



REGULAR ARTICLE

## DIVERSITY AND USAGE CUSTOM OF PLANTS OF SOUTH WESTERN HIMACHAL PRADESH, INDIA - PART I

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### SUMMARY

The present study reports the diversity of plant resources of Bilaspur district of Himachal Pradesh, India for their medicinal, traditional and edible uses. Total 98 plant species belonging to 51 different families were documented for their multifarious uses through collecting information by means of questionnaire surveys, participatory observations and field visits. Of total plant species, 44.89% of tree, 38.77% herb and 16.32% shrub were recorded. About 70.40% plants were used in medicinal practices whereas, 38.77% in traditional and 34.69% in edible purposes. The use of above ground parts like leaves (37.75%), fruits and seeds (20.40% each) and other aerial parts, stem, branch, flowers/inflorescence (12.24-3.06%), was found to be higher as compare underground parts include roots, bulb and rhizome (8.16%). About 10 types of diseases related to stomach, mouth, cough, cold, skin, blood, vitality & strength, bones, muscles, and other like memory, swelling etc. were found to be cured by plant based medicines. Use of young twigs was higher (39.47%) in different traditional activities as compare to other plant parts such as, leaves (23.68%), timber (10.51% each) and fruit, bark, spine, powder, latex/ resin, seed and stem (23.68% collectively). It was observed that urbanization posing a threat to the plant diversity of the area as well traditional knowledge and cultural practices of the rural peoples.

**Key words:** Diversity, Bilaspur district, Himachal Pradesh, Medicinal plants, Traditional plants, Edible plants

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### 1. Introduction

The relationship between plants and human beings is very old since the origin of life. Human used and still using plants for their basic daily needs: feeding, clothing, sheltering, hunting and nursing. Plants have always a great importance in many cultures not only for their nutritional values but also, for medicinal and ritual or magical values i.e. a complete ethnobotanical importance. These ethnomedicinal uses of plants vary across cultures. The estimated number of higher plant species (angiosperms and gymnosperms) on this planet is 250,000 (Ayensu and DeFilipps 1978) with a lower level at 2, 15,000 (Cronquist 1981, Cronquist 1988) and an upper level as high as 5, 00, 000 (Tippo and Stem 1977, Schultes 1972). Of these, only about 6% have been screened for biologic activity, and about 15% have been

evaluated phytochemically (Verpoorte 2000). It is a fact that the 25% of all medical prescriptions are based on substances derived from plants or plant-derived synthetic analogues (Gurib-Fakim 2006).

Being a hilly state, Himachal Pradesh has rich plant diversity due to varying degree of agro climatic zonation from subtropical to extreme cold. The state is a bucket of large variety of medicinal herbs. There are about 3500 known plant species recorded in the state, about 500 are reported on the medicinal value (Chauhan 2003). This plants diversity is used by the local people for various activities like, traditional healthcare, cultural, and religious throughout their life. In this study the information on various plants, which are used by local people for

different activities throughout their life has been discussed.

The district Bilaspur of Himachal Pradesh, where the study was conducted, is situated in Sub-mountain and low hills sub-tropical zone of Himachal Pradesh. The district lies between 31° 12' 30" and 31° 35' 45" north latitude and between 76°23'45" and 76°55'40" east longitude in the outer hills of the Himalayas next to the Punjab plains and forms a part of the basin the river Sutluj which flows across it for about 90 Km. The average height of the area is 673 meters and average rainfall is 1478.8 mm (Sharma and Mishra 2009). The soil colour is light yellow, brown to black. The maximum population of the district resides in rural areas, with agriculture as their major occupation (Gautam and Bhadauria 2008).

Although, due to increase in urbanization and regularly increased literacy rate are leading the district towards the new heights of development. But, these developments are migrating the youths of the area towards mainstreams, leading to the disappearance of the traditional knowledge day by day. Keeping this in view, many researchers have explored time to time the indigenous knowledge of different parts of the area (Sharma and Mishra 2009, Gautam and Bhadauria 2008, Gautam and Bhadauria 2009) and still are trying. The present study is therefore, a continuation of on-going efforts to explore of the traditional knowledge and cultural practices in the study area with the ultimate aim of evaluating them for diversity and utilization pattern.

## 2. Methodology

The present study covers one tehsil (Jhandutta) of the district Bilaspur of Himachal Pradesh having more than 21 villages (Figure 1). The maximum population of the area is rural with agriculture as their major occupation.

