

**STUDIES ON ETHNO-MEDICO-BOTANY
OF KUNIHAR FOREST DIVISION
DISTT. SOLAN (HP)**

THESIS

by

SAROJ VERMA

*Submitted in partial fulfilment of the requirements
for the degree of*

MASTER OF SCIENCE

in

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(FOREST PRODUCTS)



COLLEGE OF FORESTRY

**Dr. Yashwant Singh Parmar
University of Horticulture and Forestry
Nauni, Solan -173 230 (H.P.) India**

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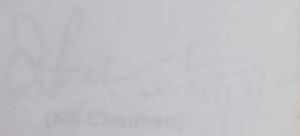
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of Horticulture and Forestry, Nauni-Solan (H.P.). It is a privilege to have my gallant
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The assistance and cooperation of the staff and students of the Department of Forest Products have been fully acknowledged.

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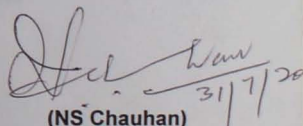
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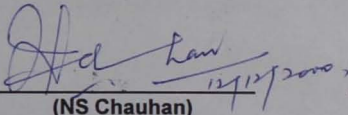
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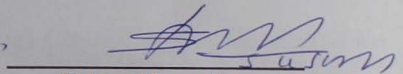

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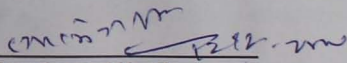
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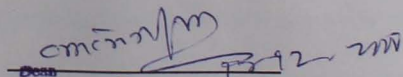
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Date : 31st July, 2000

Verma
(Saroj Verma)

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Chapter 1

INTRODUCTION

Human culture has been augmented by plants and plant products since time immemorial. But few people realize that plants are an important part of our environment and how much their influence on humanity has been and always will be.

The ancient Indians were acquainted with larger number of plants than the natives of any other country. This is evident from the ancient Indian treatise such as *Materia Medica*, *Nighantus* and *Koshas*. According to *Ayurvedic Materia-Medica* there is no plant on the earth which does not gave medicinal value.

India is a veritable emporium of medicinal and aromatic plants with one of the richest floristic diversity on the earth. But this, in other parts of the world, has been severely damaged and diminished by rapid industrialization and urbanization coupled with the wholesale and reckless distribution of our forests which in the past were reservoirs of very rich plant and animal life. Indian System of medicines utilize 80 per cent of the material derived out of plants. There are over 2500 plant species in India having documented medicinal value, majority of them growing in a wild state, whereas, only a few are cultivated out of these about 750 plant species from the ingredients of 14,000 published recipes of *Ayurveda*, *Sidha* and *Unani* medicines. The therapeutic value of 98 plant species has been established by modern investigations and are extensively used by the modern medical practitioner in one form or the other (Chauhan, 1999). In India about 2500 species of plants are known to be having medicinal properties. Only 100 plant species are used in different systems of medicines (Brahma Varchas, 1984).

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Darwin in his work on domestication of plants and animals said, "From innumerable experiments made through dire necessity by the savage of every land, with the result handed down by tradition, the nutritious, stimulating and medicinal properties of the most unpromising plants were probably first discovered". Such studies were covered under the special branch of science known as 'Ethno-botany'.

Ethnobotany is the study of direct relationship between human beings and plants and is proving to be of great utility in the health care programmes and also for exploring various life supporting species as emergency foods besides bringing out the useful information about socio-cultural, madico-religious lores and mores, phrases and proverbs, taboos and totems prevailing in an area or in a society.

The term 'Ethno-botany' was first applied in 1895 by John W. Harshberger to the study of plants used by primitive and aborigines.

There are many interdisciplinary aspects of Ethno-botany like Ethno-pharmacology, Ethno-medicine, Ethno-gynaecology, Ethno-orthopaedics (Healing of bones by plants), Ethno-ophthalmology (Plants in eye diseases), Ethno-agriculture, Ethno-phytochemistry, Ethnocosmetics etc.

Sub-discipline of Ethno-botany are Ethno-mycology, Ethno-algology, Ethno-lichenology, Ethno-bryology, Ethno-teridology, Ethno-paleobotany, Ethno-ecology, Ethno-taxonomy, Ethno-medico-botany, Ethno-archaeobotany.

Ethno-botanical studies provide helpful clues to crop domestication and folk selection for better use of resources to meet local needs, but there have been only limited surveys to reveal this fact even in ethnically physio-graphically and floristically rich regions such as India (Arora, 1987).

Himachal Pradesh, a hilly state situated in the North-West Himalayas, boasts of a wide diversity of plant forms of European, Tibetan and Chinese origin in its sub-

tropical, temperate, alpine and cold desert regions (Chauhan and Thakur, 1995). This state has been regarded as a veritable emporium of plant genetic resources specially the medicinal and aromatic plants.

Kunihar division falling under the administrative jurisdiction of district Solan bounded by Nalagarh division towards South-West, Solan towards South-East and Shimla towards North-East and Bilaspur towards North-West has remained unexplored for its vegetal resources except a short stint by researcher from IRISM, Jogindernagar of Nalagarh division including Kunihar area during December, 1972 (Chauhan, NS Personal communication).

The present work exclusively aimed at the identification, inventorization and comparative studies for entire Kunihar Forest Division would prove extremely useful in assessing the status, utilization potential and future strategies for the conservation of Medicinal and Aromatic Plant resources in these areas. This kind of theoretical-cum-practical approach for the studies on the economic medicinal and aromatic plants, will have its definite significance in following similar approach in other adjoining areas to construct regional approach and policy documentation on the subject. Therefore, keeping in view the above mentioned factors the present work on "Ethno-medico-botany of Kunihar Forest Division" was undertaken with the following objectives:

- i) To survey and collect the floristic elements of the study area and making permanent records for preservation of the specimens and detailed studies in the Herbarium.
- ii) To identify and collect the information about the local/vernacular names and traditional usage of different plant species/plant parts used by the local inhabitants along with the mode of administration.
- iii) To inventories the resources and document the Ethno-botanical information existing with old people faith healers, Tantriks, physicians, local Vaides etc.

Chapter 2

REVIEW OF LITERATURE

The co-evolution of cultures, life-forms and habitats has conserved the biological diversity on this planet. Our knowledge of the intimate relationship between early man and plants has come to us mainly through surviving traditions. This relationship which now forms the core of inter-disciplinary science known as Ethnobotany, has attracted much attention. Therefore, the work is done on the aspect of Ethno-medico-botany of Kunihar Forest Division. Accordingly the review of such work is dealt under three broad parameters:

1. Plant exploration and systematic enumeration.
2. Floristic comparison/diversity
3. Ethnobotany

1. PLANT EXPLORATION AND SYSTEMATIC ENUMERATION

The history of plant exploration is concomitant with the evolution of human beings. The knowledge of natural resources, their enumeration along with evaluation of their resources potential and life style of people are pre-requisite to standardize their systematic exploration. This grass root approach to local inventory will enrich the macro approach of natural and global biodiversity enumerations.

Vedic literature, existing since the period of Rigveda written about (500 years B.C.) and regard civilization mentioned 67 medicinal plants. Later, mentions of the valuable medicinal plants were found in Yajurveda with 81 and Athrvaveda (4500-2500 B.C.) 290 species. Sushruta Samhita written during 1000 B.C. and Charak Samhita, contained very comprehensive record of medicinal plants and described

properties and uses of 1100 and 1270 plants respectively, in compounding of drugs (Chopra *et al.*, 1958).

The earliest records of plant collecting expeditions date back to 1495 B.C., when Queen Hatsheput of Egypt sent an expedition to Somalia in precious frankincense (Coats, 1969).

In other civilizations of the world with regard to the history of medicinal herbs, mention may be made of the works of Hippocrates (5th century B.C.) the father of medicines in the west. A Greek worker Theophrastus (372-287 B.C.), described plants used in the treatment of various diseases. Pliny (23-79 A.D.) Dioscorioides (77-78 A.D.) famous for his *Materia Medica*; Galens (131-200 A.D.); Hilarius, Mathiodus the Italian physician, Clausius- best known for his translation of Spanish herbal writings are the early pioneer workers in the field. The leech book of Bald, Written during 900-950 A.D. and kept in British museum is an Anglo-Saxon work and shows a remarkable knowledge of British plants and herbs (c.f. Wren, 1956; Scherry and Robert, 1954 and Trease, 1952).

The golden age of plant collections, however, was the 18th century, when botanists under the direction and patronage of Sir Joseph Banks (1743-1820), President of Royal Society and of the Royal Botanical Garden at Kew were sent to various parts of the world in research of exotic species. Among the collectors, three are worthy of special mention- Francis Masson (1741-1806) collected twice in Africa, Madeira, the Canaries and West Indies. David Nelson (d. 1789) accompanied Captain Bleigh on the fated voyage of HMS Bounty to the society Islands to collect breadfruit for planting in the West Indies. George Caley (1770-1829) hunted alone for plants during a period of 10 years in the remotest parts of Australia (c.f. Jackson and Ford Lloyd, 1986).

A contemporary and comprehensive records of over 11300 illustrations representing 8870 plant species introduced from tropical and warm climate regions

of the world was presented along with the information like growth, habitat, shape, texture, flower and foliage description by Graf (1973).

Collections and specimen counts from several locations of the Bridge Creek (California) yielded a total of more than 32,000 leaves and fruits (Chaney, 1942).

Lott *et al.*, (1987) recorded about all vines, shrubs and trees with d.b.h. 2.5 m within 30 transects in 2 upland areas and in the Arroyo (Stream) flood plains at Chamela, Jalisco and Mexico.

The rich and diverse flora of Israel comprising 2530 species including 46 endemics was studied by Danin (1988).

Turner *et al.* (1994) studied the flora of Singapore and showed that out of 2277 species, 594 had faced extinction. Hamid *et al.* (1995) reported 9 medicinal plant species belonging to family Cucurbitacea of Pakistan.

India, a rich source of biodiversity soon attracted the attention of explorers. According to Burkill (1965), the scientific beginning of plant exploration work in India dates back to Garcia da Orta, a great pharmacist from Portugal. He came and settled in Goa in 1534. In his garden he mainly grew those plants which were used by local physicians for the treatment of various diseases. His knowledge of plants is recorded in his book 'Colloquies' published in 1565. But, it was Heinrich Van Rheedee, the Governor of Dutch possession in Malabar in 1667, who made the first real attempt to explore systematically the Plant Wealth of India. He made 794 excellent illustration and described about 750 species with the assistance of various workers from different fields including scientists, plant collectors, artists, physicians, integrators etc (Manilal, 1980).

Linnaeus in his 'Species Plantarum' bases the nomenclature of Indian plants mainly on Rheedee's work (Santapau, 1973).

One of the most significant outcome of all these collections is to be seen in Hooker's 'Flora of British India' (1872-1897) spread over 7 volumes. This pioneer work has formed the basis of all the later provincial or local Indian floras published till date. King and Pantling (1898) described the Orchids of Sikkim-Himalyas morphologically and taxonomically with drawings covered in 3 volumes. Eighty two new and rare Indian plants were described by King *et al.* (1900).

Dey *et al.* (1964); Uniyal and Issar (1966-68); conducted a botanical survey of Baghirathi and Shillonger valleys in Uttar Kashi forest division of Garhwal Himalaya and have reported more than 100 medicinal plants of commercial and traditional importance.

Gupta (1967) enumerated more than 1150 species of flowering plants of Dehra Dun valley (UP), which included hundreds of plants of medicinal and aromatic plants.

For temperate regions, Rushford (1970) described conifers of 5 different families containing 48 genera and over 600 species. Mehra *et al.* (1969) reviewed the literature regarding survey work on medicinal and aromatic plants and concluded that there have been sporadic and restricted efforts limited to few regions of this vast country.

Rao and Razi (1981) carried out botanical exploration of Mysore district and described 1601 species of flowering plants belonging to 170 families and 778 genera, with appendix of Unani, Ayurvedic and trade names of drugs.

The scanty vegetation of Ladakh amounting to 611 species of which 540 were dicots, 65 monocots and 2 gymnosperms was accounted by Kachroo *et al.* (1987). They gave ecological and taxonomical appraisal of the vegetation.

Different survey units of central council for Research in Ayurveda and Sidha have undertaken preliminary survey tour programmes with a view to study the flora and fauna, mineral wealth, medical practices, folk medicines, life and habits of the local people, trade aspects and economics of the available drugs in 17 state of India viz., Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Sikkim, Uttar Pradesh and West Bengal (Anonymous, 1986).

Choudhary *et al.* (1993), made a thorough and comprehensive survey of the Cuttack district and made mention of 330 medicinal plants, under 253 genera belonging to 91 angiospermic families.

Bhatia (1993) examined the impact of bio-technological innovation on biodiversity and the status of biotechnology in agriculture, forestry and aqua-culture.

Srivastava and Namhata (1995), classified 63 plants species including medicinal and aromatic plants as minor forest produce, of Jammu and Kashmir state. The inventory includes many important medicinal and aromatic plants like *Inula racemosa*, *Silybum marianum*, *Ephedra gerardiana*, *Aconitum* spp. etc.

Farooqui (1996) collected and enumerated 100 plants from the Central Eastern Sardinia which could be utilized for medicinal and aromatic purposes.

In connection with the exploration survey of medicinal plants in Himachal Pradesh, it is seen that there had not been any concerted effort to explore fully the herbal resources of this hilly state till late 1970's. Several sporadic and preliminary exploratory surveys of course had been conducted.

The earliest attempt to collect plants from Himachal Pradesh was made by William Moorcraft (1765-1825) who collected plants from Kangra, Kullu, Lahaul

and Spiti in 1821. The countess of Dalhousie, collected about 600 species of plant between April to October, 1829 from Shimla. Some other plant collections of 19th century have been referred to Winder Bolten (1803-1854); Munro (1818-1880); Walker (1894).

The first account of the flora of vegetable products of Lahaul and Spiti region was published by Aitchinson (1868). Collet (1921), enumerated more than 1326 plant specie from Shimla region covering about 500 sq km with the altitudinal range varying from 600-3000 m.

Joshi (1952), published a list of aquatic vegetation of Lahaul.

Uniyal and Chauhan (1971) described the medicinal plants of Uhal Valley in Kangra forest division of Himachal Pradesh in Kullu (1972). Traditionally important medicinal plants of Kangra in Dharamshala forest circle, Himachal Pradesh, were also discussed by them (1973).

Some other workers who made valuable contribution regarding the plant exploration of HP are Chauhan (1974); Kapoor *et al.* (1976); Sharma (1977); Nair (1977); Kapahi and Sarin (1979); Uniyal and Mehrotra (1979). Bhattacharya and Uniyal (1982); Vij *et al.* (1982); Dhaliwal and Sharma (1994), also carried out similar exploratory works in the different parts of Himachal Pradesh.

Aswal and Mehrotra (1994) reported a total of 985 species belonging to 353 genera and 79 families from Lahaul-Spiti and including part of Rohtang. Out of 985 species, 797 are dicots, 180 monocots and 8 gymnosperms.

Chauhan (1974) enumerated the commercially important medicinal and aromatic plants of Una Forest Division in Himachal Pradesh.

Chauhan *et al.* (1979), identified and reported 30 Indian medicinal plants used in Tibetan medicine at Mecleod Ganj, Dharamshala, Distt. Kangra.

Choudhery and Wadhwa (1984) in their analysis of the flora of Himachal Pradesh have reviewed the work of various earlier workers.

Chauhan and Chauhan (1988) have discussed the ethnobotany of Trans Giri area of Sirmour district.

Chauhan and Khosla (1988b) discussed 104 medicinal plants of Himachal Pradesh having commercial importance.

Chauhan (1990) discussed 12 species of medicinal orchids of Himachal Pradesh.

Chauhan (1984) surveyed the wild medicinal and aromatic plants of Pabbar Valley of Himachal Pradesh and collected 761 species belonging to 107 families out of which 649 were dicots, 89 monocots and remaining 10 are ferns. Out of 400 species of medicinal and aromatic plants, 104 species discussed are of commercial medicinal and aromatic value, while 85 species were of ethnobotanical importance of that area.

Sindhi, (1996) worked on the 'Diversity and Economic Utility of the Flora of Nauri, district Solan, HP' and enlisted 723 plants belonging to 115 families. Out of this 266 plants are reported to have proven medicinal properties and are used in the formulation of Ayurvedic and Unani Systems of medicines and also used as household remedies. In addition to this, 85 plant species used locally for curing diseases have been listed.

Chauhan (1997) documented the Ecological and Ethnobotanical Studies on the flora of Spiti. Out of identified species 74 have been categorized as medicinal

and aromatic plants 104 plant species were recorded as of ethno-botanical importance.

Gupta (1998) did 'Comparative studies on the Medicinal and Aromatic Flora of Churdhar and Rohtang Areas of Himachal Pradesh'. In total 195 plant species were collected from Churdhar belonging to 53 families and 139 genera. Out of 195 plants, 172 species belong to dicots, 18 to monocots and 5 to gymnosperms. A total of 182 species belonging to 58 families and 142 genera were collected from Rohtang area. Out of 182, 162 are dicots, 14 monocots and 6 gymnosperms.

Chauhan (1999-2000) have discussed around 700 species of Medicinal and Aromatic Plants in Himachal Pradesh under different categories.

2. FLORISTIC COMPARISON/DIVERSITY

Many workers have done a recommendable job in studying the floristic components of Himalayan region, among them some have taken the initiatives in this regard. Smith (1974) conducted vegetation survey of Western Australia and documented brief notes illustrated by photos of the vegetation types shown on vegetation map. Life forms, height and density are the criteria used to distinguish sixteen represented formations.

Long (1977) observed that species diversity in *Pseudotsuga menziesii*/*Gaultheria shallon* stands was maximum at five years old stand which, decreased from five to twenty years old stand as *Gaultheria shallon* started to dominate the understorey. As *Gaultheria shallon* decreased, the diversity of herbs and mosses increased. The overstorey cover increased with age, while the understorey of seventy year old stand approached a dynamic equilibrium in terms of species richness, diversity and cover. Climax would not reach for several hundred years during which time *Tsuga heterophylla* was expected to replace *Pseudotsuga menziesii* and the dominant overstorey species.

In parallel to the Indian context, the floristic studies were also undertaken from time to time in other parts of the globe such as the composition of major grasslands type in North-west Dakota were studied by Hanson and Whitman (1938). ; Desert vegetation of North America was reviewed by Shreve (1942), while Billings (1945) exploited some plant associations of Carson desert region, Western Nevada.

Solangaarachchi and Perera (1993) reported details of floristic information on 81 species of important medicinal plants representing 73 genera and 37 families in the understorey of the tropical dry mixed evergreen forest at Hurula reserve of Sri Lanka. About 1 per cent of the species were endemic and 61 per cent were found to be medicinal importance.

