i> Linn.	Santha, Senta	500-1100	Leaves febrifuge, in gout and rheumatic pains, on wounds, swellings and burns, bark astringent.
<i>Sapindus mukorossi</i> Gaertn.	Rentha	900-1550	Fruit emetic and expectorant, used in salivation, epilepsy and chlorosis.
Scrophulariaceae			
<i>Digitalis lanata</i> Ehrh.		1600-2500	Used as cardiac stimulant.
<i>Digitalis purpurea</i> Linn.	Akarkara	1900-3250	Medically used for its effect on cardiovascular system.
<i>Pedicularis pectinata</i> Wall.	Michren	3300-3700	Leaves are diuretic, astringent and homeostatic.
<i>Verbascum thapsus</i> Linn.	Gidder tobacco	600-2300	Leaves and flowers are used for treatment of diarrhoea and pulmonary diseases. Leaves are used as adulterant for <i>Digitalis</i> . Dried leaves and flowers are smoked in case of asthma and act as stimulant.
Solanaceae			
<i>Datura inoxia</i> Mill.	Dhatura	1100-1600	Used as anesthesia in surgery and ophthalmologic operation. Leaves in the form of a poultice used for rheumatic swelling of the joints, Lumbago & painful tumors.

<i>Datura stramonium</i> Linn.	Dhathura, Shivapriya	900-1530	Leaves and seeds antiseptic, anodyne, narcotic and intoxicant. Leaf powder made in pills, used in hemorrhoids, seed cure dandruff.
<i>Solanum nigrum</i> Linn.	Makai	700-1450	The herb is used as diuretic and laxative decoction narcotic and antispasmodic, freshly prepared extract of herb is effective in cirrhosis in liver.
<i>Solanum pseudocapsicum</i> Linn.		600-900	Alcoholic extract of roots and stem of the lint possess antibacterial activity.
<i>Salanum xanthocarpum</i> Schrad & Wend.	Kandiari	600-1400	The juice of plant is useful in dysentery and fever. The drug made from this is administered against asthma.
Taxaceae			
<i>Taxus baccata</i> Linn.	Barmi	2100-2400	Leaves used in asthma, bronchitis, cough, indigestion, epilepsy, antispasmodic, emmenagogue and as aphrodisiac, a tincture made from young shoots used for headache, giddiness, feeble and falling pulse, diarrhoea, fleshy aril stomachic, carminative.
Thymelaeaceae			
<i>Daphne papyraceae</i> Wall.	Kochhad, Tetmaran	1100-1800	Plant bitter, purgative, used as febrifuge, root and leaves used against cutaneous infection and gonorrhoea.
Ulmaceae			
<i>Celtis australis</i> Linn.	Khirak	1200-1700	Fruit is used in amenorrhoea and are colic.
Urticaceae			
<i>Urtica dioica</i> Linn.	Bichhu booti	1000-2100	Infusion of leaves and roots used as a hair-stimulant and for cleaning dandruff.
Valerianaceae			
<i>Valeriana jatamansi</i> James and Wall.	Mushkbala	1200-2300	Roots used in hysteria, nervous unrest and emotional troubles.
Verbenaceae			
<i>Lantana camara</i> Linn.	Lantana	560-1200	Decoction given in tetanus, rheumatism and malaria tonic.

<i>Vitex negundo</i> Linn.	Banna	1300-2000	Roots tonic, febrifuge, diuretic; used in rheumatism and dyspepsia, also as an anthelmintic; flowers astringent, used in diarrhoea, fever & liver complaints; leaves aromatic, tonic and vermifuge, dried leaves smoked to cure catarrhal and headache, their decoction employed in medicinal baths for acute rheumatism.
<i>Verbena officinalis</i> Linn.	Karaita	600-2300	Fresh leaves used as a rebe-facient in rheumatism extract of the aerial parts used in liver and gall bladder complaints.
Violaceae			
<i>Viola canescense</i> Wall.	Banksha	960-2400	The decoction of plant is used to loose phlegm in the chest and for pulmonary problems.
<i>Viola odorata</i> Linn.	Banksha	900-2300	Herb is considered as aperients, antipyretic, cooling, diuretic and expectorant. Locals use the leaves and stem of the herb as one of ingredient of local tea. Decoction of the leaves is used in cold, fever and throat infection in winters.

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