Figure-1: Map of the study area



Study has been carried out in several time intervals during the period 2008–2010, to collect information on the medicinal, cultural and traditional uses of plants of the area. About 70 peoples of different age groups were consulted for information collection. Community leaders, elderly persons (man & women) of the villages and local medicine man (Baidiya) were interviewed via a meeting while collecting information. Questioning during the interview was carried out in native local language in order to minimize bias information and make it easy to understand and to administer for the interviewer and interviewee as well as have encouraged spontaneous participation.

Although, the maximum information was carried out by older individuals, but some cases young people have also participated. During the collection of information the first contacts with villagers occurred by chance or in the fields. In some cases, elder's of one village recommended other individuals of other villages. About seventy informants have been interviewed from about 18 different villages of the study area. Most of the interviewee was farmers with a primary or no education, with their age varied 40-70 years. Final list of plants was prepared according to information obtained by interviewers. We have met one traditional ayurvedic practitioner, Shri Jeet Ram Sharma, a very helpful 90-year-old man (died last year).

### 3. Results

During the initial survey and group discussions with local villagers it was found that, information on the medicinal and traditional uses of plants now seems to be confined to elder people (above 40 years of age) only. Younger generation is ignorant about the vast medicinal resources available

in their surroundings and is more inclined towards market resources. It is interesting to know that, males are involved in this vast important knowledge comparatively more than females. The main reason is that the female of this age group mostly household workers and could have been a little hesitant.

Table -1: List of plants used for medicinal, traditional and edible purpose

Sr. No.	Botanical Name	Common Name	Family	Plant part Used	use
1.	<i>Acacia catechu</i> (L. f.) Willd.	Khair	Mimosaceae.	Heart wood	1) The 'Katha' obtained from heart wood of 20-30 years old plants is used against mouth sores and twigs as toothbrush. 2) Twigs are used in various traditional rituals. 3) Katha is used as important ingredient of 'Paan' ( <i>Piper bettle</i> leaves), extensively chewed in India.
2.	<i>Achyranthes aspera</i> L.	Puthkanda	Amaranthaceae	Branches, seeds, leaves	1) Seed paste is used in treating mad dog bite. Paste of fresh leaves is used in Scorpion sting. 2) Twigs are used in various traditional rituals. 3) If 'Kheer' a liquid food made up of seeds and milk is eaten, it inhibits appetite for 2-3 days.
3.	<i>Adhatoda zeylanica</i> Medik.	Basuti	Acanthaceae	Leaves and flowers, roots	1) Flowers, leaves and roots mixed with honey are used against cough and cold. 2) Mangos kept for ripening are covered by twigs.
4	<i>Adiantum pedatum</i> L.	Chhap	Dryopteridaceae	Leaves	1) Lower side of leaf is used to imprint the hands by children for temporarily decoration.
5.	<i>Aegle marmelos</i> (L.) Correa ex Roxb.	Bel	Rutaceae	Fruits , branches	1) Fruit pulp is edible and used to prepare juice which is very useful in indigestion and dysentery. 2) Fruits and twigs are used in various religious activities.
6.	<i>Agave americana</i> L.	Kevda	Agavaceae.	Leaves	1) From semidried leaves ropes are made.
7.	<i>Aloe vera</i> (L.) Burm. F.	Dwarya	Liliaceae	Leaves	1) On burn, leaf paste is applied.
8.	<i>Albizia lebbek</i> (L.) Willd.	Darek	Mimosaceae.	Wood, Bark	1) Bark powder is used as blood purifier. 2) Wood is used to make furniture.