While studying species composition, diversity index and regeneration potential of forest communities of outer Garhwal, Ram prasad *et al.* (1992) reported that lower altitudinal forests (700-900 m) were dominated by *Shorea robusta/Mallotus philippensis* and *Shorea robusta/Pinus roxburghii* and mid altitudes (1000-1700 m) by *Pinus roxburghii* and those of >2000 m altitude by *Quercus incana/Rhododendron arboreum*. Maximum similarity in species composition was found in *Pinus/Quercus* and *Quercus/Rhododendron* communities and maximum diversity in *Shorea/Pinus* and *Quercus/Rhododendron* communities.

Jain *et al.* (1994) reported that more than 600 plant species grow around the Sahariya-inhabited area of Central India which are used for different purposes like fuel, food, fibre, medicines, small wood timber etc. A number of clans are named after plants, which they never harm.

William Moorcroft (1821) was the earliest person to collect plants from Himachal Pradesh. He collected plants from Kangra, Kullu, Lahaul and Spiti in 1821. Contess of Dalhousie collected more than 600 species from Shimla in 1829. Since then, large number of workers have felt with the floristic studies of the region

falling under the erstwhile undivided Punjab or the territories of Himachal Pradesh before its reorganisation in 1971. The important among these are Cleghorn (1864), Aitchinson (1868, 1869), Stewart (1868, 1869), Ribbentrop (1873), Brandis (1874, 1878, 1887), Coldstream (1880), Watt (1881), Mc Donell (1882, 1883) collections from Chur mountains through out the states of Sirmour and Shimla and other parts of the state were made by Clarke (1889). Buck (1885), Kanjilal (1901), Collet (1886, 1902), Coldstream (1880), Gamble (1898), Duthie (1906), Burkill (1908), Bamber (1916), Sahni (1927), Parker (1938, 1956), Sabnis (1940-41), Gupta (1961, 1964, 1966), Nair (1963, 1964a, b, c), Shabnam (1964), Chauhan (1971-2000) has conducted surveys and collections from all over Himachal Pradesh and has identified and 2400 species, the voucher specimens of which are housed at ISM Jogindernagar and UHF Herbarium, Solan. Bor (1973), Vohra (1980), Jain (1983), Aswal *et al.* (1994) and Sharma and Singh (1989, 1990 and 1995).

Floristic composition of Western Himalayan sub-alpine coniferous forest was dominated by *Abies spectabilis* in the Parvati range in Kullu district of Himachal Pradesh (Gupta *et al.*, 1982), Singh and Verma (1986) studied the distribution of grasses legumes and ferns in grazed forest communities dominated by *Quercus incana*, *Cedrus deodara* and *Pinus roxburghii* during the rainy, winter and summer season at Shimla.

Sharma (1991) compared the performance of growth and survival data for 11 provenances/clones of *Populus ciliata*, one of *Populus yunanensis* and 4 of *Populus deltoides* in Spiti valley with local provenance of *P. ciliata* (Tabo) and observed better performance of all the provenances.

Nautiyal *et al.* (1994) conducted exploration of fodder grasses and legumes germplasm of cold desert of India viz., Ladakh region in Jammu and Kashmir and Lahaul and Spiti in Himachal Pradesh. A total of 61 accession of 16 folder legumes and 160 accession of 63 fodder grasses documented for conservation multiplication along with 21 woody fodder plant species.

3. ETHNOBOTANY

Plants play a vital role not only in our economy, but also as remedies of various human diseases. Study and use of economic plants of India have been a part of Indian medicine and Indian plant lore from ancient time. Rigveda seems to have the earliest records of use of plants in medicine, but these references are very brief.

Archaeological or palaeobotanical evidences about collection, use and cultivation of plant products by early man for food, house-building etc. (Van Zeixt and Casparie, 1983) and reference to herbal medicine in ancient scriptures suggest a very long history of ethnobotany. Yet the word 'Ethnobotany' was applied to such knowledge by Harshberger (1895), a century ago, 'An introduction to Ethnobotany' (Faulks, 1958) is the first book on ethnobotany describing the goods and services obtained from plants and relationship of vegetation with humanity.

'The Nature and Status of Ethnobotany' (Jain, 1981) is the first book dealing with Indian Ethnobotany. It has a compilation of articles on yield studies conducted in different phyto-geographical areas of India. The scope, concepts and implications of ethnobotany have been expanding at a very fast rate (Schultes, 1962, 1963; Ford, 1978; Jain, 1967, 1970, 1986, 1987, 1989; Virjee *et al.*, 1984; Alcorn, 1987).

In India, some field studies in tribal areas of Madhya Pradesh by Jain *et al.* (1964, 1965, 1979), Andaman and Nicobar Island by Bhargava (1981) have been conducted with some positive results. Apart from the field work, herbaria and musea play an important role in ethnobotanical research. The outstanding work of this type is that of Altschul (1968, 1979a, 1970b) who scrutinized several hundred thousand herbarium specimens of Harvard University. Very little work has been done on this aspect in India. Jain and Dam (1979) searched a part of about one hundred thousand specimens in Assam for recording ethnobotanical data.

One of the excellent source of ethnobotanical research is the large compilation of anti-tumour plants from old texts and local folk medicine from all over the world by Hartwell (1967-1971), Sarmah (1971, 1972, 1973) on Vedic literature and the work of Jain and Tarafdar (1970).

Many of the plants familiar to the witch doctor really have the healing powers that tradition attaches to them. The age old arts of the herbalist must, therefore get tapped (Maheshwary, 1980).

Ethnomedicine have now been classified into several more specialized disciplines e.g. papers have appeared under the discipline of ethno-narcotizes (Schultes, 1956), ethnopediatrics and ethnogynaecology (Schultes, 1963). Altschul (1970a, b) and Effron (1967) stressed the role of ethnopharmacology in the search of psychoactive drugs.

The conservation of ethnobotanical resources and wild relative of crop plants is vital for future breeding programmes. The tribal societies and cultures are themselves disappearing and with them goes their traditional plants lores. Ethnobotany has thus, become increasingly important because the information which is being gathered and would otherwise be lost at a rapid rate. The workers who described various conservation practices of tribals are Gadgil and Vartik (1973, 1976), Paul and Mudgil (1985).

The importance of ethnobotanical studies in North-east India has already been emphasized. The study of Ethnobotany has been made by workers like Mudgal and Jain (1980); Dam and Hajra (1981); Veena Chandra (1983); Hynniewta (1984, 1987); Pal (1984 and 1992); Singh and Anand Krishna (1983); Thothathri and Pal (1987); Pandey (1988); Rawat and Singh (1990); Kohli (1992); Singh (1993); Pandey and Rawat (1994); Rawat *et al.* (1995, 1996), but not much on ethnomedicobotanical aspects.

Chauhan (1988) reported ethnobotany of 85 species from Pabbar Valley in Himachal Pradesh; 32 species from Spiti.

The Ethnobotanical study is carried out by Chauhan and Chauhan (1988) of paharis inhabiting the Trans-giri area of Sirmour district in Himachal Pradesh. The emphasis is on the relationship between the usage of Indigenous wild medicinal and aromatic plants growing in this area by the natives.

Maheshwari (1994) undertook Ethnobotanical surveys and documentation with a view to prepare resource inventories of plants used for food, fibre, medicine, materials and energy. Over 550 species of plants are used by the tribes of Madhya Pradesh in traditional medicine.

Singh *et al.* (1997) gave information on new folk medicinal uses of 96 plant species belonging to 93 genera and 59 families. The data were collected during 1983-94 either from local healers or from reliable elderly villagers during the course of Ethnobotanical explorations of various forest and rural areas of Garhwal and Kumaon region of India. Plant species with their common name, vernacular name, collection number, habit and medicinal usage are listed.

Sharma (1998) did 'Ethnobotanical studies of Gaddies- A tribal community in district Kangra of Himachal Pradesh. He collected 161 species belonging to 124 genera and 52 families from different locations. Out of these, 145 species belong to dicots, 11 to monocots and 5 to gymnosperms represented by 45, 4 and 3 families, respectively.

Chapter 3

METHODOLOGY AND INTINERARY OF DATA COLLECTION

3.1 GENERAL DESCRIPTION OF THE STUDY AREA

3.1.1 Location and extent

Geographically, this area is situated between $30^{\circ}5.5'$ to $31^{\circ}22''$ longitudes and $76^{\circ}36'$ to $77^{\circ}09'$ latitudes. This area constitute an part of Solan district of Himachal Pradesh and is bounded by Nalagarh division towards South-West, Solan towards South-east, Shimla towards North-east and Bilaspur towards North-west. The elevation generally varies from 300 m to 2200 m above mean sea level. Kunihar forest division covers an area of 572.37 sq kms. Kunihar forest division has four ranges viz., Kunihar, Arki, Darla and Kutharh with head quarters at respective areas.

3.1.2 Hills and valley

The area is criss-crossed by hills enclosing broad to narrow valleys. Hills in Kunihar, itself are not more than 1500 m. There is one in Arki range with altitude ranging from 2000 m to 2500 m. This hill starts from Piplughat and passes through Saryanj, Chonratu area. In Kunihar range, there are mainly two hills on the map, one is Khajera or Khajara dhar (1220 m) in Pargana Uparli Palli and second is Ghaneri dhar (1370 m) which is in the middle of Hatcot and Namol villages.

3.1.3 Geology and soil

Kunihar forest division falling under the administrative jurisdiction of district Solan and its topography is well defined by hill ranges and narrow valleys. The

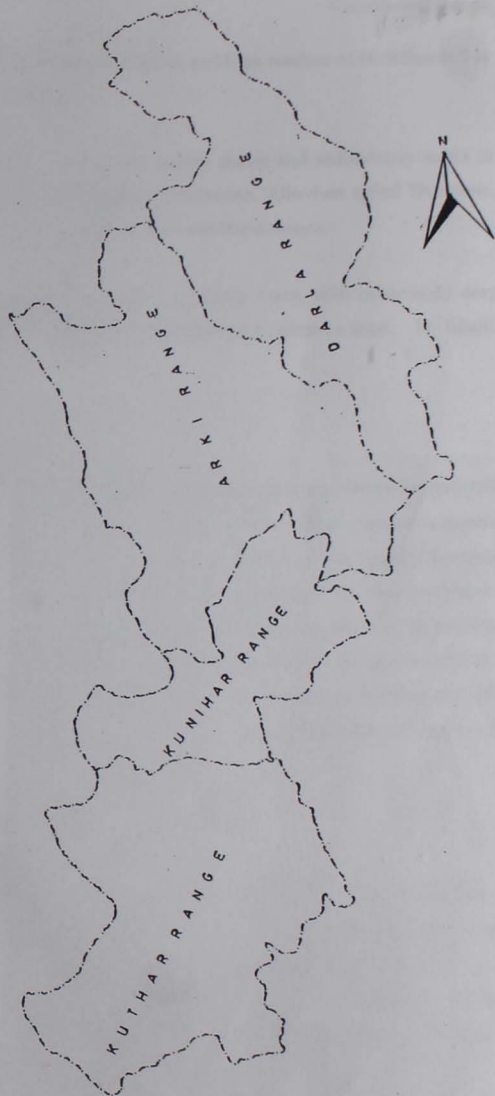


Fig. 1 Geographical map of Kunihar forest division.

altitude generally varies from 300 m to 3260 m and high reaches of Badidhar hill is covered with snow during winter.

The rocks commonly seen in the area are shales and sedimentary rocks in Kunihar and Kutharh ranges and Dolomitic limestone, Alluvium rolled limestone, limestone phyllites and platylime stone in Arki and Darla ranges.

The soil texture varies from clayey to clayey loam, with moderately deep depth; clayey loam, shallow along with spurs and clayey loam to loam. In 'Shaili' areas is Red clayey.

3.1.4 Climate

The climate in the division unfolds four broad seasons. The winter generally spreads over from December to February. The period from March to June is summer and rainy season generally extends from July to September. October and November exhibit autumn. During winter the lower areas receive plentiful rains and there is snowfall in Badidhar area. Temperature during the winter months even in the lower area is cold because of cold winds. During rainy season area receives plentiful rains lands cape becomes lush green. During the summer months in Kunihar and other valleys the days are too hot and sultry. During monsoon Kuni Khad Gumber khad and other small water channels begin to swell.

3.1.5 Water channels

Kuhani or Kuni khad which makes East-north and to some extent Western boundary of the Baghal and Kunihar has to origin near Jatog (Shimla) and it meets Gamber khad at Gonvada village. There is another khad named Rau which has its origin near Khanol village of Kunihar area. During summer it remains dry and in the rainy season, it is replenished. Gumber khad touches the boundaries of Kunihar and it flows towards Bilaspur.

3.1.6 General vegetation

Vegetation of the area mainly dominated by broad leaved mixed vegetation. *Pinus roxburghii*, *Acacia catechu*, *Albizia chinensis*, *Anogeisus latifolia*, *Cassia fistula*, *Terminalia bellirica*, *T. chebula*, *Toona ciliata*, *Celtis australis*, *Pistacea integerrima* are the main tree species of the area. Shrubby elements constitute chiefly *Punica granatum*, *Tecoma stans*, *Randia tetrasperma*, *Flacaurtia indica*, *Berberis lycium*, *Prinsepia utilis*, *Indigofera* sp., *Robdosia rugosa* etc.

Bauhinia vahlii, a woody climber is quite conspicuous in ravines and slopes. Other Climbers include species of *Smilex*, *Rosa*, *Cryptolepis*, *Buchanani*, *Jasminum officinalis*, *Celastrus peniculatus* etc. Herbaceous element is constituted by mixture of grasses, species of *Cassia*, *Rhynchosia*, *Lathyrus*, *Ageratum*, *Bidens*, *Xanthium*, *Achyranthes aspera*, *Withania somnifera*, *Solanum khasianum* and various weeds of agriculture fields like *Cynodon dactylon*, *Cyprus rotundus*, *Malvastrum coromandelianum* etc.

3.1.7 Cultural heritage

3.1.7.1 Dialect and caste system

The dialect of people of this area is called Paharhi Boli. After 5-10 km there is slight difference in the dialect. Caste system dominates among the people. Brahmins are considered as the top class, who act as priests and Kul Purohits of people. Among the scheduled castes are: Kolis, Chamars, Turis, Julah, Lohars, Dumnas. Among higher castes are Rajputs and Brahmins.

3.1.7.2 Culture

People of this area have their own peculiarities. The people have great faith in God and Dieties. Shivji dyar, Baniya, Devi temple, Dharde Dev temple, Temple of Danu dev, Lutru, Mutru and Radha-Krishna are the main religious places. In

Darlaghat range there is a Dhuni in Aslu village which is one of the 84 Dhunis of Himachal Pradesh. People celebrate many festivals and fairs viz., Sharad Purnima fair which is held at Unchagaon (Kunihar) ground for two days in the months January-February. It starts from Purnamashi and lasts up to the next day. It is held in the honour of Sharad-Purnima and Devta 'Danu-Dev', whose temple is on the bank of the tank. Worship is done on Purnmashi and Sankrant by a Brahmin. Baisakhi fair is held for a day at Unchagaon every year. At the fair, a cattle show also arranged. Bani fair is held on 8th May at Hardevpur which is three km from Kunihar. Wrestling bouts are the main features of this fair. Barhi fair is held in the middle of June on Badidhar hill which is 3-4 km from Saryanj village. There is a temple of Bara Dev and Budi Devi. Earlier cattle were cut in this fair, but now only sheep are cut. Sair fair is held at Arki for two days on Sankrant of September month. A cattle show is arranged and owners of the best cattle are given prizes. Wrestling bouts are also main attractions of the fair etc. Besides believing in God, people of this area also believe in superstitions. There are many proverbs regarding bad omens which read:

छिकदे खाईए, छिकदे पिए, छिकदे रहिए सोए !

छिकदे बाट न हांडिए, चाहे स्वर्ण सुईने दी होए !!

जो सुर चले, वही पग दीजे !

पोथी पत्रा कभी न लीजे !!

Meanings

- i) Sneezing at the time of eating, drinking and sleeping is good, but while starting on a journey it is a bad omen and one should leave the idea to go on that way even if it leads to a gold mine.
- ii) While starting on a journey put only either left or right foot out according to the blowing of nostril.



Cattle show at Sair Fair-Arki.



Barhidhar Fair

Marriage tradition is same as is prevalent in Hindu society in India. The choice of mates is regulated by caste, as in other parts of India. Marriage is arranged by the elders. Relatives of groom and bride matches the stars of the prospective couple by showing their horoscope to their respective Kul Purohiths. Sagai is the first step in marriage ceremony. On behalf of the groom, his father, relatives and a priest offer ornaments, clothes and money as present to the bride or her family members. This is called Rokda. In return the girl's family sends present for the boy. The date of marriage is fixed by Purohit. Once the Sagai is done, the alliance is usually not canceled. At least 2 months before from fixed date there is Samidha Muhurat. That day is believed to be the starting of marriage. People from the village cut the Samidha (wood pieces) for Dham. Earlier a man was sent to invite the people for Dham, but now invitation cards are used for this purpose. One day before marriage Shanti Pujan is celebrated in which Mama's of bride or groom participate. On that day ladies and girls apply Ubtan and Oil on bride or groom with the help of Dub (*Cynodon dactylon*) and side by side ladies sing the folk songs. After Shanti Pujan at the boy's home Suhag Pitari is filled which is tied with Red or Yellow cloth. After pujan Mama ties the Sehra on the head of groom.

On the day of marriage, the groom comes in a procession called Barat. He is accompanied by close relatives and friends. With the help of Banana stems and Paja (*Prunus cerasoides*) Bedi/Mandap is decorated. Brahmin Purohit conduct the ceremony. The marriage ceremony is conducted as per the practice prevalent in other parts of the country with seven feras around sacred fire solemnising the bond between bride and groom. After the marriage is over, the bride leaves for her future home with groom. This is called Maklava. At groom's home, Vadhu Pravesh is done and bride takes the blessings of all the elders by touching their feet, which is locally called Matha Tekna. The local village diety is also worshipped on the occasion of marriage. The Sehra is untied by Purohit and is given in the lap of the mother of the groom. On the some day a large feast called Dham is given by grooms family in the village. On second or third day, the bride and groom go back at bride's home which is called Geranu-Fernu.

On the birth of a child different Sanskars are celebrated. Among these are *Meghajanana Sanskar* in which on the birth of a male child, before nal chhedan with the help of stick of daru (*Punica granatum*) the word Om is written on tongue of new borne baby. *Chhat Pujan* is celebrated on 6th day. On that day a statue of Banti Devi, with the help of cow dung is is made. This statue is called Bihai. This is decorated with Dub (*Cynodon dactylon*), dupatta and other clothes and is worshipped. *Havan* is celebrated on 11th day and the name of the child is decided. This locally is called *Hoom*. *Ann Prashan* is done in 6th, 8th or 10th month in case of a male child and in 5th, 7th or 9th month in case of girl child. In first, third or fifth years of birth *Mundan ceremony* is celebrated. On this day the hairs of the child are cut. All these hairs are offered at the shrine of a diety. *Aksharambh* Sanskar is the day which is fixed by Purohit and on that day after Dev Pujan, on a flat wood, soil or sand is put. On that sand with the help of the fingers of child Hindi Alphabets are practiced. It is done on 5th year. But now people, after 2 or 3 years admit their childrens in nursery schools. *Yajyopavit* sanskar is among the Brahmins in which *Janeu* (a holy thread) is put on the body of a boy in 13th years from his birth.