9.	<i>Asparagus racemosus</i> Willd	Sahans Bain	Liliaceae	Roots	1) Root powder is taken with milk for vitality and strength.
10.	<i>Bauhinia vahili</i> Wight & Arnott	Tourya	Caesalpiniaceae	Leaves	1) Small bowls made up of leaves are used in all the religious ceremony from birth to death.
11.	<i>Bauhinia variegata</i> L.	Kachnar	Caesalpiniaceae	Bark , flower	1) Bark paste is used in skin diseases. 2) Flowers are used as vegetable.
12.	<i>Bambusa bambos</i> (L.) Voss.	Baans	Poaceae	Stem	1) Used to make baskets. Whole stem is used to make carrier for dead bodies.
13.	<i>Berberis aristata</i> DC.	Kasmalya	Berberidaceae	Bark	1) Bark powder is used for blood purification, fever.
14.	<i>Bombax ceiba</i> L.	Semal	Bombacaceae.	Wood	1) Wood is used in roofing.
15.	<i>Brassica nigra</i> (L.) Koch.	Halwan	Brassicaceae	Seeds	1) Seeds are put in eyes for dust clearing.
16.	<i>Bryophyllum pinnatum</i> (Lamk.) Oken	Khindad Patt	Crassulaceae	Leaves	1) Leaf poultice with mustered oil is applied on swelling.
17.	<i>Butea monosperma</i> (Lamk.) Taub.	Palah or Palash	Fabaceae	Leaves, flowers and resin/latex	1) Leaves and flowers extract is used in cough, cold, fever and menstrual disorders. Resin is used in snake bite and waist pain. 2) Twigs are used in different religious activities.
18.	<i>Capsicum annum</i> L.	Peepli	Solanaceae	Fruits	1) Fruit paste locally called 'Malham' made with mustered oil is used in skin diseases.
19.	<i>Cynodon dactylon</i> (L.) Pers.	Doobh	Poaceae	Leaves	1) Aerial parts are crushed with water. 2-3 drops of this extract are poured in the nostril to cure nasal bleeding. Paste is applied on cuts and wounds. Root powder with sugar is used as memory sharpener/improver. 2) One of the important plants used in every religious occasion.
20.	<i>Calotropis gigantea</i> (L.) R.Br.	Aak	Asclepiadaceae	Root, flowers and latex	1) Root powder is used in dysentery. Powdered flowers are used in cough, cold, asthma and digestive problems. Latex is applied on swelling.
21.	<i>Carisa opaca</i> Stapf. Ex Haines.	Gurna	Apocynaceae	Fruits, spines	1) Spines are used by rural peoples to pull out small spines inserted in fingers during daily activities. 2) Fruits sprinkled with salt are edible.
22.	<i>Cassia fistula</i> L.	Aliya	Caesalpiniaceae	Pods/seed	1) Pod and seeds extracts are administered to cure stomach problems, fever, ring worm

					and thoracic obstructions.
23.	<i>Cassia occidentalis</i> L.	Relu	Caesalpiaceae	Branch	1) Young twigs are used as tooth brush
24.	<i>Citrus limon</i> (L.) Burm. F.	Galgal	Rutaceae	Fruits	1) Fruit pickle is used during cold. 2) Generally eat during winter season and used as pickle mainly.
25.	<i>Coriandrum sativum</i> L.	Been	Umbelliferae	Seeds, leaves	1) Leaves are chewed as a mouthfreshner. Seed and leaf paste is applied on body during warm to relief from body burning. 2) Seeds are used as spice. Leaves are used as fragrative agent in vegetable.
26.	<i>Citrus medica</i> L.	Nimbu	Rutaceae	Fruits	1) From fruits, juice & pickle are prepared. 2) Fruit juice is used commonly during summer to get relief from dehydration.
27.	<i>Curcuma longa</i> L.	Haldi	Zingiberaceae.	Rhizome	1) Paste is act as antiseptic. Powder mixed in milk is (given to patient after accident to strengthened the body. 2) Used to make worship symbol on forehead "Tilak" and to decorate worship places known as "Hawan Kund".
28.	<i>Cyperus rotundus</i> L.	Nagarmotha	Cyperaceae	Root	1) Root powder is used as tonic to improve body health. 2) Plant is used in different religious activities.
29.	<i>Centella asiatica</i> (L.) Urban	Brahmi	Apiaceae	Leaves	1) Leaves are believed to improve the memory.
30.	<i>Cissampelos pareira</i> L.	Patindu	Menispermaceae	Leaves, stem	1) Root paste is used against snake bite and toothache. Leaf and stem are given as feed to lactating animals for improve milk quality.
31.	<i>Chenopodium ambrosioides</i> L.	Jangli Bathu	Chenopodiaceae	Seeds, stem, leaves	1) Paste of aerial parts is used to cure amoebic dysentery. Root and shoot extracts have believed to be nematicidal activity
32.	<i>Chenopodium album</i> L.	Bathu	Chenopodiaceae	Seeds and leaves	1) Boiled seeds with milk called "Kheer" are eaten during fast. 2) Green leaves are used as vegetables.
33.	<i>Cocus nucifera</i> L.	Gari	Palmaceae	Dried fruits	1) Used as one of the important Important ingredient of Hawan Samagri.
34.	<i>Colocasia esculenta</i> (L.) Schott	Arbi	Aracaceae	Bulb	1) Paste is applied on burns. 2) Bulbs are used as vegetable.

35.	<i>Cuscuta reflexa</i> Roxb.	Akash Bel	Convolvulaceae	Stem	1) Paste is used for cleaning sores and to treat itching and swelling.
36.	<i>Cannabis sativa</i> L.	Bhang	Cannabinaceae	Leaves, seeds	1) Leaf paste is used to resolve tumour, against yellow wasp bite and dressing wounds and sores. Seed powder is used for vitality and strength. Leaf extract is used as sweet drink for freshness in summer.
37.	<i>Dalbergia sissoo</i> Grah.	Taali	Fabaceae	Timber	1) Used to make door and window frames.
38.	<i>Dendrocalamus strictus</i> (Roxb.) Ness.	Magar baans	Poaceae	stem	1) Used in roofing.
39.	<i>Diplazium esculentum</i> Retz.	Lingra	Dryopteridaceae	Stem/Leaves	1) Young leaves are used as vegetables.
40.	<i>Dodonaea viscosa</i> L. Jacb. Subsp.	Mehindu	Sapindaceae.	Branch, leaves	1) Branches along with leaves are used to make broom.
41.	<i>Phyllanthus emblica</i> Gaertn.	Amla	Euphorbiaceae	Fruit and branches	1) Fruit powder is used in constipation and is one of the major ingredients of Triphala churn. 2) Twigs are used in worship of God.
42.	<i>Euphorbia heloscopia</i> L.	Doodhli	Euphorbiaceae	Latex	1) Latex is used to cure Dermatophytosis.
43.	<i>Euphorbia royleana</i> Boiss.	Chhuien	Euphorbiaceae.	Phylloclade	1) Planted during the boys birth ceremony.
44.	<i>Euphorbia hirta</i> L.	Doodhli	Euphorbiaceae	Stem and leaves	1) Stem and leaf extracts are useful in Jaundice.
45.	<i>Eruca sativa</i> Mill.	Taraamiraa	Brassicaceae	Seeds	1) Seed powder given to animals for better lactation.
46.	<i>Ficus religiosa</i> L.	Peepal	Moraceae	Branches	1) Considered as God Brahma. Leaves and twigs are used in religious activities.
47.	<i>Ficus auriculata</i> Loureiro Roxb.	Tyamalya	Moraceae	Leaves	1) Used to make plates called "Pattal" used in taking meal during different ceremonies.
48.	<i>Ficus glomearata</i> Roxb. (glomerulata)	Umraya	Moraceae	Latex	1) Latex is applied as grease on threads used in Charkha.
49.	<i>Foeniculum vulgare</i> Mill.	Saunf	Apiaceae.	Seeds	1) Seeds fried in pure ghee (clarified butter) mixed with sugar are used to treat stomachache.
50.	<i>Fumaria parviflora</i> Lam.	Pitt Papda	Fumariaceae	leaves	1) Leaf powder is used locally as blood purifier. 2) It's a common weed in wheat crop used as animal fodder.
51.	<i>Grewia asiatica</i> L.	Falsa	Malvaceae/ Tiliaceae	Fruits	1) Ripened fruits are edible. 2) Fruit seeds are believed to induce male infertility.
52.	<i>Grewia oppositifolia</i>	Bayol	Malvaceae	Bark	1) Bark of branches is used to make ropes.
53.	<i>Gloriosa superba</i> L.	Nagardi	Liliaceae	Leaves and roots	1) Leaf extract is used for killing head louse. Root paste is an antidote to snake bite.