3.1.7.3 Dress and Ornaments

In the old time men used to wear Dhoti and long shirt and turban as head robe. But, now these are replaced by Pant-shirt and simple Kurta-pyjama. The ladies dress includes simple Salwar-Kameez and Dupatta. In old days ladies were to wear Chudidhar pyjama, kurta, Dupata, Choli of red colour choli with Pasvaj (lehanga). It was mostly put by Queens and rich people. Among winter dresses are sweater, cardigan, Shawls and Pattus made up of wool. Men use finger rings and chains only as ornaments. Ladies wear Chur or Bajuband made up of silver, chak made up of both gold and silver, nose pin, necklaces, Ghazare or Ghazaru made up of silver, Chutkiyan of silver which are put on toes, Ear rings, Tops, or studs, finger rings, Munde of gold, Choki of silver, which is the sign of Suhag, Nath-tik of gold, Golden or silver bangles and Bindies. These are very heavy so cannot be wear daily.

This jewellery is put on the occasion of ceremonies. All jewelry is put according to ceremonies.

3.1.7.4 Agriculture

People depend on agriculture for their livelihood. In agriculture, most of produce is for their own use than produce for sale. There is limited scope for extensive cultivation as flat land is available only in Kuniyar valley. Steep slopes have been terraced for cultivation. Irrigation facilities are limited though small channels or 'kuhls' have been constructed to bring water to the fields. In non-irrigated areas, the farmers depend on monsoons for watering their fields. Ploughing is done with the help of bullocks. Major crops are maize and wheat. The summer crops are grown in late May and harvested in September, after which winter crops are cultivated on the same land. The most important summer crop is maize, among winter crops is wheat. In some areas in Darlaghat range rice is grown during June-July. In winters cash crop is ginger which is also grown in some parts of Darlaghat range. Vegetables which are grown as cash crops are tomato, beans cucumber, peas, pumpkins, shimla mirch, cabbage and cauliflower. In Darlaghat area, mash is grown as pulses in the fields.

3.1.7.5 Grasslands

In Kuniyar forest division there are many grasslands and people cut the grasses to fetch their animals. Common species are *Phragmites*, *Paspalum*, *Dicanthium*, *Heteropogon*, *Bothriochloa*, *Chrysopogon*, *Chloris* etc.

3.2 METHODOLOGY

This chapter details the methodology adopted for the field surveys, data collection and analysis of the information collected as per the requirements of the study. The present studies were carried out in the Kuniyar forest division areas of

district Solan. The study area ranges in elevation from 300-2500 m. The present investigations were undertaken under the following headings:

- Systematic enumeration of floristic elements.
- Enumeration of medicinal and aromatic plants
- Ethno-medico-botanical studies.

Extensive field surveys of the entire area have been carried out. Starting from the lower elevation i.e. Gumberpool, Ramshahar, Kunihar and moving up to the higher elevation i.e. Badidhar area.

The collection of voucher specimens has been done during flowering/fruiting period to facilitate the process of identification. Only angiospermic plants including seasonal, annual, perennial and woody plant species have been collected and no lower plants dealt with. Identification of the plant specimen was done according to the field characters by consulting various floras based on the Bentham and Hooker's Systems of Classification, compared with the specimens in the UHF, Herbarium and deposited for records.

The specimen thus collected were processed i.e. pressed and dried in blotting sheets and poisoning with mercuric chloride solution (2%) was done to provide protection against insect and fungal attack.

3.2.1 Enumeration of medicinal and aromatic plants

Inventory of entire floristic elements was prepared. The documented information was used to delineate medicinal and aromatic plants. These have been high lighted giving latin names, local/vernacular names, locality, description and ethnobotanical uses.

3.2.2 Ethno-botanical studies

The information regarding the traditional knowledge, local uses of the plants of the study area, containing the information about the local name of the plant, parts used, purpose for which used, mode of administration and curative properties were recorded through interviews and discussion with elderly people, herbal healers, local vaidas and rural women and the same have been documented in the results.

Chapter 4

EXPERIMENTAL RESULTS

Enumeration of species with their utilization in ethnobotany

- Latin name : *Abrus precatorius* Linn. (Leguminosae)
- Local name(s) : Rati
- Distribution : Commonly found in dry slopes in thorny scrub of *Acacia* a *Zizyphus*, climbing on bushes and shrubs. Aslu, 1200-1300 m. (Verma, S.; 7621)
- Description : A much branched climber with woody stem. Leaves paripinnate, 2-3 inch long. Leaflets 20-40, opposite, oblong ligulate deciduous. Pod 1-1.7 x 0.4 to 0.5 inch. Oblong turgid, 3-5 seeded. Seeds ovoid or subglobose, generally 2/3 scarlet and rest jet black.
- Parts used : Leaves, Roots, Seeds.
- Ethnobotany : Decoction of the leaves is given in cough and cold. The roots are crushed in water and filtered. This filtrate is given to reduce the effect of poison. The paste of the leaves is applied on the swelling. Seeds are used by goldsmiths as a unit of measurement for gold. Bruised seeds are used as poison. Seeds are put in eyes for bringing out foreign particles by making it move in circles under the eyelids.
- Magico religious belief: During dispute or controversy, if one puts the piece of root in his or her mouth, nobody can defeat him/her. To keep away the evil spirits, people tie a piece of root of white Gunja (*Abrus pulchellus*) on the wrist.
- Latin name : *Acacia catechu* Willd. (Leguminosae)
- Local name(s) : Khair
- Distribution : Common in thorny scrub of *Acacia* and *Zizyphus*. Arki, 1200 m. (Verma, S. 7542).

- Description : A middle sized tree with black stem bark. Spines are curved and paired. Leaves pinnately compound; leaflets paired. Flowers in spikes, small, white. Pods are stalked. Seeds are 4 to 7 and dark brown.
- Parts used : Bark, Wood, Pod
- Ethnobotany : Katha obtained from the heartwood is used to cure the mouth ulcers. Powder of bark is used in dysentery. Its quantity used is 5-10 g. Pods are also used in leprosy. The young leaves of khair give cooling effect so their paste applied is over head.
- Latin name : *Acacia modesta* Wall. (Leguminosae)
- Local name(s) : Paloz
- Distribution : In thorny scrub of *Acacia* and *Zizyphus* between 900-1000 m. Jabbal, 900-1000 m. (Verma, S. 7615).
- Description : A small tree. Leaves glabrous grey green. A pair of flattened, recurved prickles inserted below the leaf base. Flowers are white in spikes. Pods flat, oblong. 5-7.5 x 0.6-1.25 cm.
- Parts used : Wood, Leaves.
- Ethnobotany : Wood is used for agriculture implements while the twigs are used for cleaning teeth. Leaves used as fodder.
- Latin name : *Acacia nilotica* (L.) ex DC (Leguminosae)
- Local name(s) : Kikkar
- Distribution : Scattered in thorny scrub of *Acacia* and *Zizyphus*. Bani, Haripur, 1000-1200 m. (Verma, S. 7872, 7673).
- Description : A medium sized tree with stipular spines. Leaves pinnately compound. Flowers yellow, in axillary heads. Pods grey, downy, deeply constricted between the seeds.
- Parts used : Wood, Leaves, Pods, Bark

- Ethnobotany : Eating leaves is useful in Prameh Rog (leucorrhoea) and Urinary troubles. Pods are used n cough. Crushed leaves are applied on boils and ulcers. From bark gum is extracted which is use in white wash as glue. Wood is used for making agriculture implements.
- Latin name : *Acer oblongum* Wall. ex. DC (Sapindaceae)
- Local name(s) : Padag
- Distribution : Found scattered in the forest area.
Lade ki Bayen, 1200 m. (Verma, S. 7645)
- Description : A middle sized tree. Leaves ovate-lanceolate, acuminate, entire. Fruit glabrous, winged, divergent.
- Parts used : Wood.
- Ethnobotany : Wood is used for building construction and agriculture implements.
- Latin name : *Achryanthes aspera* L. (Amaranthaceae)
- Local name(s) : Puthkanda
- Distribution : Common throughout the area between 300-1500 m.
Mangu, 1450 m. (Verma, S. 7514).
- Description : A hairy under shrub, stems with long, rambling branches. Leaves opposite, ovate spikes robust up to 18 inch long, fruits with inverted spiny tips sticking to the clothes.
- Parts used : Whole plant.
- Ethnobotany : In painful scorpion stings, the paste of the roots is applied. Ash of the plant is used to cure asthma. The root is tied on the wrist of women for painless and easy delivery. Plant is used in Hawana. Flowering plants are smoked to relieve breathing problem due t asthma.
- Magico religious belief: If the twigs of "red apamarga" are used as 'datun' for 6 months a person gets the 'Vacha-Sidhi' (a mastery on speech). Keeping roots with the person, brings prosperity and nobody can harm him.

Latin name	:	<i>Acorus calamus</i> Linn. (Araceae)
Local name(s)	:	Vach, Bare
Distribution	:	Mostly found in the areas above 1300 m. elevation near water channels or marshy places. Aslu, 1200-1300 m. (Verma, S. 7581).
Description	:	Semi-aquatic aromatic herb with creeping root stock. Leaves simple, long, leathery, strap like.
Parts used	:	Rhizomes
Ethnobotany	:	Rhizomes are dried to make Snuff and grind to make Naswar. Dry rhizomes are ground and mixed in mustard oil and massaged over the aching joints. Rhizomes are burnt in earthen pots and is made into ash and in this ash Kuth (<i>Saussurea costus</i>) and Sendha Namak are mixed. This powder is given in malaria.

Latin name	:	<i>Adiantum capillus-veneris</i> Linn. (Adiantaceae)
Local name(s)	:	Hansraj
Distribution	:	Common in shady and moist rocky slopes or on stone walls. Shakani, 1260 m. (Verma, S. 7529).
Description	:	A small fern with many dark-brown stems arising from the compact base. Leaves bipinnate with an apical leaflet, usually 3-4 pairs of lobed upper pinnules and 2-3 pairs of pinnate basal pinnae.
Parts used	:	Leaves.
Ethnobotany	:	Tea made from the leaves is widely used in cough especially from cold. It is also used in fever.

Latin name	:	<i>A. incism</i> Forsk (Filicinaceae)
Local name(s)	:	Mayurshikha
Distribution	:	Common under rocks and in marshy areas. Shakani, 1260 m. (Verma, S. 7527).

Description : A small fern. Stipes 2-4 inch long, tufted wiry, spreading, dark chestnut-brown, tomentose. Fronds 15-30 cm.

Parts used : Fronds

Ethnobotany : Fronds are mixed in butter and used for controlling the internal heat of the body. These are also applied on skin diseases, used in cough and fever.

Latin name : *Aerva scandens* Wall. (Amaranthaceae)

Local name(s) : Safed murgha

Distribution : Common in open lands, wasteland, road sides between 1000-1300 m. Aslu, 1200-1300 m. (Verma, S. 7821).

Description : A climbing under shrub with white and shining flowers in short compact spikes.

Parts used : Roots

Ethnobotany : The decoction of roots is used in dysentery.

Latin name : *Agave americana* Linn. (Agavaceae)

Local name(s) : Ramban

Distribution : Common on dry slopes in thorny scrub of *Acacia* and *Zizyphus*. Dhadhog, 1300 m. Verma, S. 7502)

Description : A perennial, stout, plant bearing rosette of long, erect, pointed, fleshy leaves, top having rigid, long spine.

Parts used : Leaves, Young shoots

Ethnobotany : Leaves are dipped in water for 1 to 2 days. Thereafter, fibres are extracted and are used to make ropes. Leaves are used to increase the menstrual discharge in ladies. Young shoots are used as vegetable and are also pickled. This pickled is considered 'Niroga' (keeping far from diseases).

- Latin name : *Ajuga bracteosa* Wall. ex Benth. (Labiatae)
- Local name(s) : Nilkanthi
- Distribution : Very common. Found as a weed in fields, open slopes and roadsides up to 1500 m. Mangu, 1450 m. (Verma, S. 7510).
- Description : Stems erect or ascending usually diffusely branching from the base. Lower surface of leaves is bluish-purple. Flowers pale blue or lilac.
- Parts used : Whole plant.
- Ethnobotany : It is used as a bitter tonic. Leaf extract is applied on hair to kill the lice. Leaf juice is also used in earache. Infusion of leaves is given in pneumonia, bronchitis, gastric pain and typhoid fever.

- Latin name : *Albizia chinensis* (Osbeck) Merr. (Leguminosae)
- Local name(s) : Ohi, Chuli
- Distribution : Common in mixed deciduous forest area. Planted on field borders. Kutharh, 900-1000 m. (Verma, S. 7613).
- Description : A middle sized to tall tree. Leaves pubescent, pinnules 6-15 pairs; leaf lets, 40-80, stipules pink, caducous. Flowers yellowish in fasciculated paniced heads.
- Parts used : Wood, Leaves
- Ethnobotany : Leaves are used as fodder. Wood is used for furniture and agriculture implements.

- Latin name : *A. julibrissin* Durazz. (Leguminosae)
- Local name(s) : Lal Siris.
- Distribution : Sporadic, rarely one or two trees in grasslands, ravines. Darlaghat, 1400 m. (Verma, S. 7609).

- Description : A small tree. Leaves softly hairy. Stipules linear, caducous, pinnules, 6-12 pairs; leaflets 20-25 on a pinnate. Flowers pink in fasciculated panicle heads.
- Parts used : Bark, Leaves.
- Ethnobotany : The bark is used in snake bite and leaf extract is used in eye diseases.
- Latin name : *A. lebbek* (L.) Benth. (Leguminosae)
- Local name(s) : Siris
- Distribution : On road sides and also planted an avenue tree. Arki, 1200 m. (Verma, S. 7582).
- Description : A medium sized tree. Leaves glabrous, pinnules 2-4 pairs; leaflets 6-18 on a pinnule. Heads long stalked. Pods 15-30 x 3.75-5 cm.
- Parts used : Roots, Bark, Flowers
- Ethnobotany : Bark is crushed and applied on boils. Roots are used to kill the intestinal worms. Flowers are used in snake bite and asthma. Leaves are used as fodder.
- Latin name : *Aloe barbadensis* Mill. (Liliaceae)
- Local name(s) : Ghikawar, Gwarpatha, Ghritkumari
- Distribution : Sparce in the area, often along field borders. Aslu, 1200-1300 m. (Verma, S. 7657).
- Description : A small fleshy plant with a rosette of pointed fleshy leaves. Leaf margins are spiny.
- Parts used : Leaves
- Ethnobotany : Leaves are used as vegetable. The mucilaginous inner portion is warmed and applied on boils to induce puss formation. Juice of the leaves is used on burns.

- Latin name : *Anaphalis busua* (Compositae)
- Local name(s) : Dradi
- Distribution : On grassy slopes above 1500 elevation. Badidhar, 2000-2200 m. (Verma, S. 7573).
- Description : An erect herb. Stems covered with wooly or cottony tomentum. Heads white clustered in terminal corymbs.
- Parts used : Entire plant
- Ethnobotany : Entire plant is used as dhoop. Cotton is taken from plant. Essential oil is also extracted from the plant.
-
- Latin name : *Androsace rotundifolia* Hardw. (Primulaceae)
- Local name(s) : Nirodhak buti, Golpatti phool
- Distribution : Common on rocks, on grassy slopes. Mangoo, 1450 m. (Verma, S. 7513).
- Description : More or less hairy. Leaves radical, orbicular. Flowers deep pink to white in umbellate cymes.
- Parts used : Leaves.
- Ethnobotany : Leaves are eaten with gur and ghee in correcting menstrual flow, thus helping avoiding conception in women.
-
- Latin name : *Anogeissus latifolia* Wall. ex Wedd. (Combritaceae)
- Local name(s) : Chhal, Dhaw
- Distribution : Found in sub-tropical dry evergreen forest area. Kunihar, 1000 m. (Verma, S. 7598).
- Description : A tall tree with smooth greenish-white bark. Leaves alternate ovate-lanceolate. Flowers are small in globose heads. Fruit glabrous, shining, horny.
- Parts used : Wood, leaves, stems.

- Ethnobotany : Leaves are used for tanning. Gum (Ghatti-gum) is extracted from stems of the tree. Wood is durable and used for building construction and agriculture implements. Decoction of the root bark is used in the treatment of billiousness. In 'Munadi fever' (periodic fever) decoction of leaves, long pepper, black salt and harad are given.
- Latin name : *Arisaema helleborifolium* Schott. (Araceae)
- Local name(s) : Sanp ki Makki
- Distribution : Rare in shady areas.
Baridhar, 2000-2200 m. (Verma, S. 7581).
- Description : A succulent 1-1.5 m. tall plant. Leaves 9-12 lobed. Spedic prolonged into a far-protruding, tall like pointed tip.
- Parts used : Tubers.
- Ethnobotany : Plant is poisonous and causes itching and choaking of throat. The Nepali labours eat it as vegetable after cooking properly.
- Latin name : *Argemone mexicana* Linn. (Papaveraceae)
- Local name(s) : Satyanashi, Swarnkshiri
- Distribution : Common on waste lands in open sunny sites.
Jabbal, 900-1000 m. (Verma, S. 7665).
- Description : A glabrous, glaucous, 30-120 cm tall prickly herb, yielding yellow sap. Leaves thistle like, stem clasping, spinous. Flowers yellow capsule prickly.
- Parts used : Roots, Seed, Juice of plant.
- Ethnobotany : Plant juice is used to cure leprosy. It is also used as blood purifier. Seeds are used to remove constipation. Paste of roots is applied on skin diseases. Plant juice is also used in ophthalmia.

- Latin name : *Asparagus adscendens* Roxb. (Liliaceae)
- Local name(s) : Sansarmuli, Safed Musli.
- Distribution : Common in forest area up to 1300 m. in scattered form. Batalghatti, Arki, 1200 m. (Verma, S. 7505, 7824).
- Description : Stems tall, straggling, spines straight. Flowers numerous, white in colour. Berries 0.5 to 0.8 cm diameter.
- Parts used : Roots, Fruits
- Ethnobotany : Roots are used as tonic, demulcent and in dysentery with milk. Fruits are used to wash the clothes. This plant is worshipped and used in shanti pujans. In case of tonsils, its root is tie in the neck. In headache, the paste of roots is applied on forehead.
- Latin name : *Astragalus strictus* Grah ex Benth. (Leguminosae)
- Local name(s) : Chai, Changeri
- Distribution : In grasslands.
Gahar, 1250 m. (Verma, S. 7869).
- Description : Perennial herb, covered with silvery white hairs. Stems tufted. Flowers pale purple in ovoid heads and borne on stalks shorter than the pinnate leaves.
- Parts used : Entire plant.
- Ethnobotany : Decoction of the plant is given in cough and cold.
- Latin name : *Atylosia mollis* Benth. (Leguminosae)
- Local name(s) : Ban Sem.
- Distribution : Common on roadsides, grassy slopes, shrubbery's.
Batalghatti, 1200 m. (Verma, S. 7584).
- Description : A densely pubescent, twining herb, stems long climbing on shrubs. Flowers yellow, long racemed.