54.	<i>Helianthus annuus</i> L.	Surajmukhi	Asteraceae	Seeds	1) Oil is applied for quick healing of bone fracture. 2) Oil is edible.
55.	<i>Holarrhena antidysenterica</i> Wall.	Inderjau	Apocynaceae	Bark, twigs	1) Bark powder aqueous extract is used in amoebic dysentery and as antihelminthic. 2) Twigs are used in religious activities.
56.	<i>Hordium vulgare</i> L.	Jau	Poaceae	Seeds	1) Used as one of the important constituent of materials used in religious occasions known as "Hawan"
57.	<i>Hyptis suaveolens</i> (L.) Poit.	Pakumber	Fumariaceae	Leaves, stem	1) Leaves and stem are used to improve the milk quality in milk yielding animals.
58.	<i>Hyssopus officinalis</i> L.	Jufa	Lamiaceae	leaves	1) Leaf decoction is used to kill round worms, and to cure wounds and muscular rheumatism.
59.	<i>Juglans regia</i> L.	Akhrot	Juglandaceae	Leaves and branches	1) Dried fruits are edible.
60.	<i>Linum usitatissimum</i> L.	Alsi	Linaceae	Seeds	1) Oil is edible. 2) Seeds powder mixed with sugar is utilized to strengthen the body. 3) Seed oil is edible.
61.	<i>Macuna pruriens</i>	Dryaungal	Fabaceae	stem	1) Stem used in traditional religious activities.
62.	<i>Mangifera indica</i> L.	Aam	Anacardiaceae	Stem and fruits	1) Fruit is edible. 2) Unripe fruits are used to prepare pickles. 3) Twigs are used in religious activities.
63.	<i>Mallotus philippinesis</i> (Lam.) Muell. Arg.	Kaamal	Euphorbiaceae	Seeds	1) Seed powder is used to treat Malaria.
64.	<i>Momordica charantia</i> L.	Karela	Cucurbitaceae	Fruits	1) Fruit used as vegetable is believed to kill the stomach worms.
65.	<i>Morus alba</i> .Lin	Toot	Moraceae	Inflorescence, leaves	1) Inflorescence is edible and leaves are used as fodder.
66.	<i>Morus rubra</i> L.	Toot	Moraceae	Inflorescence, leaves	1) Inflorescence is edible and leaves are used as fodder.
67.	<i>Morus nigra</i> L.	Toot	Moraceae	Inflorescence, leaves	1) Inflorescence is edible and leaves are used as fodder.
68.	<i>Murraya koenigii</i> (L.) Spreng.	Gandela	Rutaceae	Stem and leaves	1) Leaves are used as mouth freshener while young branches are as tooth brushes. 2) Used to various witchcraft activities. 3) Leaves are used to flavour the grewy of vegetables.
69.	<i>Musa paradisaica</i> L.	Kela	Musaceae	Fruit and leaves	1) Leaves are used in religious occasions. 2) Fruits are administered to cure diarrhoea and dysentery. 3) Fruits are edible

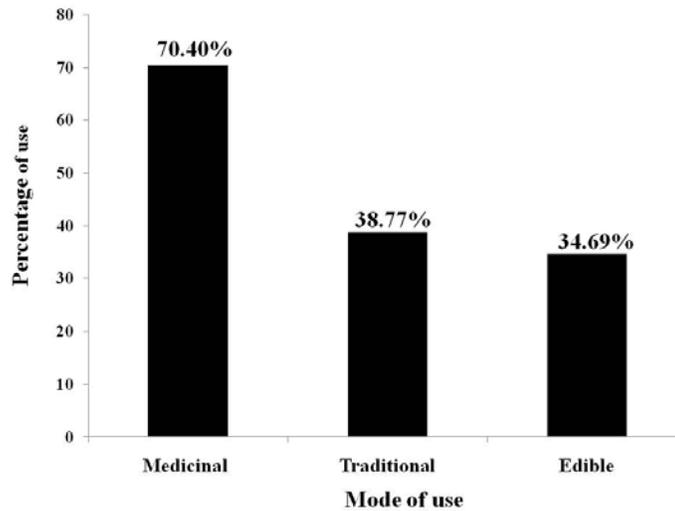
70.	<i>Nerium indicum</i> Mill.	Kaner	Apocynaceae	Stem, leaves	1) Stem and leaf paste is used to cure itching.
71.	<i>Ocimum sanctum</i> L.	Tulsi	Lamiaceae	Seeds, stem, leaves	1) Leaf tea is used to treat cold and cough. Leaf juice is believed to be an mosquito repellent. It is also used to treat earache. Root and leaf decoction is useful in malarial fever. 2) Various plant parts used during religious occasions from birth, to death.
72.	<i>Phoenix sylvestris</i> Roxb.	Khajuriya	Arecaceae.	leaves	1) Leaves are used to prepare carpets.
73.	<i>Pinus roxbughii</i> Sarg.	Chil	Pinaceae	Leaves, branch, seeds and timber	1) Leaf/ needles paste is used in minor skin infections. 2) Timber is used to make furniture. Dried needles smoke is used as mosquito repellent. 3) Seeds commonly known 'Chilgoza' are edible.
74.	<i>Prunus dulcis</i> Batsch var.	Badam	Rosaceae	Dried fruits	1) Fruit decoction is used to stop dysentery in small babies. 2) Dried fruits are edible.
75.	<i>Psidium guajava</i> L.	Aamrud	Myrtaceae	Fruits	1) Fruits are edible
76.	<i>Pyrus pashia</i> Buch.-Ham.	Kainth	Rosaceae	Young branches, fruits	1) Paste of young twigs is used as hair dye. 2) Ripened fruits are edible.
77.	<i>Punica granatum</i> L.	Dadu	Punicaceae	Seeds	1) Seeds are used to stop dysentery and nose bleeding.
78.	<i>Ricinus communis</i> L.	Arand	Euphorbiaceae	Seeds	1) Seeds are poisonous. Oil is used as ointment.
79.	<i>Saccharum officinarum</i> L.	Ganna	Poaceae	Aerial parts	1) Aerial part is used in different religious activities. 2) Stem is used for juice.
80.	<i>Sapindus mukorossi</i> Gaertn.	Reetha	Sapindaceae	Fruits, leaves	1) Fruits are used as shampoo. Also considered superior for woollen and silk cloth washing. 2) Leaves are used as fodder.
81.	<i>Sida cordifolia</i> L.	Didya	Malvaceae	Stem, leaves	1) Leaf and stem paste is given to animals for improving sex power.
82.	<i>Sesamum indicum</i> L.	Til	Pedaliaceae	Seeds, leaves	1) Seed oil is used as ointment in bones fracture and burns. Leaves extract is used in dysentery, diarrhoea. 2) Seed oil is edible. 3) Seeds are important constituent of materials used in worship known as "Hawan".
83.	<i>Spilanthus oleracea</i> L.	Akarkara	Asteraceae	leaves, Flowers	1) Leaves are taken to cure throat and gums affections. Flowers are used to cure mouth sores.
84.	<i>Syzygium cummi</i> L.	Jamun	Myrtaceae	Fruits, seeds	1) Fruit and seed powders are administered for curing