- Parts used : Root.
- Ethnobotany : Root is used in snake bites. Root is applied as a paste on the bitten part and is reported to reduce the effect of poison.
- Latin name : *Bacopa monniera* (L.) Penn. (Scrophulariaceae)
- Local name(s) : Brahmi
- Distribution : Found near water sources, sporadic in occurrence. Udu ka nalah, 1100 m. (Verma, S. 7640)
- Description : A creeping succulent herb. Leaves oblong and obtuse. Flowers pale bluish, fading to white in the leaf axils.
- Parts used : Entire plant.
- Ethnobotany : Plant is used in urinary troubles and in constipation. Leaves are used to increase the memory. To increase memory fresh leaves should be eaten before sun rise.
- Latin name : *Barleria cristata* Linn. (Acanthaceae)
- Local name(s) : Tadrelu
- Distribution : Common weed throughout the area. Aslu, 1300 m. (Verma, S. 7819).
- Description : An under shrub. Leaves with spines at tip with pale-blue flowers.
- Parts used : Roots and leaves.
- Ethnobotany : Roots are crushed and applied on swellings. Leaf infusion is given in cough. Leaves after crushing are applied on boils.
- Latin name : *Bauhinia vahlii* Wight and Arn. (Leguminosae)
- Local name(s) : Taur, Maljhan.

- Distribution : Common in dry forest areas.
Miyaun, 1200 m. (Verma, S. 7507).
- Description : A gigantic, evergreen climber. Leaves variable in size, deeply cordate. Flowers white, pod 22.5-30 x 5.7.5 cm. Flat, woody, rusty velvety.
- Parts used : Leaves, roots, seeds.
- Ethnobotany : Root juice with curd is used in dysentery. Leaves are used to make doonas, plates. Roasted seeds are eaten as tonic. The decoction of the roots about 50 ml is taken thrice a day for four days as a cure for fever. Leaves are also used to make 'Jhums' as umbrella in rains.
- Latin name : ***B. variegata* Linn. (Leguminosae)**
- Local name(s) : Karyalo, Kachnar
- Distribution : Common in dry forest areas.
Mangu, 1450 m. (Verma, S. 7646).
- Description : A small tree. Leaves deeply cordate. Flowers large fragrant, pinkish white. Pods 15-25 x 1.75-2.25 cm., flat, slightly falcate.
- Parts used : Bark, flowering buds, seeds.
- Ethnobotany : Decoction of the bark in the dose of 25 ml is given for 15 days (twice a day) in tuberculosis. The flower powder is used for haemorrhage. Bark decoction is also used as blood purifier. Flower buds are used to make 'Rayta' and are also pickled or cooked as vegetable. Decoction of the leaves is used in headache caused by Malarial fever.
- Latin name : ***Begonia amoena* Wall. (Begoniaceae)**
- Local name(s) : Khattapatta
- Distribution : In swampy areas on trees and rocks.
Danoghat, 1100 m. (Verma, S. 7511).

- Description : A succulent herb with tuberous roots. Leaves are radical, long stalked, unequal sided.
- Parts used : Leaves.
- Ethnobotany : Leaves are used in chutneys and also useful against fever.
- Latin name : *Berberis lycium* Royle (Berberidaceae)
- Local name(s) : Kashmal
- Distribution : Common in jungle and forest area between 800-2200 m. Batalghatti, 1200 m. (Verma, S. 7861).
- Description : A small shrub with white bark. Leaves narrow oblanceolate, subsessile, mucronate. Flowers are dull yellow in simple racemes which are exceeding the leaves.
- Parts used : Roots.
- Ethnobotany : Roots are boiled in water and concentrated to make Rasount which is used in ophthalmia, earache and in gum swellings.
- Latin name : *Berchemia lineata* DC. (Rhamnaceae)
- Local name(s) : Barchi
- Distribution : Found up to 1100 m. Udu ka nalah, 1100 m. (Verma, S. 7620).
- Description : A small diffuse shrub. Leaves nearly sessile. Flowers in purple-blue in small axillary or terminal clusters.
- Parts used : Leaves.
- Ethnobotany : Decoction of the leaves is given in fever.

- Latin name : ***Blumea wightiana* DC. (Compositae)**
- Local name(s) : Jangli-Tambaku, Kukuradru
- Distribution : Common in waste lands.
Aslu, 1200-1300 m. (Verma, S. 7806).
- Description : An erect herb densely covered with soft hairs. Leaves, alternate, toothed. Flowers are pale yellow often a few purple in centre.
- Parts used : Leaves, Roots, Seeds.
- Ethnobotany : Decoction of roots is taken twice a day for 5 days in urinary problems. The decoction of leaves is given in stomachache. Oil is extracted from seeds.
- Latin name : ***Boehmeria platyphylla* D. Don (Urticaceae)**
- Local name(s) : Priyuna.
- Distribution : Common near swampy areas.
Shakni, 1200 m. (Verma, S. 7553).
- Description : A shrub with rough leaves. Flowers white in spikes.
- Parts used : Leaves.
- Ethnobotany : Leaves are used in inflammation of skin.
- Latin name : ***Boenninghausenia albiflora* (Hook) Reichd. ex Meissn. (Rutaceae)**
- Local name(s) : Pissumar buti.
- Distribution : Common between 1500-2200 m. under *Quercus* and Deodar trees. Baridhar, 2000-2200 m. (Verma, S. 7532).
- Description : A perennial herb. Stems 3-6 m. high, branching. Leaves bi-pinnate. Flowers white in terminal leafy panicles.
- Parts used : Entire plant.

- Ethnobotany : The crushed leaves of the plant have a strong disagreeable odour which are used as repellent against fleas.
- Latin name : *Boerhaavia repens* Linn. (Nyctaginaceae)
- Local name(s) : Punarnava
- Distribution : Common on dry waste land throughout the area. Haripur, 1250 m. (Verma, S. 7669).
- Description : Diffuse herb. Leaves simple, opposite, unequal. Flower in axillary or terminal panicles, purple in colour.
- Parts used : Entire plant.
- Ethnobotany : Plant is shothahara, mootrala, hridya, raktavardhaka i.e. reducing swelling, diuretic, cardiac, blood purifier. Tender shoots are eaten as vegetable. Plant is smoked to treat asthma, used in dropsy, jaundice. Root powder preparation is used in eye diseases. Roots used in anaemia. Plant paste is applied on scorpion sting. Powder of root with sugar is taken in whooping cough. Plant powder is rubbed on skin to reduce the swelling.

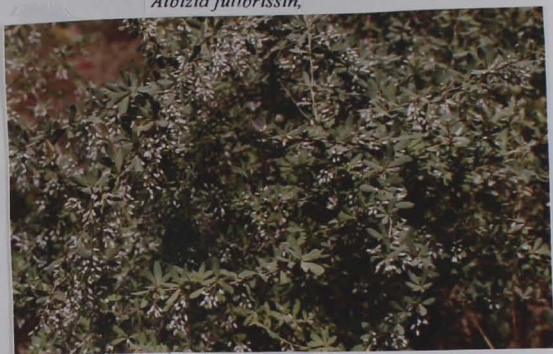
- Latin name : *Bombax ceiba* Linn. (Bombacaceae)
- Local name(s) : Simal, Semal
- Distribution : Frequent in forest areas between 900-1300 m. Aslu, 1200-1300 m. (Verma, S.).
- Description : A deciduous tree. Leaves digitately compound with 1-7 foliolate. Flowers clustered or solitary, red, cup shaped. Fruit a capsule.
- Parts used : Thorns, Roots, Fruits.
- Ethnobotany : Thorns are crushed in cow milk and paste is applied on pimples. Paste of roots is also taken with unboiled cow milk to regulate the menstruation and with black pepper it is used to control the white discharge. Cotton is used in pillow stuffing.

- Latin name : *Buddleia paniculata* Wall. (Loganiaceae)
- Local name(s) : Neemba
- Distribution : Not common.
Sarali, 1100 m. (Verma, S. 7617).
- Description : A small shrub. Leaves ovate or oblong, sharply toothed and under site white tomentose. Flowers crowded in leafy heads of whorls. Flowers are pink with lavender blue lobes.
- Parts used : Wood.
- Ethnobotany : Used as fuel wood. This is also used as an ornamental shrub.
- Latin name : *Cannabis sativa* Linn. (Cannabinaceae)
- Local name(s) : Bhang, Sulfa
- Distribution : A common weed on waste lands between 300-1500 m.
Kunihar, 1000 m. (Verma, S. 7900).
- Description : An erect herb with grooved stems. Leaves palmate. Flowers are pale yellow, green, dark green unisexual. Fruit is an achene.
- Parts used : Leaves, Flowers, Resinous exudate.
- Ethnobotany : Leaves are rubbed with hands to make bhang. It is narcotic and sedative. This bhang is applied on the boils. Bhang is made into a paste with water, mixed with milk and sugar is taken as intoxicating in Shivratri. Charas is prepared from the resinous exudate from leaves. Ganja is prepared from the dried flowering or fruiting tops of female plant. Bhang is used as an appetizer. One spoon leaf juice is used to kill the worms. Leaves are boiled in water and that water applied on sprain or foot is kept in that water.

- Latin name : *Caesalpinia decapetata* (Roth) Alston
(Leguminosae)
- Local name(s) : Kanteli.
- Distribution : Very common in forest area.
Arki, 1200 m. (Verma, S. 7839).
- Description : A scrambling shrub with twice pinnate leaves and large
erect spikes of bright yellow flowers.
- Parts used : Leaves.
- Ethnobotany : Leaves are used as fodder. Plant is also used as
ornamental.
- Latin name : *Carissa carandus* Linn. (Apocynaceae)
- Local name(s) : Karaunda
- Distribution : Frequent in forest area between 300-2000 m.
Shakani, 1260 m. (Verma, S. 7883).
- Description : A small thorny evergreen shrub with light grey bark.
Leaves opposite, dark green and shining above.
Flowers white.
- Parts used : Fruits, Roots, Leaves
- Ethnobotany : Fruits are used in cough. If fruits are eaten without
having cough, they cause cough. The decoction of
roots is also used in cough. Leaves are given at the
commencement of remittent fever. The leaf juice with
honey is used in whooping cough.
- Latin name : *Cassia fistula* Linn. (Leguminosae)
- Local name(s) : Amaltas
- Distribution : Frequent in sub-tropical dry evergreen forests and on
roadsides. Batalghatti. 1200 m. (Verma, S. 7538).



Albizia julibrissin,



Berberis lycium,



Cassia fistula,



Boerhaavia repens

- Description : A small tree with paripinnate leaves. Flowers bright yellow in axillary racemes. Pod up to 0.6 m. long dark brown when fully ripe.
- Parts used : Fruit, Bark, Leaves.
- Ethnobotany : The fruit pulp is used as laxative. The bark of pod is crushed with kesar (*Crocus sativus*), Mishri and rose water. This paste is given for easy and, painless delivery. The paste of leaves is applied on ringworm and in few days, it removes the scars of ringworm. Ash of the pod is given with honey in cough to the children. Decoction of the stem bark is used to wash the wounds for soon healing.
- Latin name : ***Casuarina equisetifolia* Linn. (Casuarinaceae)**
- Local name(s) : Jangli saru, Jangli Jau
- Distribution : Planted on roadside only in Kunihar area. Kunihar, 1000 m. (Verma, S. 7895).
- Description : A large tree with drooping branches, with whorls of 6-8 scale like leaves.
- Parts used : Seeds, Leaves, Bark.
- Ethnobotany : The decoction of bark and expressed juice of the seeds are used in the treatment of chronic diarrhoea and dysentery. Decoction of leaves is beneficial in the treatment of colic. It is planted for the aesthetic value.
- Latin name : ***Cedrus deodara* (Roxb.) Loud. (Coniferae)**
- Local name(s) : Deodar.
- Distribution : Found between 2000-2200 m. Baridhar, 2000-2200 m. (Verma, S. 7688).
- Description : A large tree with needle like leaves.
- Parts used : Wood. Bark.
- Ethnobotany : The decoction of bark is used in diarrhoea and dysentery. Wood is strong and is used to make the door and window frames. From wood oil is extracted which is used in skin diseases.

- Latin name : *Celastrus paniculata* Willd. (Celastraceae)
- Local name(s) : Malkangni.
- Distribution : Scattered between 1100-1250 m. elevation.
Lade ki Bayen, 1200 m. (Verma, S. 7682).
- Description : A climbing shrub covered with small white wart like excrescence. Leaves alternate. Capsule globose 3-celled.
- Parts used : Seeds, Roots.
- Ethnobotany : The bark of root is crushed and past is applied on wounds. Paste of roots given to women as abortifacient. Seeds are laxative, stimulant and used in leprosy. It is said that if the seeds are eaten for 62 days, it increases the memory. For this start from one seed first day, two seeds on second day and so on up to 31 seeds on 31st day. Thereafter decrease the number of seeds one by one so that on 62 day there is one seed to eat. Oil is extracted from the seeds.
- Latin name : *Celosia argentea* Linn. (Amaranthaceae)
- Local name(s) : Lal Murgha.
- Distribution : Ornamental.
Kunipool, 1000 m. (Verma, S. 7540).
- Description : An annual herb. Leaves alternate, narrowly lanceolate. Flowers white shining, tinged with pink at tips.
- Parts used : Seeds, Herb.
- Ethnobotany : Herb is used as vegetable. Seeds used in mouth sores.
- Latin name : *Celtis australis* Linn. (Urticaceae)
- Local name(s) : Khirak
- Distribution : Common. Mostly found on field borders.
Pathragal, 1500 m. (Verma, S. 7842).

- Description : A tree with stalked alternate leaves. Fruit is a wrinkled drupe.
- Parts used : Leaves, Wood, Fruits.
- Ethnobotany : Fruits are edible and used in stomachache. Leaves are used as fodder. Wood is used to make sports goods and agriculture implements.

Latin name : ***Centella asiatica* (L.) Urban (Umbelliferae)**

Local name(s) : Brahmi.

Distribution : Common near water and swampy areas below 1300 m. Bambira, 1200 m. (Verma, S. 7626).

Description : A prostrate herb which is rooting at joints. Leaves orbicular, toothed.

Parts used : Leaves.

Ethnobotany : Leaves are used as brain tonic, in skin disease, leprosy and as a blood purifier.

Latin name : ***Cheilanthes farinosa* Kaulf. (Sinopteridaceae)**

Local name(s) : Hansraj.

Distribution : Common in swampy areas and on roadsides. Shakni, 1260 m. (Verma, S. 7528).

Description : A small fern with tufted rootstock. Stipites more or less elongated, deltoidealy, lanceolate, white or powdery beneath.

Parts used : Leaves.

Ethnobotany : Decoction of the leaves is used in fever. The juice of the plant is mixed with honey and is taken after meal by the weak people suffering from tuberculosis.

- Latin name : ***Chenopodium album* Linn. (Chenopodiaceae)**
- Local name(s) : Bathu, Ghnau.
- Distribution : A common on wastelands and also cultivated. Chandi, 900-1000 m. (Verma, S. 7680).
- Description : A small herb which is mealy white on flowers and under side of leaves. Flowers are clustered in axillary spikes and are tinged with purple.
- Parts used : Leaves.
- Ethnobotany : Leaves are used as laxative and used in the form of vegetable in piles.
- Latin name : ***Cissampelos pareira* Linn. (Menispermaceae)**
- Local name(s) : Patindu, Patha.
- Distribution : Commonly found throughout the area up to 1500 m. Kunihar, 1000 m. (Verma, S. 7516).
- Description : A slender climber with perennial root stock. Flowers minute. Male flowers pedunculate. Female flowers are clustered in orbicular bracts.
- Parts used : Leaves, Root.
- Ethnobotany : Root is laxative, useful in dysentery and urinary troubles. Crushed leaves are applied on septic ulcers. Its roots, black pepper, asafoetida and ginger are crushed and mixed with honey and this is used in colic and indigestion.
- Latin name : ***Clematis gouriana* Roxb. (Ranunculaceae)**
- Local name(s) : Belkum.
- Distribution : Common throughout the area, climbing on trees or small shrubs. Shakani, 1260 m. (Verma, S. 7833).
- Description : A glagrbrous climber with furrowed stems. Leaves pinnate. Flowers pale yellow. Achenes hairy.

- Parts used : Roots.
- Ethnobotany : Decoction of the roots is given thrice a day for three days, in stomachache. If the juice of leaf touch the skin, it forms boils.
- Latin name : *Clerodendrum fragrans* (Vent.) Willd. (Verbenaceae)
- Local name(s) : Attradana.
- Distribution : Common on waste lands between 900-1200 m. grown as ornamental. Arki, 1200 m. (Verma, S. 7575).
- Description : A shrub with large heart shaped leaves and with conspicuous terminal branched clusters of pinkish white flowers.
- Parts used : Leaves.
- Ethnobotany : The paste of leaves is used with black pepper in colic pain. This is also used as ornamental plant.
- Latin name : *Cnicus wallichii* DC. (Compositae)
- Local name(s) : Chiul.
- Distribution : Common weed on wastelands. Haripur, 1250 m. (Verma, S. 7666).
- Description : A small spinous shrub. Branches are grooved. Flowers are dull yellow.
- Parts used : Roots.
- Ethnobotany : Roots are cooling. In fever the paste of roots is applied on the forehead.
- Latin name : *Cocculus laurifolius* DC. (Menispermaceae)
- Local name(s) : Tildhara.
- Distribution : Common up to 1200 m. Udu ka nalah, 1100 m. (Verma, S. 7603).

- Description : A large evergreen shrub with a short trunk and thin grey bark. Flower are minute.
- Parts used : Roots.
- Ethnobotany : Roots are used as tonic, in stomachache, as diuretic and antiperiodic. This plant was used as an arrow poison.
- Latin name : *Colebrookia oppositifolia* Smith (Labiatae)
- Local name(s) : Dushno, Pansra, Binda.
- Distribution : Common throughout the area.
Jalana, 1100 m. (Verma, S. 7530).
- Description : A shrub with densely, silky, hairy twigs, leaf stocks and inflorescence. Flowers white in whorls, terminal branches, spike like clusters.
- Parts used : Leaves.
- Ethnobotany : The leaves are chewed in case of mouth ulcers. The paste of leaves is also applied on wounds and bruises.
- Latin name : *Convolvulus arvensis* Linn. (Convolvulaceae)
- Local name(s) : Hiran Khuri.
- Distribution : Common in fields, on wastelands.
Aslu, 1200-1300 m. (Verma, S. 7658).
- Description : A slender spreading or climbing, perennial herb with distinctive arrow shaped leaves. Flowers solitary, purple with white centre.
- Parts used : Roots, Seeds.
- Ethnobotany : Decoction of the roots is given in constipation. Seeds yield a fatty oil.

- Latin name : ***Corallodiscus lanuginosus* (Wall. ex DC.) Burt.**
(Gesneraceae)
- Local name(s) : Chapti-patti.
- Distribution : Common in swampy areas.
Shakani, Danoghat, 1260 m, 1100 m. (Verma, S. 7539,
7832).
- Description : A small herb. Leaves crowded with ovate blade and
variably rounded. Capsules cylindrical, 2 cm with
persistent style.
- Parts used : Leaves.
- Ethnobotany : The paste of leaves is used on wounds.
- Latin name : ***Cordia obliqua* Willd. (Boraginaceae)**
- Local name(s) : Lasoora.
- Distribution : Rare. Gamjhun, 900 m. (Verma, S. 7835).
- Description : A large tree. Leaves alternate, 7.5-15 cm. long.
Flowers white.
- Parts used : Fruits, Bark.
- Ethnobotany : Fruits are pickled. Fruits are used in urinary problems
and expectorant. Bark is a source of tannin.
- Latin name : ***Cotinus coggygia* Scop. (Anacardiaceae)**
- Local name(s) : Tung.
- Distribution : Commonly found in sub-tropical dry evergreen forests.
Kunihar, 1000 m. (Verma, S. 7851).
- Description : A shrub or small tree with elongated, feathery, pale
yellow flowers.
- Parts used : Leaves, Twigs.

Ethnobotany : The leaves are used for tannin. Twigs are used for cleaning teeth. Juice of the leaves is applied on wounds for soon healing.

Latin name : *Cotoneaster microphylla* Wall. (Rosaceae)

Local name(s) : Bhedda, Pasarni.

Distribution : Near rocks, not common.
Baridhar, 2000-2200 m. (Verma, S. 7541).

Description : A small much branched, prostrate, evergreen shrub. Fruit are globose or ovoid, scarlet when ripe.

Parts used : Stolons.

Ethnobotany : Stolons are used as constipative. Twigs used for walking sticks and baskets. The paste of leaves is applied on Pararni/Brahm-sutri.

Latin name : *Crotalaria albida* Heyne (Leguminosae)

Local name(s) : Thakara.

Distribution : Common between 1200-1500 m.
Kradaghat, 1500 m. (Verma, S. 7896).

Description : An erect or much branched, diffuse, silvery hairy under shrub with pale yellow flowers.

Parts used : Roots, Leaves.

Ethnobotany : Roots are used as purgative. The decoction of leaves is used in cough.

Latin name : *Cryptolepsis buchanani* Roem. (Asclepiadaceae)

Local name(s) : Dudhi

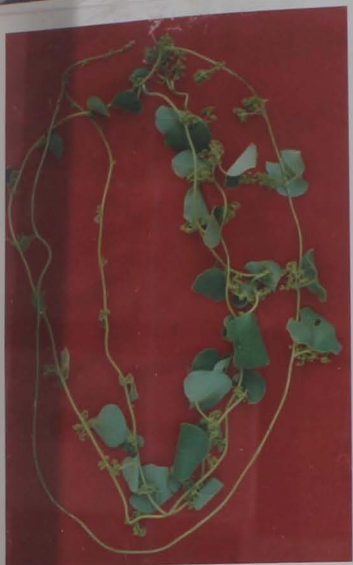
Distribution : Commonly found climbing on trees, wires etc. in tropical and sub-tropical forests.
Chandi, 900-1000 m. (Verma, S. 7612).

- Description : A large climbing shrub with milky juice. Flowers pale white in short peduncled lax, dichotomous cymes. Follicles in divaricate pairs.
- Parts used : Entire plant.
- Ethnobotany : Plant is toxic. It is used for rickets in children. Latex from the leaves is used in mouth ulcers.
- Latin name : ***Cuscuta reflexa* Roxb. (Convolvulaceae)**
- Local name(s) : Akashbel
- Distribution : Common throughout the area between 900-1500 m. (Diggal, 1000 m. (Verma, S. 7652).
- Description : A closely twining, fleshy, forming dense yellow masses on low trees and shrubs. It is leafless.
- Parts used : Entire plant.
- Ethnobotany : The plant is crushed with Munnaka and half glass juice is taken to remove the worms in intestine. It also controls the heartbeat in weakness. Ladies apply the juice of plant on hairs to increase the length of the hairs.
- Latin name : ***Cydonia oblongum* Mill. (Rosaceae)**
- Local name(s) : Bihidana.
- Distribution : Few plants in forest area between 1100-1300 m. Haripur, 1250 m. (Verma S. 7681).
- Description : A large shrub. Branchlets, under side of leaves, peduncles and calyx are white tomentose.
- Parts used : Fruits, Seeds.
- Ethnobotany : Fruit is edible, used in jam, marmalades etc. Seeds are used in skin diseases.

- Latin name : *Cynodon dactylon* Pers. (Graminae)
- Local name(s) : Doob.
- Distribution : Common in fields, courtyard and near villages. Aslu, 1200-1300 m. (Verma, S. 7626).
- Description : A perennial herb; stems prostrate, creeping and forming matted tufts with short ascending branches. Spikelets green or purple, awnless.
- Parts used : Entire plant.
- Ethnobotany : The juice of plant is put in nose to check the bleeding. This juice is used to reduce the acidity, constipation. This plant is used in Puja.
- Magico-religious blief: During solar eclipse dub is put in water and other things. People think that it purifies all the things the thereafter used them.
- Latin name : *Dalbergia sissoo* Roxb. (Leguminosae)
- Local name(s) : Shisham, Tali.
- Distribution : Common in forest area and in field borders. Bani, 1000-1100 m. (Verma, S. 7854).
- Description : A small tree with yellow-white flowers.
- Parts used : Bark, Leaves and Wood.
- Ethnobotany : Bark is used as abortifacient. Leaves are used as fodder. Wood is strong, used in building construction, for furniture and legs of beds.
- Latin name : *Daphne cannabina* Wall. (Thymeliaceae)
- Local name(s) : Shivji ka phool.
- Distribution : Common between 1800-2200 m. Baridhar, 2000-2200 m. (Verma, S. 7571).
- Description : A small shrub. Leaves shortly stalked, crowded near the end of branches. Flowers are white in colour.

- Latin name : *Delphinium denudatum* Wall. (Ranunculaceae)
- Local name(s) : Nirbisi.
- Distribution : Common in grassy slopes.
Mangu, 1450 m. (Verma, S. 7624).
- Description : A glabrous or slightly downy herb. Stems 0.6-0.9 m., branched. Flowers scattered 2.5-3.75 cm. long, blue in colour, spur cylindric, nearly straight.
- Parts used : Roots.
- Ethnobotany : Root is used in toothache, 3.5-7.0 g decoction of root per day is used as tonic after fever. Roots are dried and powdered and this powder is massaged on head to kill lice. It also increases length of hairs.
- Latin name : *Dicliptera publeuroides* Nees. (Acanthaceae)
- Local name(s) : Barhjadi, Bauna.
- Distribution : Common between 900-1500 m.
Mangu, Kutharh, 1450 m, 900-1000 m. (Verma, S. 7509, 7627).
- Description : A hairy, diffuse herb with pink flowers.
- Parts used : Entire plant.
- Ethnobotany : The plant is used as tonic. Leaves are crushed and paste is applied on wounds.
- Latin name : *Dioscorea sativa* Linn. (Dioscoreaceae)
- Local name(s) : Ratalu.
- Distribution : Common throughout the forest area.
Lade ki Bayen, 1200 m. (Verma, S. 7804).
- Description : A climber with alternate leaves. Stems bearing numerous bulbils.

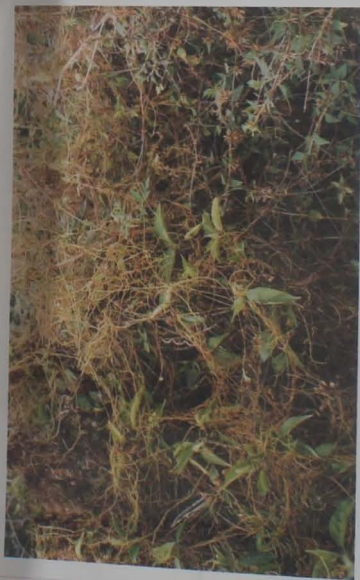
- Parts used : Roots, Seeds.
- Ethnobotany : Seeds are crushed and applied on the boils. Roots are used as vegetable.
- Latin name : *Dodonea viscosa* Linn. (Sapindaceae)
- Local name(s) : Mehndru.
- Distribution : Common in tropical and sub-tropical forest area. Gahar, 1250 m. (Verma, S. 7860).
- Description : An evergreen shrub with small yellow flowers.
- Parts used : Leaves, Bark.
- Ethnobotany : Leaves are boiled in water and this water applied on stiff areas. The paste of leaves is also used on burns. Seeds are edible. Bark contains tannin. About 20 ml decoction of leaves is taken once a day for two days to stop excess menstrual flow.
- Latin name : *Echinops nivens* Wall. (Compositae)
- Local name(s) : Oontkatara.
- Distribution : Common in grasslands. Saryanj, 1500 m. (Verma, S. 7576).
- Description : A small shrub. Heads 3.75-7.5 cm. in diameter. Outer involucre bracts are narrow, spatulate, spine tipped.
- Parts used : Roots.
- Ethnobotany : Powdered roots are used on wounds in cattle. Root bark should be powdered and mixed with honey to make 2-3 g tablets and eaten to cure cough and asthma.
- Latin name : *Ehretia laevis* Roxb. (Boraginaceae)
- Local name(s) : Charad, Papdi.
- Distribution : Common between 100-1300 m. Gahar, 1250 m. (Verma, S. 7857).



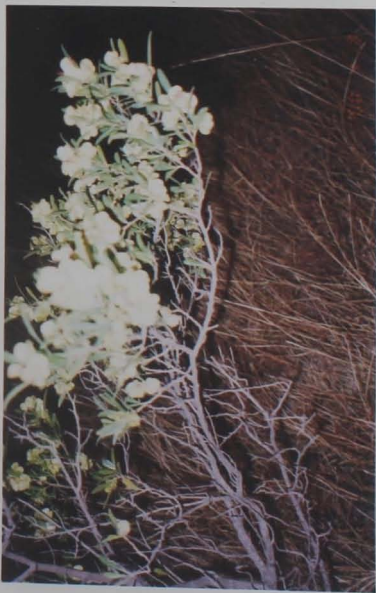
Cissampelos pareira



Cnicus wallichii



Cuscuta reflexa



Dodonea viscosa

- Description : A moderate sized deciduous tree. Flowers white in terminal or axillary dicotomously branched corymbose-cymes.
- Parts used : Leaves, Wood.
- Ethnobotany : Leaves are used as fodder and wood used as fuel.
- Latin name : ***Elaeagnus umbellata* Thumb. (Elaeagnaceae)**
- Local name(s) : Goin.
- Distribution : On roadsides.
Sarali, 1100 m. (Verma, S. 7601).
- Description : A small shrub with light yellow flowers. Fruits are orange coloured.
- Parts used : Seed, Flowers, Fruits.
- Ethnobotany : Seeds are stimulant in cough. Flowers are cardiac astringent. Fruits are edible.
- Latin name : ***Embllica officinalis* Gaertn. (leguminosae)**
- Local name(s) : Aonla. Amla.
- Distribution : Common in forest area.
Dhadhog, 1300 m. (Verma, S. 7526).
- Description : A moderate sized deciduous tree. Flowers are greenish yellow. Fruits six lobed, globose, fleshy, pale yellow.
- Parts used : Fruits, Leaves.
- Ethnobotany : Powder of fruits mixed in rose water and applied on forehead. It relieves headache. Fruit powder used in indigestion. Dried fruits and Sesame are dipped in water or milk and ground them. This paste is used on the scars of small pox to remove them. Leaves are used as fodder. The poultice of fruits is used to stop bleeding from the cuts.

- Latin name : *Evolvulus alsinoides* Linn. (Convolvulaceae)
- Local name(s) : Shankhpushpi.
- Distribution : Common in grassland and forest floor.
Kunihar, 1000 m. (Verma, S. 7651).
- Description : A much branched, diffuse, perennial herb with blue or white flowers.
- Parts used : Entire plant.
- Ethnobotany : The plant is ground with cold water and is used to increase age, strength, beauty, appetite and intelligence.

- Latin name : *Eucalyptus citriodora* Hook. (Myrtaceae)
- Local name(s) : Safeda.
- Distribution : Planted on roadsides as avenue tree.
Arki, 1200 m. (Verma, S.).
- Description : A large tree with white flowers.
- Parts used : Leaves.
- Ethnobotany : Leaves are boiled in water and steam is taken in cold.
Oil is extracted from leaves.

- Latin name : *Euphorbia hirta* Linn. (Euphorbiaceae)
- Local name(s) : Dughika, Laldudhi.
- Distribution : A common weed in open grounds and in fields..
Haripur, 1250 m. (Verma, S. 7668).
- Description : An annual, procumbent herb. Leaves opposite in pairs.
Flowers small pinkish. Fruit is an yellowish capsule.
- Parts used : Entire plant.
- Ethnobotany : Juice of the plant is given to stops bleeding in piles.

- Latin name : *E. royleana* Boiss. (Euphorbiaceae)
- Local name(s) : Chhuro.
- Distribution : Abundant in thorny scrub of *Acacia* and *Zizyphus*.
Aslu, 1200-1300 m. (Verma, S.).
- Description : A medium sized tree or shrub with yellow flowers.
- Parts used : White milk or latex, stem pulp.
- Ethnobotany : The latex is applied as 'Gul' on the painful parts. Care should be taken that water should not touch on that part and milk should be kept away from the eyes. Stem pulp is used as Raita. The latex is filled in the hollow cavities of decayed teeth.
- Latin name : *Euonymus pendulous* Wall. (Celastraceae)
- Local name(s) : Bhambela.
- Distribution : Rare.
Baridhar, 2000-2200 m. (Verma, S. 7893).
- Description : A small tree. Branches are drooping. Leaves are leathery and sharply toothed. Flowers are white in colour.
- Parts used : Wood.
- Ethnobotany : Wood is suitable for carving and used for making boxes and pegs.
- Latin name : *Ferula jaeschkeana* Vatke (Umbelliferae)
- Local name(s) : Ghora ghass, Jangli Heeng.
- Distribution : Rare.
Mangu, 1450 m. (Verma, S. 7635).

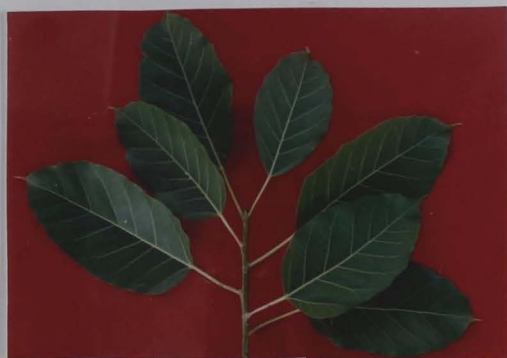
- Description : A tall perennial, 2 m high shrub. Leaves large, 2-3 pinnate with toothed segments. Fruits are 1-1.5 cm long and 1 cm broad. Flattened with lateral wings.
- Parts used : Entire plant.
- Ethnobotany : An essential oil is extracted from the roots and seeds. This plant is given to horses to increase their strength hence called ghora ghass.
- Latin name : *Ficus glomerata* Roxb. (Urticaceae)
- Local name(s) : Umbro.
- Distribution : Found between 1100-1300 m. Lutroo, Aslu, 1260 m, 1200-1300 m. (Verma, S. 7544, 7814).
- Description : A middle sized tree. Leaves are alternate. Fruit are sub globose, red or orange when ripe.
- Parts used : Fruits, Roots.
- Ethnobotany : The juice of roots, sugar and black zeera are mixed together. This juice is given to treat the 'Sujak Rog' (gonorrhoea). Green and dried fruits are ground in the water and mixed with Mishri. This juice is given in piles and diarrhoea.
- Magico-religious belief: Roots are bring in 'Shubh Muhurat' and used as 'Tilak' forehead. It produces the effect of 'Sammohana' (Hypnotism). Twigs are also used in 'Hawana'.
- Latin name : *F. infectoria* Roxb. (Urticaceae)
- Local name(s) : Pilkhan.
- Distribution : Few trees are found between 1000-1200 m. Haripur, 1250 m. (Verma, S. 7675).
- Description : A large tree with greenish grey smooth bark. Fruits are sessile, basal with minute bracts.

- Parts used : Fruits, Bark, Roots.
- Ethnobotany : Bark and fruits are astringent, cooling, used as blood purifier, in swelling and cough. Decoction of the bark is used to wash the ulcers.
- Latin name : *F. palmata* Forsk. (Urticaceae)
- Local name(s) : Fegra, Daugla.
- Distribution : Common in forest and on field bunds. Sayaan, 1450 m. (Verma, S. 7892).
- Description : A small tree. Receptacle 1.25-2.5 cm. in diameter, usually solitary.
- Parts used : Fruit, Latex.
- Ethnobotany : Dip two dry fruits in water for a night and eat them in the morning. Similarly 2 dry fruits are dip in the water in the morning and eat them in the evening. It removes pile in one week only. Latex is used on ringworm. Fruits also used in constipation and diabetes. For skin diseases and purification of blood 5 fig, 11 munakkas are boiled in 250 milk and drink this milk.
- Latin name : *F. religiosa* Linn. (Urticaceae)
- Local name(s) : Pipal.
- Distribution : Common. Planted near temples. Haripur, 1250 m. (Verma, S. 7672).
- Description : A large tree, glabrous, usually epiphytic, figs are axillary.
- Parts used : Bark, Fruits.
- Ethnobotany : In urinary troubles 10 g bark is boiled in half liter water and when it remains $\frac{1}{4}$ th it is filtered. This filtrate should be taken twice a day. If in this decoction honey is mixed, it is used to purify the blood. Powder of bark is sprinkled over the wounds for soon healing.

- Magico-religious belief: People believe that Brahma, Vishnu and Mahesh live on the pipal, if tree is married with tulsi (*Ocimum sanctum*). If pipal tree remains unmarried, the evil spirits occupy the tree.
- Latin name : *Flacourtia ramontchi* Herit. (Bixaceae)
- Local name(s) : Kangu.
- Distribution : Common in thorny scrub of *Acacia* and *Zizyphus*. Pathragal, 1500 m. (Verma, S. 7871).
- Description : A small thorny deciduous tree. Fruit globose, subacid, red or dark brown when ripe.
- Parts used : Fruits, Leaves.
- Ethnobotany : Fruits are edible. Leaves are boiled in water and bath is taken with this water in case of body allergy.
- Latin name : *Flueggia micropoda* Bl. (Euphorbiaceae)
- Local name(s) : Patala, Bakarcha.
- Distribution : Common between 1200-1500 m. Mangu, 1450 m. (Verma, S. 7644).
- Description : A glabrous shrub. Fruit are globose, crowned with the star like stigma. Seeds 3-6 minutely dotted.
- Parts used : Leaves, Fruits.
- Ethnobotany : The decoction of leaves is given as laxative and antipyretic. Leaf juice employed for killing worms in sores. Fruits are edible.
- Latin name : *Galium rotundifolium* Linn. (Rubiaceae)
- Local name(s) : Safed manjith.
- Distribution : Common near water and swampy areas between 1200-1500 m. Saryanj, 1500 m. (Verma, S. 7579).