85.	<i>Syzygium aromaticum</i> (L.) Merrill & Perry	Laung	Myrtaceae	Flower buds	diabetes. 2) Fruit are edible. 1) Oil is used in toothache.
86.	<i>Terminalia bellerica</i> Roxb.	Baheda	Combretaceae	Fruits	1) Fruit is an important constituent of Triphala churn. Used in indigestion.
87.	<i>Terminalia chebula</i> Retz.	Harad	Combretaceae	Fruits	1) Fruit is an important constituent of Triphala churn. Fruits roasted on hot ash are used to cure cough.
88.	<i>Tinospora cordifolia</i> (Willd.) Miers ex Hook. f. & Thoms.	Gulaj	Menispermaceae	Stem	1) The stem juice is used for blood purification. 2) Stem pieces are used in traditional religious activities.
89.	<i>Toona ciliata</i> Roemer	Tooni	Meliaceae	Wood	1) Wood is considered as one of the best timber for making door and windows. 2) Leaves are used as fodder.
90.	<i>Tridax procumbens</i> L.	Doodhli	Asteraceae	Leaves	1) Crushed leaf is used to stop wound bleeding.
91.	<i>Trachyspermum ammi</i> (L.) Sprague	Ajwain	Apiaceae	Seeds	1) Stem and leaves are used in cookeries. 2) Seeds are used in stomach pain as well as in indigestion.
92.	<i>Urginea indica</i> (Roxb.) Kunth.	Jangli onion	Liliaceae	bulb	1) Bulb paste is used to get relieve from joint pain and burning.
93.	<i>Vetiveria zizanioides</i> (L.) Nash	Surad	Poaceae	Leaves	1) Leaves are believed to facilitate easy delivery in buffalos. 2) Aerial part is used for roofing by villagers.
94.	<i>Viola odorata</i> L.	Vanskan	Apiaceae Violaceae	Flowers	1) Tea made from flowers is useful in cough and cold.
95.	<i>Vitex nigundo</i> L.	Bana	Verbenaceae.	Leaves, seeds	1) Seed boiled in water, and that water is used to warm the fractured bones. Leaves and seeds boiled in water are used for bathing new born babies and their mother. Leaf smoke is used as mosquito repellent. 2) Twigs are used by local religious villagers in witchcraft activities.
96.	<i>Vitis vinifera</i> L.	Manaka Daakh	Vitaceae	Dried fruits	1) Slightly roasted dried fruits are used to cure cough. 2) Both fresh and dried fruits are edible.
97.	<i>Woodfordia fruticosa</i> Kurz.	Tilchauli	Lythraceae	Flowers	1) Flowers are used to treat cough.
98.	<i>Zingiber officinale</i> Roscoe.	Adrak	Zingiberaceae	Rhizome	1) Semi heated rhizome is used for cough and cold. 2) Rhizome is believed to be appetite stimulant. 3) Rhizome is used in tea and vegetables.

The present course of investigations has revealed the usage of 98 plant species belonging to 49 different families used by the rural peoples of the study area. The information on scientific name, local name, part used and medicinal, traditional and other uses, obtained during the survey through individual interviews has been provided (Table 1). The dominant families are Poaceae and Moracrae with 6 species

each, followed by Euphorbiaceae and Rutaceae with 5 and 4 species respectively. Other families were recorded with 1-3 plant species only. It was found that about 70.40% plants were used in medicinal practices whereas, 38.77% in traditional and 34.69% in edible purposes (Figure 2). Out of 98 plant species, 44.89% were observed to be Trees species, herbs (38.77%) and shrub (16.32%).

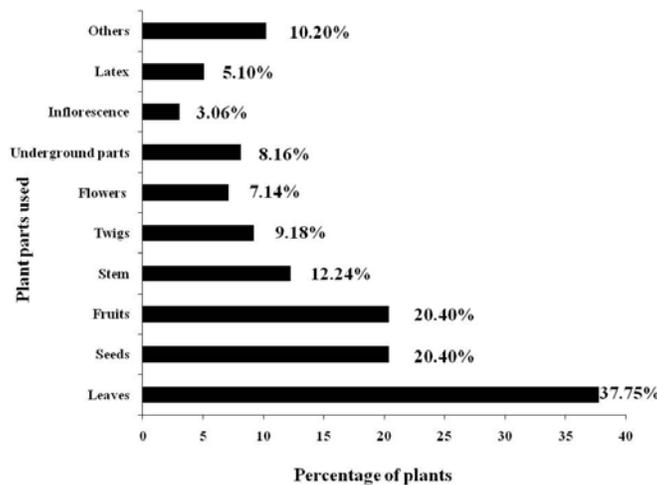
Figure- 2: Mode of plant used



About sixteen (17.34%) plants having both medicinal as well as traditional importance, twenty (20.44%) plants are used for medicinal and edible purpose and twelve (12.24%) are of traditional and edible importance. About seven (7.14%) plants were recorded to be used in all medicinal, traditional and edible purposes. It was found that local people uses various plant parts

mostly leaves (37.75%), along with fruits and seeds (20.40% each), other aerial part like stem, twigs, flowers/inflorescence, (12.24-3.06%), underground parts include roots, bulb and rhizome (8.16%), latex/resin (5.10%) and other plant parts such as wood, bark and oils (10.20%) for different medicinal, traditional activities and edible purposes (Figure 3).

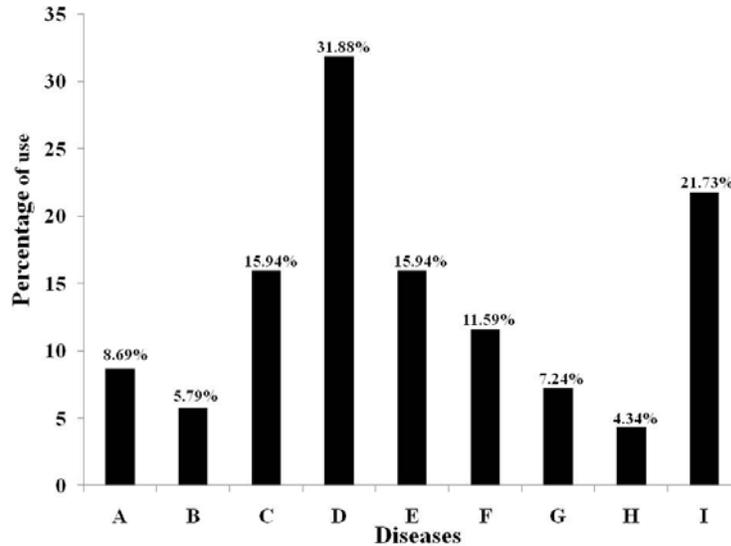
Figure- 3: Statistics of plant parts used



On the basis of collected information regarding the medicinal uses of plants, about 10 types of diseases related to stomach, mouth, cough, cold, skin, blood, vitality and strength, bones, muscles and other like memory, swelling, etc. were found to be

cured by local villagers by the use of plant based medicines. Even jaundice, malaria, bone fracture, snake bite, nasal and wound bleeding, memory improvement etc. are treated (Fig.4).