Evolvulus alsinoides



Ficus infectoria,



Euphorbia hirta,



Ficus religiosa

- Description** : A small herb with trailing branches. Leaves are in whorls of 4, ovate. Flowers are white often tinged with green or yellow.
- Parts used** : Entire plant.
- Ethnobotany** : The juice of plant is used in sore throat, chest complaints and for colic pains. Plant is used as fodder.
- Latin name** : *Geranium nepalensis* Sweet (Geraniaceae)
- Local name(s)** : Bhandra.
- Distribution** : In swampy areas between 1500-2200 m. Badidhar, 2000-2200 m. (Verma, S. 7562, 7654, 7848).
- Description** : A perennial, pubescent or softly hairy herb with pale purple flowers
- Parts used** : Roots.
- Ethnobotany** : The Juice of roots is used in renal diseases. Roots contain red colouring matter which is used as dye.
- Latin name** : *Gerbera lanuginosa* Benth. (Compositae)
- Local name(s)** : Kupheru.
- Distribution** : Common on rocks, grassy slopes between 1200-1500 m. Mangu, 1450 m. (Verma, S. 7607, 7567).
- Description** : A small white tomentose herb with white flowers tinged with pink. Leaves are lanceolate, 7.5-12.5 cm. long, pinnately lobed near the base.
- Parts used** : Leaves.
- Ethnobotany** : The white cotton like coating on the underside of the leaf is used as tincture for stonching wounds.

- Latin name : *Grewia optiva* Drume ex. Burrett (Tiliaceae)
- Local name(s) : Biul.
- Distribution : Common.
Gahar, 1250 m. (Verma, S. 7865).
- Description : A moderate sized tree with yellow flowers.
- Parts used : Leaves, Bark, Fruits.
- Ethnobotany : Leaves are used as fodder. Stems are dipped in water for few days and then fiber is extracted which is used to make the ropes. Bark of the stems is used by ladies to clean their hairs. Fruits are edible.
- Latin name : *Hamiltonia suaveolens* Roxb. (Rubiaceae)
- Local name(s) : Padra.
- Distribution : Scattered between 1800-2200 m.
Baridhar, 2000-2200 m. (Verma, S. 7591).
- Description : A small shrub with divaricate branches. Flowers are bluish purple. Capsule is ellipsoid, 5 seeded.
- Parts used : Entire plant.
- Ethnobotany : Planted as ornamental.
- Latin name : *Hedera nepalensis* Koch (Araliaceae)
- Local name(s) : Chopru.
- Distribution : Found on trees, ground and rocks between 1500-2200 m..
Baridhar, 2000-2200 m. (Verma, S. 7879).
- Description : A woody climber to 30 cm. Fruits glabrous, shining, yellow or orange red.
- Parts used : Entire plant.

- Ethnobotany : Leaves and berries are stimulant, diaphoretic and cathartic. Berries are used in low blood pressure.
- Latin name : *Helinus lanceolatus* Brandis (Rhamnaceae)
- Local name(s) : Gur mar buti.
- Distribution : Common in forest area between 1000-1500 m., Tal-Arki, 1260 m. (Verma, S. 7803).
- Description : An unarmed, climbing shrub. Flowers yellow, small, umbellate clusters at the end of long axillary stalks.
- Parts used : Roots.
- Ethnobotany : The root bark is eaten which makes sweet buds inert. After this any sweet thing does not give any sweet taste and one can eat more amount of sweets.
- Latin name : *Hol arrhena antidysenterica* Wall. (Apocynaceae)
- Local name(s) : Indrajau, Kurchi.
- Distribution : Common on sedimentary rocks, on roadsides between 1000-1500 m. Aslu, Haripur, 1200-1300 m, 1250 m. (Verma, S. 7647).
- Description : A glabrous or pubescent tree. Leaves nearly sessile, ovate-oblong 15 x 7.5 cm., acute. Flowers are white in terminal corymbose cymes.
- Parts used : Roots, Seeds, Stem bark.
- Ethnobotany : The root powder is used as snuff (Naswar) to check the bleeding from nose. Seeds and bark of the stems are given in dysentery. In case of dropsy, the powder of the bark is rubbed over the body.
- Latin name : *Ichnocarpus fragrans* Wall. (Apocynaceae)
- Local name(s) : Dudhi bel, Belkamu.
- Distribution : Common on trees, in grassy slopes between 1000-1200 m. Udu ka nalah, 1100 m. (Verma, S. 7637).

- Description : A climbing shrub with white, fragrant flowers.
- Parts used : Roots.
- Ethnobotany : Roots are boiled in water and when it remains 1/4th it is given with the paste of black pepper as a blood purifier.
- Latin name : ***Impatiens balsamina* Linn. (Balsaminaceae/ Lythraceae)**
- Local name(s) : Binchi
- Distribution : Common on wasteland in rainy season. Arki, 1200 m. (Verma, S. 7521).
- Description : Annual herb with narrow lanceolate leaves. Flowers pink or nearly white. Capsules are ovoid acute.
- Parts used : Aerial parts.
- Ethnobotany : The aerial parts are crushed and used as Henna. It is considered cooling. The paste of the plant is also applied on head. Crushed leaves are applied on septics between toes.
- Latin name : ***Indigofera pulchella* Roxb. (Leguminosae)**
- Local name(s) : Kathi.
- Distribution : Common in forest area. Kunihar, 1000 m. (Verma, S. 7846).
- Description : A shrub 10-12 ft. high. Leaves imparipinnate. Flowers rose coloured.
- Parts used : Flowers, Stem bark.
- Ethnobotany : Powdered stem bark is used in toothache. Flowers are used in *Triphala Churan*. Seeds are dried and applied on hairs to check the hair fall and breaking of hairs.

- Latin name : *Ipomoea carnea* Jacq. (Convolvulaceae)
- Local name(s) : Bada Aak.
- Distribution : Planted on roadsides and field bunds.
Piplughat, 1450 m. (Verma, S. 7580).
- Description : A shrub with heart shaped leaves having white to pinkish flowers.
- Parts used : Entire plant.
- Ethnobotany : This plant is used as ornamental. It is grown on the field boundaries to check the soil erosion.
-
- Latin name : *Jasminum arborescens* Roxb. (Oleaceae)
- Local name(s) : Chameli.
- Distribution : Common throughout the area and on roadsides.
Shakni, 1260 m. (Verma, S. 7863).
- Description : A large sub-erect shrub with white flowers.
- Parts used : Leaves.
- Ethnobotany : The juice of leaves with black pepper and garlic acts as an emetic and also used in obstructions of the bronchial tubes by viscid phlegm.
-
- Latin name : *J. dispernum* Wall. (Oleaceae)
- Local name(s) : Chameli.
- Distribution : Common throughout the area.
Kutharh, 900-1000 m. (Verma, S. 7618).
- Description : A glabrous scandent shrub. Branches four sided.
Flowers white fragrant.
- Parts used : Leaves.

- Ethnobotany : For acidity and gastric troubles, the green leaves are made into tablets of 10 g and mixed with gur and consumed with cold water.
- Latin name : *J. humile* Linn. (Oleaceae)
- Local name(s) : Pili-chameli.
- Distribution : Not common. Found between 1300-1500 m. Mangu, 1450 m. (Verma, S. 7633).
- Description : An erect shrub. Leaves are opposite; leaflets 3-7 ovate or oblong, end one 2.5-5 cm. long. Flowers are yellow.
- Parts used : Leaves, Flowers.
- Ethnobotany : The paste of leaves is applied on skin diseases, wounds and ulcers. Leaves are chewed in toothache. The Plant is grown as ornamental.
- Latin name : *J. pubescens* Willd. (Oleaceae)
- Local name(s) : Chameli.
- Distribution : Common throughout the area. Gumber, 900-1000 m. (Verma, S. 7849).
- Description : A scandent shrub. Leaves are opposite and simple, 2.5 to 7.5 x 2-3.75 cm. Flowers are white and scented
- Parts used : Leaves.
- Ethnobotany : Dried leaves used in poultice for indolent ulcers.
- Latin name : *Jatropha curcas* Linn. (Euphorbiaceae)
- Local name(s) : Safed arand.
- Distribution : On roadsides between 1000-1100 m. Bakhlag, 1100 m. (Verma, S. 7897).

- Description : A shrub or small tree with a short irregular trunk, flowers yellowish in terminal cymes.
- Parts used : Twigs, Latex.
- Ethnobotany : Latex is used for eczema. Young twigs with black pepper are ground and made into paste. This paste is given twice a day to women for treatment of white discharge.
- Latin name : *Juglans regia* Linn. (Juglandaceae)
- Local name(s) : Akhrot.
- Distribution : Mostly planted. Found between 1000-2000m. Diggal, 1000 m. (Verma, S. 7634).
- Description : A large tree. Drupe ovoid, green, thick, fleshy rind, enclosing the woody wrinkled, 2 valved nut.
- Parts used : Fruits, Leaves, Bark.
- Ethnobotany : Nut is roasted on fire and is given in cough. Nut is kept in water and then ground. This paste is applied on navel to cure dysentery. To those children who wet beds in the night, walnut with 20 raisins is given daily for two weeks. Walnut oil is put in the nose to cure paralysis. In kidney stone one spoon powder of shell of the nut or powder of the nut is given in the morning and evening. The stem bark and leaves are used as *Datun*. It prevents the cavities in teeth. The shell of the nut is crushed and applied in the laceration of toes.
- Latin name : *Justicia adhatoda* Linn. (Acanthaceae)
- Local name(s) : Basuti, Basti
- Distribution : Common near villages, in forest area. Diggal , 1000m.(Verma, S. 7816).
- Description : A small shrub. Leaves apposite, simple, elliptic lanceolate. Flowers white in thrysiform spikes, bilobed. Fruit a capsule.
- Parts used : Leaves, Roots.



Holarrhena antidysenterica,



Hypericum oblongifolium,



Ichnocarpus fragrans



Duchesmia indica (Fragaria indica)

Ethnobotany : One table spoon of leaf juice is given thrice a day to cure cough. The juice of leaves provides relief in problems related to cough, nose, throat and urinary infection. In case of tuberculosis, leaf juice with honey is consumed in the morning and evening. Roots are dried and powdered. This powder is taken with water in malarial fever.

Leaves are smoked in 'chilam' to provide relief to asthma patient.

Six masha juice of the leaves is mixed with equal quantity of honey and one masha of ground sambhar salt help to cure any sort of cough within three days. If the results are not positive then substitute the black pepper (1 masha) with sambhar salt.

Latin name : *Lannea coromendalica* (Hautt.) Merr.
(Anacardiaceae)

Local name(s) : Jhingan.

Distribution : Common throughout the area .
Kutharh , 900-1000 m. (Verma, S. 7608).

Description : A moderate sized deciduous tree. Drupe oblong compressed.

Parts used : Wood, Fruits.

Ethnobotany : Wood used for furniture and agriculture implements. The fruits are powdered and applied twice a day for soon healing of wounds

Latin name : *Lantana camara* Linn. (Verbenaceae)

Local name(s) : Phul-lakri.

Distribution : Widely grown weed throughout the area between 300-1800 m. Diggal , 1000 m. (Verma, S. 7662).

- Description : A shrub 1.2-1.5m high and densely pubescent. Flowers deeply red coloured. Pods grey silky, narrowly oblong.
- Parts used : Stems, Flowers.
- Ethnobotany : The decoction of flowers is used in cough and cold. Stems are used as ropes to tie the fuel wood lots.
- Latin name : ***Leucas lanata* Benth. (Labiatae)**
- Local name(s) : Kathi-buti.
- Distribution : Common in grass lands between 1000-1500m. Pathragal ,1500 m. (Verma, S. 7882).
- Description : Perennial, clothed with soft, white wooly tomentum with white flowers in axillary loose clusters.
- Parts used : Leaves, Flowers.
- Ethnobotany : Flowers are used in cold and cough. Leaves are dried and powdered and taken with cold water or milk in dysentery.
- Latin name : ***Leucaena leucocephala* (Lamk.) de Wit. (Leguminosae)**
- Local name(s) : Su-babul.
- Distribution : Common between 1000-1300m. Gahar, 1260 m. (Verma, S. 7605).
- Description : A small tree with yellow flowers. Pods are 10-15cm. long.
- Parts used : Leaves.
- Ethnobotany : Leaves are used as fodder to increase the milk production in cattle.

- Latin name : *Lippia nudiflora* Rich. (Verbenaceae)
- Local name(s) : Jal-pippli.
- Distribution : Common in water between 900-1200m.
Udu ka nalah , 1100 m. (Verma, S. 7639).
- Description : A roughly pubescent herb with prostrate stems.
Flowers pink or white.
- Parts used : Entire plant.
- Ethnobotany : Leaves are eaten as vegetable. Poultice of fresh plant
applied to boils. Plant is used as diuretic.
- Latin name : *Lotus corniculatus* Linn. (Leguminosae)
- Local name(s) : Pila Phool.
- Distribution : Common on grassy slopes.
Piplughat , 1250 m. (Verma, S. 7888).
- Description : A perennial glabrous herb with yellow flowers.
- Parts used : Entire plant.
- Ethnobotany : Plant is used as fodder and is a good soil binder.
- Latin name : *Mallotus philippinensis* (Lamk.) Muell-Arg.
(Euphorbiaceae)
- Local name(s) : Kamal, Kamela.
- Distribution : Common between 900-1200m.
Gamjhun, 900 m. (Verma, S. 7834).
- Description : A small evergreen tree. Flowers are brown. Fruit 3
lobed. Capsule covered with crimson powder when
ripe.
- Parts used : Seeds, Leaves, Roots.
- Ethnobotany : Seeds are dried in shade and then ground. Small
tablets are made of the powder and are given with cold

water in jaundice. Decoction of leaves is good for the 'Vat Rog'. In Polio (myelitis) small and thin roots are tie on the neck. Bark and leaf powder are mixed with butter and applied on sores and boils.

- Latin name : *Malvastrum coromandelianum* Garcke
(Malvaceae)
- Local name(s) : Bala-ka-bhed.
- Distribution : Common weed in fields and waste lands.
Gumber, 900-1000 m. (Verma, S. 7674).
- Description : An under shrub with yellow flowers in the axils.
- Parts used : Root, Leaves.
- Ethnobotany : Root bark is given with milk to increase the strength. The paste of leaves is applied on the cut for soon healing. The decoction of leaves is also given in dysentery.
- Latin name : *Mangifera indica* Linn. (Anacardiaceae)
- Local name(s) : Aam.
- Distribution : Planted.
Akri (1200 m.) Verma, S. 7889).
- Description : An evergreen tree. Inflorescence is in terminal panicle. Flowers are yellowish green, scented.
- Parts used : Leaves, Bark, Roots, Fruits.
- Ethnobotany : The ash of the leaves along with water or oil is applied on the burns. It gives much relief. Powder of young leaves of mango is useful in diabetes. Decoction of the bark or the leaves used to wash the wounds to heal them soon. In fever, the piece of the root is tied on the wrist. For bleeding gums the leaves of mango are given to chew. In case of piles, half cup mango juice, 25 g curd and one spoon juice of ginger are mixed and taken thrice in a day. Unripe fruits are pickled, used in chutneys.

- Latin name : ***Melia azedarach* Linn. (Meliaceae)**
- Local name(s) : Drek, Dek, Bakain.
- Distribution : Scattered trees between 1100-1300 m. Shakani, 1260 m. (Verma, S. 7856).
- Description : A moderate sized tree with smooth, dark-grey bark. Flowers are lilac-blue in colour.
- Parts used : Leaves, Seeds.
- Ethnobotany : Leaves are tied over the boils . Seeds are used in rheumatism.
- Latin name : ***Millettia auricaulis* Baker ex. Brandis (Leguminosae)**
- Local name(s) : Gauj.
- Distribution : Common in sub-tropical pine forests. Kunipool, 1000 m. (Verma, S. 7548).
- Description : A large woody gregarious climber. Pods 10-17.5 x 2.5-3.75 cm. hard, brown, velvety with very thick sutures.
- Parts used : Leaves, Roots.
- Ethnobotany : Leaves used as fodder. Powder of the root is used to kill lice in cattle.
- Latin name : ***Mentha longifolia* (L.) Nath (Labiatae)**
- Local name(s) : Jungli-pudina Safed-pudina
- Distribution : Common near swampy areas. Shakani, 1260 m. (Verma, S. 7876).
- Description : A small, white, tomentose, aromatic herb.
- Parts used : Leaves.

- Ethnobotany : Leaves are used to make chutneys. Past of the leaves is used on stiff and painful joints.
- Latin name : *Meriandra strobilifera* Benth. (Labiatae)
- Local name(s) : Murta, Murti.
- Distribution : Common throughout the forest area between 1000-1500 m. Haripur, 1250 m. (Verma, S. 7886).
- Description : An erect, tomentose, shrub. Leaves thick crenate, base prolonged downwards. Flowers small, white in large crowded, erect tomentose.
- Parts used : Leaves.
- Ethnobotany : The decoction of leaves is used on the wounds and skin abrasions. Leaves are spread under the cattle to get rid of fleas.
- Latin name : *Micromeria biflora* (Buch.-Ham. ex D. Don) Benth. (Labiatae)
- Local name(s) : Jungli ajwain.
- Distribution : Common in grassy slopes between 300-2200 m.. Kunihar, 1000 m. (Verma, S. 7517).
- Description : A tufted herb with short wiry stems and very stout rootstock. Flowers small in axillary 2-4 flowered cymes, pink in colour.
- Parts used : Entire plant.
- Ethnobotany : Plant is ground and used on Kachhrali (Ulcer in armpit). This paste also used on wounds in cattle. The juice of leaves is used in stomachache.
- Latin name : *Mimosa pudica* Linn. (Leguminosae)
- Local name(s) : Lajwanti, Chhuimui.
- Distribution : Rare. Lade ki Bayen, 1200 m. (Verma, S. 7595).



Justicia adhatoda,



Leucaena leucocephala,



Lantana camara,



Lotus corniculatus

- Description : It is a sensitive plant. Flowers long peduncled. Pod long with densely prickly sutures.
- Parts used : Leaves.
- Ethnobotany : Decoction of the leaves with ginger juice is used as blood purifier. This plant is grown as ornamental.
- Latin name : *M. rubicaulis* Lam. (Leguminosae)
- Local name(s) : Kandyari.
- Distribution : Common throughout the area in the forest and wastelands.
Batalghatti, 1200 m. (Verma, S. 7552).
- Description : A prickly, erect or half climbing shrub. Flowers purple at first and later on changing to white. Pod glabrous, thin, flat, slightly curved.
- Parts used : Leaves, Roots.
- Ethnobotany : Leaves are crushed and applied on wounds. Leaves are used as fodder. The paste of roots with black pepper used on boils.
- Latin name : *Morus serrata* Roxb. (Moraceae)
- Local name(s) : Kimu.
- Distribution : Grown on field bunds.
Kunihar, 1000 m. (Verma, S. 7898).
- Description : A deciduous tree with scaly buds. Leaves are broad-ovate, cordate, toothed, often 3-lobed. Fruit 1.75 cm long, purple when ripe.
- Parts used : Leaves, Wood, Fruits.
- Ethnobotany : Fruits are edible. Wood is used for agriculture implements. Leaves are used as fodder.