Figure-4: Plant parts used for treating various diseases



A-mouth; B-bites; C- cough & cold; D- stomach; E-skin; F-blood; G-body strength; H-bone & muscles; I-others

Above ground parts for curing various diseases are higher than underground parts. Above ground parts include leaves (34.78%) used in the majority of cases, followed by seeds and fruits (20.28% each), stem (11.59%), oils/latex and flowers (8.69% each), twigs/bark (7.24%) whereas underground parts were root, tuber, rhizome, bulb (14.49%). These 69 medicinal plant species were used in curing about 10 types of ailments, of which the highest numbers of plant species (22 species) were used for the treatment of gastrointestinal disorders such as indigestion and constipation. About 11 medicinal plant species were used in curing cough and cold, skin diseases and 4 medicinal plant species were used for healing cuts and wounds (Table 1).

Use of young twigs were higher (39.47%) in different traditional activities as compare to other plant parts such as, leaves (23.68%), timber (10.51% each) and fruit, bark, spine, powder, latex/ resin, seed, stem (23.68%

collectively). All the parts of *Bambusa bambos*, *Ocimum sanctum* and *Cyprus rotundus* are used traditionally. It was observed that *Acacia catechu*, *Cynodon dactylon* and *Ocimum sanctum* are used in about every traditional religious activity from the very birth to death.

Sometimes, it was also found that peoples are not wanted to disclose the knowledge regarding the methods drug preparation from plants. They believe that this decreases the disease curing effect of the drugs. This knowledge has been orally transferred sometimes from one generation to the other and at each level a bit of it has been lost. Peoples were also found hesitant to disclose their knowledge. Peoples were also found concerned about the degradation of wild medicinal plants and their medicinal and traditional values.

*Ficus religiosa* and *Ficus benghalensis* are considered as sacred plants and no one can cut them for their individual interest. Villager's uses the flowers of *Bauhinia*

*variegata* as a vegetable by removing its stigma because they know it is poisonous. This clearly indicates their deep knowledge towards the importance of natural resources. Three plant species *Vitex nigundo*, *Calotropis gigantea* and *Butea monosperma* are used by local peoples for medicinal and traditional purposes. Because they are not found frequently in the study area now, villagers are using them carefully. This was found to be an important step towards conservation of these plants. Many of the peoples are not aware about the memory improving power of *Centella asiatica*.

#### 4. Discussion

Many of the plants that are used by the local people were also reported by many workers while studying different areas of Himachal Pradesh. Several such types of studies from time to time in different areas of Himachal Pradesh have been carried out. Medicinal and aromatic plants of Himachal Pradesh (Chauhan 2003), medicinal and traditional and other uses of the plants (Negi and Subramani 2002, Sekar and Srivastava, 2005; Sharma and Lal, 2005, Verma and Chauhan, 2006, Uniyal *et al* 2006, Guleria and Vasishth 2009) plants as timber resources (Kharwa and Rawat 2009) have been reported. The floristic diversity and conservation strategies in India (Chowdhery 1999), threatened medicinal plants and their conservation in Himachal Pradesh (Badola and Pal 2003) and observations on the traditional phytotherapies (Sharma *et al* 2004) are also described.

Bhalla and Bhalla (2004) documented about traditional food and beverages of Himachal Pradesh. Similarly, Brijljal *et al* (1996) and Sharma *et al* (2009) has described some wild edible plants and fungi as supplementary food materials. Gautam and Bhadauria (2009) have described homeopathic flora of district Bilaspur whereas, Sharma and Mishra (2009) have studied the agro-biodiversity and ethno-medicinal uses of the plant species from another area of district. Although, this part of the paper provides a list of several plants, which have been used as medicine or traditional as well as edible purposes by the

local people in the study area, India and elsewhere and clearly indicates the vast plant diversity of the area but, still a large amount of the flora is yet to be explored.

#### 5. Conclusion

Rapidly growing urbanization of the area unfortunately posing a threat to its plant diversity, traditional knowledge and cultural practices of the rural peoples. Therefore, our continuing work on documentation of plant and their multifarious uses will not only provide recognition to this knowledge but will also help in its conservation for the betterment of human society and to the coming generation.

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