- Latin name : *Murraya koenigii* Spreng (Rutaceae)
- Local name(s) : Gandhela.
- Distribution : Common from 300-2200 m.
Gahar, 1250 m. (Verma, S. 7862).
- Description : A deciduous shrub with white flowers in, terminal corymbose panicle.
- Parts used : Entire plant.
- Ethnobotany : Leaves are eaten raw in dysentery. Plant is used as tonic. Fruits are edible. Leaves used to flavour the *Curries*. To cure diabetes 10 leaves are given daily to eat.
- Latin name : *M. paniculata* (Linn.) Jacq. (Rutaceae)
- Local name(s) : Kamini.
- Distribution : Common from 1000-1300 m.
Gahar, 1250 m. (Verma, S. 7885, 7811).
- Description : An evergreen shrub or small tree with white fragrant flowers.
- Parts used : Entire plant.
- Ethnobotany : Plant is used as ornamental. Fruits are edible.
- Latin name : *Myrsine africana* Linn. (Myrsinaceae)
- Local name(s) : Banwan, Chapra.
- Distribution : Common in sub-tropical pine forests.
Baridhar, 2000-2200 m. (Verma, S. 7550).
- Description : A small evergreen shrub with small flowers. Berry solitary.
- Parts used : Leaves, Fruits.

- Ethnobotany : Leaves are used as fodder. Fruits are used as anthelmintic especially for tapeworm.
- Latin name : *Nasturtium officinalis* R.Br. (Cruciferae)
- Local name(s) : Chhuchh.
- Distribution : Common in water.
Mangu, Kunikhadd, 1450,1000 m. (Verma, S. 7802, 7845).
- Description : A glabrous herb. Stems short or long, creeping or floating in water. Sometimes branched with white flowers. Pods linear, half to one inch long.
- Parts used : Entire plant.
- Ethnobotany : It is used as vegetable.
- Latin name : *Nerium indicum* Mill. (Apocynaceae)
- Local name(s) : Lal kaner.
- Distribution : Not common.
Shakani, 1260 m. (Verma, S. 7852).
- Description : An evergreen shrub with silvery grey bark. Leaves oblong, thickly coriaceous. Flowers are rose coloured.
- Parts used : Leaves.
- Ethnobotany : Leaves are used in *Hriday Rog* (Cardiac). Leaves also used n snake bites. Leaves cooked in mustard oil are rubbed on body in allergy. Snuff of the dry leaves is used for sneezing and it relieves headache.
- Latin name : *Nicandra physaloides* (L.) Gaertn. (Solanaceae)
- Local name(s) : Noshadar.
- Distribution : Common on wastelands and roadsides.
Chandi, 900-1000 m. (Verma, S. 7687).

- Description : An annual erect herb. Leaves are stalked, ovate-lanceolate, 10-20 cm., irregularly, sinuately lobed. Flowers are blue in colour.
- Parts used : Entire plant.
- Ethnobotany : The plant is poisonous. Juice of the plant is used in urinary troubles.
- Latin name : *Nicotiana tobacum* Linn. (Solanaceae)
- Local name(s) : Tambaku.
- Distribution : Common on wastelands.
Batalghatti, 1200 m. (Verma, S. 7525).
- Description : A viscid herb with pinkish-white flowers.
- Parts used : Leaves, Seeds.
- Ethnobotany : Leaves are used in smoking. The paste of leaves is applied on scorpion stings and in skin diseases. Oil is extracted from seeds. Plant is given in stomachache in cattle.
- Latin name : *Nyctanthes arbor-tritis* Linn. (Oleaceae)
- Local name(s) : Harshingar, Seoli.
- Distribution : Planted as ornamental.
Batalghatt, Baridhar, 1200 m, 2000-2200 m. (Verma, S. 7551, 7596).
- Description : A rough, hairy, shrub or small tree. Leaves are shortly stalked, ovate, long pointed. Flowers are white and fragrant.
- Parts used : Bark, Leaves.
- Ethnobotany : Leaves are boiled in water and to that boiled water honey and black pepper are added and used in cough and cold. Decoction of stem bark is given in dysentery.

- Latin name : *Ocimum canum* Sims. (Labiatae)
- Local name(s) : Pabhari.
- Distribution : Common throughout the area.
Mangu, 1450 m. (Verma, S. 7825).
- Description : A softly hairy, erect herb with white blue flowers.
- Parts used : Entire plant.
- Ethnobotany : Leaves are used by people to flavour the food stuffs. Juice of the leaves is put in earache. Seeds are used in stomachache. Decoction of plant is used in cold.
- Latin name : *O. sanctum* Linn. (Labiatae)
- Local name(s) : Tulsi.
- Distribution : Grown in courtyard, in pots.
Arki, 1200 m. (Verma, S.).
- Description : A softly hairy herb with white pinkish flowers.
- Parts used : Whole plant.
- Ethnobotany : The leaves are used as mosquito repellent and kept in a corner in the room. Plant is used in cough and cold. Decoction of the plant is used in 'vata rog'.
- Magico-religious belief: This plant is worshipped by ladies. It is said that this plant is 'Gauri' (Wife of Lord Shiva) and giving water to this plant increases the life of their husbands. It is also believed that if this plant is kept in courtyard, no evil spirit can enter the house.
- Latin name : *Olea glandulifera* Wall. (Oleaceae)
- Local name(s) : Jharinu.
- Distribution : Common between 1200-1300 m.
Arki, 1200 m. (Verma, S. 7830).

- Description : A small tree with 10-12.5 x 3.75 cm long, ovate, long pointed leaves and white flowers in panicles. Drupe long black when ripe.
- Parts used : Leaves, Bark. Wood.
- Ethnobotany : The wood is used for furniture, agricultural implements. The bark and leaves are astringent and used as antiperiodic in fever.
- Latin name : ***Onychium contiguum* Kaulf
(Cryptogrammaceae)**
- Local name(s) : Hans-raj
- Distribution : Common in swampy areas between 1500-2200 m. Baridhar, 2000-2200 m. (Verma, S. 7589).
- Description : A small fern with sori placed upon a continuous linear receptacle. Indusium parallel with the margin of the segments, linear, pressed over the sori.
- Parts used : Seeds.
- Ethnobotany : Seeds are used in whooping cough and bronchitis.
- Latin name : ***Opuntia dillenii* Haw (Cactaceae)**
- Local name(s) : Nagphani
- Distribution : Common on dry areas, on wastelands and on roadsides. Gumber, 900-1000 m. (Verma, S. 7678).
- Description : A low spreading bush about 1.5 m. high often forming dense thickets; branches flat, jointed bearing 4-6 prickles and tufts of numerous hairs. Flowers yellow tinged with red.
- Parts used : Fruits.
- Ethnobotany : Sarbat of fruits is used in asthma. Decoction of the fruit with ginger is also given in whooping cough to children.

- Latin name : *Origanum vulgare* Linn. (Labiatae)
- Local name(s) : Sathra, Jakhmi-buti
- Distribution : Common at higher altitudes between 1800-2200 m. Baridhar, 2000-2200 m. (Verma, S. 7588).
- Description : An erect, aromatic herb with short hairs. Leaves short, entire. Flowers are small, pale-white often tinged with pink; crowded in numerous, four sided, terminal, corymbose often paniculate spikes.
- Parts used : Entire plant.
- Ethnobotany : Seeds are used in stomachache. The paste of leaves and terminal shoots along with 2-3 black pepper is applied on boils, cuts, wounds, ulcer. A piece of the root bounded in cloth is tied to the neck of small kids as a protective measure against conjunctivitis.
- Latin name : *Osyris arborea* (Wall.) ex. DC. (Santalaceae)
- Local name(s) : Jangli Chai, Kaile.
- Distribution : Common between 1000-1300 m. Jabbal, 1000 m. (Verma, S. 7676, 7838).
- Description : A 1.5-3 m. high shrub. Young shoots are 3-angled. Flowers are minute. Patianth is 3-4 lobed. Drupe is globose, red when ripe.
- Parts used : Leaves and Bark.
- Ethnobotany : Leaves and bark of the stem are used to make tea. Crushed leaves are applied on cuts and other wounds.
- Latin name : *Ougenia oojainensis* Linn. (Leduminosae)
- Local name(s) : Sandan
- Distribution : Common between 1000-1300 m. Gahar, 1260 m. (Verma, S. 7847).

- Description : A medium sized tree with a thin ashy grey or light brown bark, with leaves of 3-leaflets and flowers light pink or white in fascicles racemes.
- Parts used : Wood, Leaves.
- Ethnobotany : Wood is used for agricultural implements. Leaves are used as fodder.
- Latin name : ***Oxalis corniculata* Linn.**
(Oxalidaceae/Geraniaceae)
- Local name(s) : Khatti-mithi, Changeri, Malori.
- Distribution : Common in fields and wastelands through the area. Kuniyar, 1000 m. (Verma, S. 7515).
- Description : A small annual or perennial herb with alternate, stalked, three lobed leaves and yellow flowers in long stalked umbels. Capsule tomentose, cylindric with projecting tip.
- Parts used : Entire plant.
- Ethnobotany : Juice of the plant with salt is used in dysentery. Juice of the leaves is useful in cataract of the eyes. Its vegetable is given for 1 or 2 weeks for a mad person and side by side banfsha (*Viola serpens*) mixed in pure ghee is applied on head. Leaf juice is put in the eyes 2-3 times in Tandida.
- Latin name : ***Parthenium hysterophorus* Linn.** (Compositae)
- Local name(s) : Gajar-ghas.
- Distribution : Common weed throughout the area in wastelands. Arki, 1200 m. (Verma, S. 7549).
- Description : A 0.6-1.5 m. high shrub with pinnate leaves and white flowers.
- Parts used : Roots.

- Ethnobotany : Decoction of the roots is used in dysentery. This plant causes allergy and asthma.
- Latin name : *Phoenix humilis* Royle ex. Hook (Palmae)
- Local name(s) : Khajur.
- Distribution : Scattered between 1100-1300 m.
Udu ka nahal, 1100 m. (Verma, S. 7606).
- Description : A palm with stems 1.5-6 m, densely covered with stumps of old leaf stalks. Leaves pinnate. Fruits blackish when ripe, seated on the spikelets at a narrow vertical angle.
- Parts used : Roots, Fruits.
- Ethnobotany : Juice of the roots with lime water used in indigestion. The leaves are used by people to make mats. Fruits are edible.
- Latin name : *Pistacia integerrima* Stewart. (Anacardiaceae)
- Local name(s) : Kakarsinghi.
- Distribution : Common.
Mangu, 1450 m. (Verma, S. 7642).
- Description : A middle sized deciduous tree. Leaves odd or even-pinnate, 15-22.5 cm; leaflets 7-11 or 8-10. Drupe 0.25 inch in diameter.
- Parts used : Galls.
- Ethnobotany : Powder of galls, pipramul (*Piper longum*) and dried ginger are mixed in equal quantity and are given in fever and Vat Rog. Galls, Kaiphal (*Myrica esculenta*), dried ginger, black pepper, Kalaunji are mixed in equal quantities and are ground. This powder is given with honey in hiccups, fever, cough, and other throat diseases.

- Latin name : *Plectranthus incana* Link. (Labiatae)
- Local name(s) : Chichhdi
- Distribution : Common between 1500-200 m.
Baridhar, 2000-2200 m. (Verma, S. 7566).
- Description : A 0.3-1 m. high shrub with cordate, broadly ovate, crenate, 5-10 cm. long leaves pale, lavender blue flowers.
- Parts used : Leaves.
- Ethnobotany : Crushed leaves are used to apply on wounds and cuts. Leaves are applied on septic between toes.

- Latin name : *Plumbago zeylanica* Linn. (Plumbaginaceae)
- Local name(s) : Chitrak, Chicha.
- Distribution : Common between 1000-1500 m.
Kunihar, Mangu, 1000 m., 1450 m. (Verma, S. 7836, 7629).
- Description : A diffuse rambling under shrub; stems 0.6-1.2 m.. Leaves alternate, shortly stalked stem clasping, entire with white viscid flowers.
- Parts used : Root.
- Ethnobotany : The past of bark of roots after warming is used in treatment of leucodermaa and decoction of the roots with cow milk is given in fever. The paste of the roots is applied on ulcers. Chitrak, Harad (*Terminalia chebula*) Ambla (*Emblica officinlais*) and long pepper (*Piper longum*. (are taken in quantities of 6 masha and are ground. This powder is boiled in half liter water. When it remains half, filter it and let it be cool. This decoction is given in morning and evening in all type of fevers. The paste of roots is applied thrice a day for seven days of abscess.

- Latin name : *Plectranthus incana* Link. (Labiatae)
- Local name(s) : Chhichhdi
- Distribution : Common between 1500-200 m.
Baridhar, 2000-2200 m. (Verma, S. 7566).
- Description : A 0.3-1 m. high shrub with cordate, broadly ovate, crenate, 5-10 cm. long leaves pale, lavender blue flowers.
- Parts used : Leaves.
- Ethnobotany : Crushed leaves are used to apply on wounds and cuts. Leaves are applied on septic between toes.

- Latin name : *Plumbago zeylānica* Linn. (Plumbaginaceae)
- Local name(s) : Chitrak, Chicha.
- Distribution : Common between 1000-1500 m.
Kunihar, Mangu, 1000 m., 1450 m. (Verma, S. 7836, 7629).
- Description : A deffuse rambling under shrub; stems 0.6-1.2 m.. Leaves alternate, shortly stalked stem clasping, entire with white viscid flowers.
- Parts used : Root.
- Ethnobotany : The past of bark of roots after warming is used in treatment of leucodermaa and decoction of the roots with cow milk is given in fever. The paste of the roots is applied on ulcers. Chitrak, Harad (*Terminalia chebula*) Ambla (*Embllica officinlais*) and long pepper (*Piper longum*. (are taken in quantities of 6 masha and are ground. This powder is boiled in half liter water. When it remains half, filter it and let it be cool. This decoction is given in morning and evening in all type of fevers. The paste of roots is applied thrice a day for seven days of abscess.

Latin name	:	<i>Plectranthus incana</i> Link. (Labiatae)
Local name(s)	:	Chhichhdi
Distribution	:	Common between 1500-200 m. Baridhar, 2000-2200 m. (Verma, S. 7566).
Description	:	A 0.3-1 m. high shrub with cordate, broadly ovate, crenate, 5-10 cm. long leaves pale, lavender blue flowers.
Parts used	:	Leaves.
Ethnobotany	:	Crushed leaves are used to apply on wounds and cuts. Leaves are applied on septic between toes.

Latin name	:	<i>Plumbago zeylanica</i> Linn. (Plumbaginaceae)
Local name(s)	:	Chitrak, Chicha.
Distribution	:	Common between 1000-1500 m. Kunihar, Mangu, 1000 m., 1450 m. (Verma, S. 7836, 7629).
Description	:	A deffuse rambling under shrub; stems 0.6-1.2 m.. Leaves alternate, shortly stalked stem clasping, entire with white viscid flowers.
Parts used	:	Root.
Ethnobotany	:	The past of bark of roots after warming is used in treatment of leucodermaa and decoction of the roots with cow milk is given in fever. The paste of the roots is applied on ulcers. Chitrak, Harad (<i>Terminalia chebula</i>) Ambla (<i>Emblica officinlais</i>) and long pepper (<i>Piper longum</i> . (are taken in quantities of 6 masha and are ground. This powder is boiled in half liter water. When it remains half, filter it and let it be cool. This decoction is given in morning and evening in all type of fevers. The paste of roots is applied thrice a day for seven days of abscess.

- Latin name : *Pogostemon benghalensis* (Burm. (Kuntze (Labiatae)
- Local name(s) : Kalajalagara, Kali Basuti.
- Distribution : Less common than *Justicia adhatoda*. Aslu, 1200-1300 m. (Verma, S. 7807).
- Description : A small shrub, aromatic, perennial shrub. Branches purple. Leaves opposite stalked, ovate, 7.5-15 cm. long. Flowers whorled in dense spikes, forming a pyramidal terminal florescence.
- Parts used : Twigs, Roots.
- Ethnobotany : This pant is poisonous. Juice of twigs is used on snakebites and wounds. Decoction of the roots is given in cough.
- Latin name : *Polygonum alatum* Buch.-Ham. (Polygonaceae)
- Local name(s) : Gidar Pipli
- Distribution : Common in swampy areas between 2000-2200 m. Baridhar, 2000-2200 m. (Verma, S. 7574).
- Description : A small herb, 15-30 cm.; stem erect. Leaves glabrous, gland dotted, ovate, obtuse or acute. Flowers are white, purple of red in heads. Nuts 3 angled, minutely dotted.
- Parts used : Entire plant.
- Ethnobotany : Crushed leaves are used on swellings. Crushed plant is used as fish poison.
- Latin name : *P. hydropiper* Linn. (Polygonaceae)
- Local name(s) : Jalpippli.
- Distribution : Common in swampy areas between 1200-1500 m. Saryanj, 1500 m. (Verma, S. 7563).

- Description : A small herb, 15-45 cm. high, prostrate, rooting at joints. Leaves lanceolate, 0.5-7.5 cm long with pink or red flowers in slender, interrupted racemes.
- Parts used : Entire plant.
- Ethnobotany : The decoction of plant is given with long pepper and salt to women for irregular periods. The paste of roots used in toothache. The decoction of roots after periods is given as contraceptive to women.
- Latin name : *P. plebejum* R.Br. (Polygonaceae)
- Local name(s) : Raniphul.
- Distribution : Common in swampy areas between 1200-1300 m. Shakni, 1260 m. (Verma, S. 7877).
- Description : A prostrate 15-60 cm., leafy herb. Leaves linear not more than 1.25 cm. Flowers white or pale pink in axillary half concealed among the stipules.
- Parts used : Entire plant.
- Ethnobotany : The decoction of plant is given in indigestion (Ajiran).
- Latin name : *Premna latifolia* Roxb. (Verbenaceae)
- Local name(s) : Bakar.
- Distribution : Common on roadsides and forest area between 1000-1200 m. Bainjhatti, 1000 m. (Verma, S. 7602).
- Description : A small tree with greyish white bark. Leaves rounded cuneate, undulate, entire. Corymb is villous.
- Parts used : Leaves.
- Ethnobotany : Leaves are used in *Curries*. The decoction of leaves with paste of long pepper used in indigestion. Leaves boiled in water and bath is taken in that water in case of body allergy.



Malvasrum coromandelianum



Meriandra strobilifera,



Osyris arborea

- Description : A twining shrub with stringy grey bark with leaves of 3 leaflets and bright blue flowers in small clusters, crowded in long, paniced racemes.
- Parts used : Flowers, Roots.
- Ethnobotany : Flowers are cooling, aphrodisiac. Roots are used as demulcent and refrigerant in fever.
- Latin name : *Punica granatum* Linn. (Punicaceae/Lythraceae)
- Local name(s) : Daru, Anar.
- Distribution : Common between 300-2200m. Kradaghat, 1500m. (Verma, S. 7894)
- Description : A shrub or small tree with dark grey bark, branchlets spinescent. Flowers sessile, terminal, solitary, red in colour.
- Parts used : Fruits, Bark, Seeds.
- Ethnobotany : The Juice of seeds, ghee and syrup of sugar is given in vomiting. The bark 50-100gm is cooked in the water. When the water remains half, let it be cool. This water kills all worms in intestine. Seeds are cardiac and good for digestion. Juice of sweet seeds is taken 50-60gm in iron pot and kept in open for a night. In the morning mix mishri in this juice. This juice is given in jaundice. This is good for cough, heart and keeping body healthy. Shell of the fruit is powdered and 5-6gm is taken with cold water in the morning and evening for few days for blood piles. This is a cash crop of this area.
- Latin name : *Pyrus pashia* Ham. (Rosaceae)
- Local name(s) : Kainth
- Distribution : Common throughout the area between 900-1500 m. Kuthar, 900-1000m. (Verma, S 7643)
- Description : A moderate sized deciduous tree. Leaves simple, ovate, lanceolate, 5-10 cm., crenate or long pointed. Fruit globose, dark brown covered with raised white dots.

- Parts used : Fruits, Young leaves, Wood.
- Ethnobotany : Fruits are edible. Young leaves are ground and applied on the head for cooling effect. Wood used for agriculture implements.
- Latin name : *Quercus leucotrichophora* Roxb. (Fagaceae)
- Local name(s) : Ban.
- Distribution : Common on dry, grassy hill sides from 1500-2200 m. Baridhar, Karadaghat, 2000-2200 m., 1500 m. (Verma, S. 7586, 7875).
- Description : A small tree. Leaves stalked, ovate lanceolate, spinous-thoothed towards the tip, lower surface white tomentose. Flowers are in drooping spikes.
- Parts used : Acorns.
- Ethnobotany : Acorns are diuretic in nature and used in gonorrhoea and also used as an astringent in indigestion and diarrhoea, especially children.
- Latin name : *Rabdosia rugosa* Wall. (Labiatae)
- Local name(s) : Chhichhrhi.
- Distribution : Common throughout the area. Arki, 1200 m. (Verma, S. 7518).
- Description : An erect, branched, leafy shrub with ovate, wrinkled, hairy leaves. Flowers are white in colour.
- Parts used : Leaves, Leafy stems.
- Ethnobotany : Leaves are ground and applied on septic between toes. The leafy stems are used as brooms.
- Latin name : *Randia dumetorum* Lamk. (Rubiaceae)
- Local name(s) : Madanphal.
- Distribution : Rare. Haripur, 1250 m. (Verma, S. 7837).

- Description : A small tree or shrub; branchlets short with axillary spines. Leaves opposite, ovate or oblanceolate. Fruits are yellow in colour.
- Parts used : Seeds.
- Ethnobotany : One full hand seeds with long pepper are used in sinus. It cures sinus in one day but the quantity of seeds should not be more otherwise it causes bleeding from nose. These seeds are best for vomiting.
- Latin name : *R. tetrasperma* (Roxb.) Benth. Hook. (Rubiaceae)
- Local name(s) : Gidar-garna.
- Distribution : Common between 1200-1500 m. Lootru, 1260 m. (Verma, S. 7599).
- Description : A small, glabrous, rigid shrub; branchlets short usually ending in a spine. Leaves opposite crowded towards the end of branchlets. Berry purple, globose, 1.25 cm. in diameter. Seeds small immersed in pulp, 4 in number.
- Parts used : Wood.
- Ethnobotany : Wood is used for making walking sticks.
- Latin name : *Ranunculus arvensis* Linn. (Ranunculaceae)
- Local name(s) : Minkali.
- Distribution : Common. In water, near marshy area. Mangu, 1450 m. (Verma, S. 7829).
- Description : Annual pale green, 6-24 inch, erect branching herb. Radical leaves are long stalked, 3-5 toothed at the tip. Stem leaves shortly stalked. Flowers are yellow in colour.
- Parts used : Entire plant.

Ethnobotany : The decoction of plant is used for fever, gout and asthma.

Latin name : *R. sceleratus* Linn. (Ranunculaceae)

Local name(s) : Minkali.

Distribution : Common near water and in fields.
Shakni, 1260 m. (Verma, S. 7867).

Description : Annual, glabrous, yellow green shrub with pale yellow flowers.

Parts used : Entire plant.

Ethnobotany : Plant is crushed and tie on tied on ulcers on feet. The paste of roots with mustard oil is used on swellings.

Latin name : *Rauwolfia serpentina* (Linn.) Benth. ex. Kurtz. (Apocynaceae)

Local name(s) : Sarappandha.

Distribution : Rare. Lade ki Bayen, 1200 m. (Verma, S. 7520).

Description : A small herb with pink flowers in terminal, many flowered peduncled cymes.

Parts used : Roots, Leaves.

Ethnobotany : The bark of root is chewed to check the vomiting. 10 g fine paste of roots is used as tranquilizer in hypertension (high BP). The paste of leaves with decoction of black pepper is used in pneumonia.

Latin name : *Reinwardtia indica* Dum. (Linaceae)

Local name(s) : Basanti.

Distribution : Common.
Mangu, 1450 m. (Verma, S. 7805).

Description : A small herb with yellow flowers.

- Parts used : Stem, Leaves.
- Ethnobotany : The paste of stems is applied on wounds infected with maggots in cattle. The leaves are used in the treatment of paralysis.
- Latin name : *Rhamnus triquetra* Wall. (Rhamnaceae)
- Local name(s) : Phagora, Phulla.
- Distribution : Common in forest area.
Gamjhun, 900 m. (Verma, S. 7818).
- Description : An un-armed, pubescent shrub or small tree. Leaves are oblong ovate, acute. Flowers are in small clusters on long branches of axillary panicles. Drupe is ovoid.
- Parts used : Bark, Fruits.
- Ethnobotany : Fruits are edible. Plant is used as fuel wood. Bark is used as tonic, astringent.
- Latin name : *Rhododendron arboreum* Sm. (Ericaceae)
- Local name(s) : Burans.
- Distribution : Found only between trees of ban and deodar in Baridhar.
Baridhar, 2000-2200 m. (Verma, S. 7853).
- Description : A small evergreen tree. Leaves crowded at the end of branches. Flowers large, showy, deep crimson in colour.
- Parts used : Leaves, Flowers.
- Ethnobotany : Young leaves are poisonous. Crushed leaves applied on forehead to cure headache. Sherbat is prepared from flowers. The dried flowers are fried in ghee and used to check the bloody dysentery.



Opuntia dellenii,



Phoenix humilis,



Ranunculus scleratus,



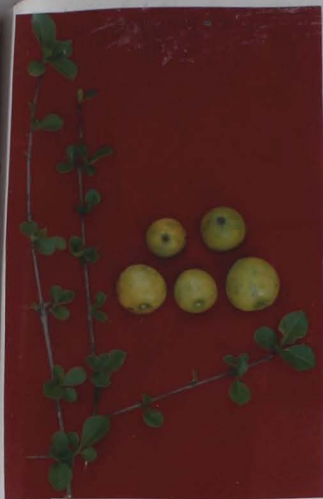
Pistacia integerrima

- Latin name : *Ricinus communis* Linn. (Euphorbiaceae)
- Local name(s) : Arand.
- Distribution : Common on wastelands.
Arki, 1200 m. (Verma, S. 7506).
- Description : An evergreen shrub or soft wooded small tree. Stems are hollow. Leaves palmately lobed. Flowers yellow. Fruit an echinate capsule.
- Parts used : Leaves, Seeds, Roots.
- Ethnobotany : Leaves are heated and tied over aching joints and swellings caused by Vat Rog. This is also useful in backache. In stomach swelling (Afara) in children, leaves with warm ghee tied on belly. The paste of the seeds is used on ulcers to cure it soon. In stomachache ash of the arand wood is taken with cold water. Juice of leaves mixed in mustard oil and used on burns. Oil of seeds used in constipation. ½ table spoon for children and 1 spoon for adults is given. About 10 g paste of the roots is taken in the morning for three days for abortion.
- Latin name : *Rosa moschata* Mill. (Rosaceae)
- Local name(s) : Kuja.
- Distribution : Common in forest area.
Karadaghat, 1500 m. (Verma, S. 7827).
- Description : A climbing prickly shrub with white flowers.
- Parts used : Flowers.
- Ethnobotany : Flowers are dried and powdered in mustard oil. This oil is used as perfume. The paste of flowers is used on skin burning. The flowers are also kept in folded clothes.
- Latin name : *Roylea calycina* Briquet (Labiatae)
- Local name(s) : Kadwo.
- Distribution : Common between 1000-1500 m.
Arki, 1200 m. (Verma, S. 7600).

- Description : A woody under shrub with white and pink flowers.
- Parts used : Leaves.
- Ethnobotany : Tablets are made of the leaves. These tablets with gur are taken in body allergy. Leaf juice is put in nose for sneezing.
- Latin name : *Rubia cordifolia* Linn. (Rubiaceae)
- Local name(s) : Manjishtha, Manjith.
- Distribution : Common upto 1500 m.
Diggal, 1000 m. (Verma, S. 7653).
- Description : A climbing herb with perennial root stocks. Leaves are in whorls of 4, long stalked. Flowers are small, dark red in numerous small cymes, forming long bracteate panicles.
- Parts used : Entire plant.
- Ethnobotany : Th decoction of roots with sugar is given to women to cure irregular menstruation. Infusion of the plant with mustard oil is used in eyes and ear diseases. The decoction of stems with turmeric powder is used on skin for discolour patches. The paste of the stems is applied on pimples and blemishes.
- Latin name : *Salvia coccinia* Linn. (Labiatae)
- Local name(s) : Mausmi salvia.
- Distribution : In marshy area, common during rainy season.
Shakni (1260 m. (Verma, S. 7554).
- Description : A small herb with red flowers.
- Parts used : Entire plant.
- Ethnobotany : The decoction of plant is used in renal troubles, in tubercular cough. If eaten before flowering, it may cause abortion in cattle.

- Latin name : *S. moorcroftiana* Wall. (Labiatae)
- Local name(s) : Thuth.
- Distribution : On roadsides and wastelands between 1300-1500 m. Kraradaghat, 1500 m. (Verma, S. 7890).
- Description : The plant is clothed with white usually wooly or cottony hairs. Stems 0.5 to 0.9 m. Leaves thick, long stalked. Flowers pale blue lilac or nearly white in distant whorls with coloured bracts.
- Parts used : Roots, Seeds, Leaves.
- Ethnobotany : The decoction of roots is used in cough. Seeds are used as emetic. The paste of leaves is applied on itching.
- Latin name : *Sapindus mukorosii* Gaertn. (Sapindaceae)
- Local name(s) : Reetha.
- Distribution : Few trees scattered between 1200-1300 m.. Arki, 1200 m. (Verma, S. 7587).
- Description : A large tree. Leaves alternate usually-even, sometimes odd pinnate. Flowers, numerous purple in terminal panicles. Drupe yellow, globose.
- Parts used : Fruits.
- Ethnobotany : Dried cover of the seeds is used to wash the hairs and clothes. Unripe fruits are ground and taken with honey in gout.
- Latin name : *Sapium insigne* Trimen (Euphorbiaceae)
- Local name(s) : Chhirna.
- Distribution : Common up to 1500 m. Shakni, 1250 m. (Verma, S.).

- Description : A small tree. Leaves alternate, bright-green. Flowers yellow green in erect spikes.
- Parts used : Milky latex.
- Ethnobotany : Milky latex is applied on warts for removal. Sap is also applied in alopecia as effective cure.
- Latin name : *S. sebiferum* Roxb. (Euphorbiaceae)
- Local name(s) : Pahari Sisham.
- Distribution : Not common.
Haripur, 1250 m. (Verma, S. 7671).
- Description : A small tree with greenish yellow flowers.
- Parts used : Wood.
- Ethnobotany : The wood is used for furniture.
- Latin name : *Sarcococca saligna* Muell.-Arg. (Euphorbiaceae)
- Local name(s) : Tilliari.
- Distribution : Common between 1500 to 2000 m.
Baridhar, Karadaghat, 2000-2200 m., 1500m. (Verma, S. 7559, 7597).
- Description : A small evergreen shrub. Leaves elliptic or lanceolate, entire, shining above. Flowers pale yellow, bracteate in short axillary racemes.
- Parts used : Leaves, Roots.
- Ethnobotany : The decoction of leaves is given in fever. The sarbat prepared from roots is given in gonorrhoea.
- Latin name : *Schefflera venulosa* (Wight & Arn.) Harms (Araliaceae)
- Local name(s) : Paplakho.
- Distribution : Found on rocks between 1100-1300 m.
Shakni, Udu ka Nalah, 1260 m., 1100 m. (Verma, S. 7831, 7650).



Randia dumetorum,



Reinwardtia indica,



Rubus ellipticus,



Rhododendron arboreum

- Description : A soft wooded scandent shrub with 5-7 leaflets. Flowers yellowish green or cream coloured. Fruits fleshy when ripe and 5 ridged when dry.
- Parts used : Flowering buds, Leaves.
- Ethnobotany : Flowering buds are used as Raita. Warm leaves are applied to get relief from back pain.
- Latin name : *Scindapsus officinalis* (Roxb.) Schott. (Araceae)
- Local name(s) : Gathiala.
- Distribution : On rocks between 1200-1500 m. Aslu, 1200-1300 m. (Verma, S. 7614).
- Description : A stout, succulent, climbing shrub, rooting freely from the stem which attain 1 inch in diameter and is marked with annular scars of fallen leaves.
- Parts used : Entire plant
- Ethnobotany : The 'Halwa' of the plant is used in gout. Leaves used in Bsoun for cattle. The decoction of the fruits is given as expectorant in asthma.
- Latin name : *Sedum adenotricum* Wall. (Crassulaceae)
- Local name(s) : Nunu.
- Distribution : Common on rocks, grassy slopes. Mangu, 1450m. (Verma, S. 7624)
- Description : Glandular- pubescent, 3-10in. high herb. Leaves sessile oblong or obovate, rosulate. Flowers white striped with pink.
- Parts used : Entire plant.
- Ethnobotany : Entire plant is crushed and applied on piles.
- Latin name : *Senecio chrysanthemoides* Dc. (Compositae)
- Local name(s) : Jaari.
- Distribution : Common on roadsides, in grassy slopes. Lootru, 1260 m. (Verma, S. 7592).

- Description : A perennial herb with yellow flowers.
- Parts used : Roots.
- Ethnobotany : The decoction of roots of this plant and flowers of Bahera (*Terminalis bellirica*) is given in Cholera and periodic fever.
- Latin name : ***Solanum khasianum* Clarke. (Solanaceae)**
- Local name(s) : Chhakmoli.
- Distribution : Common on wastelands, near villages, in forest area. Arki, 1200 m. (Verma, S. 7533).
- Description : A much branched, prickly under shrub with white flowers and yellow berries.
- Parts used : Fruits.
- Ethnobotany : Fruits are given in toothache to cattle. Fruits are crushed and applied on the wounds for soon healing.
- Latin name : ***S. niger* Linn. (Solanaceae)**
- Local name(s) : Makoi, Phatkoin.
- Distribution : Common on wastelands near villages and forest area. Mangu, 1450 m. (Verma, S. 7522).
- Description : An erect herb. Leaves ovate or oblong, coarse with angular teeth. Flowers white. Berries red, yellow or black.
- Parts used : Entire plant.
- Ethnobotany : The juice of the plant is given in leprosy and swellings with the vegetables of its leaves. The vegetable of this also used in stomachache. Fruits are edible.

- Latin name : *S. verbasifolium* Linn. (Solanaceae)
- Local name(s) : Pahari Tambaku.
- Distribution : Common in forests between 1000-1200 m. Few plants in town on wasteland. Arki, 1200 m. (Verma, S. 7577).
- Description : An erect shrub with stellate tomentum. Flowers white. Berry yellow.
- Parts used : Leaves.
- Ethnobotany : Leaves are dried and applied externally to lessen the inflammation, burning sensation and pains. In cattle, the leaf juice is applied to get rid of leech.
- Latin name : *S. xanthocarpum* Schrad and Wondl. (Solanaceae)
- Local name(s) : Kateri.
- Distribution : Common on roadsides. Bambira, 1200 m. (Verma, S. 7530).
- Description : A low, diffuse, prickly herb with blue flowers.
- Parts used : Roots.
- Ethnobotany : Roots are used in *Dashmula*. Root decoction used in cough, asthma, and pain in chest. The juice of flowers is given to infants in stomachache.
- Latin name : *Stephania glabra* (Roxb.) Miers. (menispermaceae)
- Local name(s) : Bishkhappar.
- Distribution : Common between 1200-1500m. Aslu, 1200-1300 m. (Verma, S. 7684).
- Description : A climbing shrub. Leaves broadly ovate or orbicular, 3-7 inch across, sinuate, lower surface pale. Umbels axillary, solitary or several in a long stalked cyme. Flowers green-yellow. Drupe red.

- Parts used : Roots
- Ethnobotany : Root pieces are given in cattle feed in 'Basoun'. It also treats the gastric problems. It should not be taken in excess quantities.
- Latin name : *Toona ciliata* Roem. (Meliaceae)
- Local name(s) : Tuni.
- Distribution : Common.
Aslu, 1200-1300 m. (Verma, S. 7619).
- Description : A large tree with even pinnate leaves. Panicles shorter than the leaves. Flowers honey scented.
- Parts used : Wood.
- Ethnobotany : Wood used for construction and agricultural implements.
- Latin name : *Tecoma stans* (L.) H.B. & K. (Leguminosae)
- Local name(s) : Yellow elder.
- Distribution : On roadsides grown as avenue tree.
Batalghatti, 1200 m. (Verma, S. 7558).
- Description : A small tree with yellow flowers.
- Parts used : Roots.
- Ethnobotany : Roots are used as antidote to snake or scorpion venom. The decoction of roots is used in urinary problems. It is grown as ornamental.
- Latin name : *Terminalia bellirica* (Gaertn.) Roxb.
(Combretaceae)
- Local name(s) : Bahera.
- Distribution : Common in forest area up to 1500 m.
Batalghatti, 1200 m. (Verma, S. 7531).

- Description : A large deciduous tree. Leaves alternate, crowded towards the ends of branches. Fruits ovoid, ellipsoids or globose, grey velvety. Nut thick walled and hard.
- Parts used : Fruits, Bark.
- Ethnobotany : Fruits are used in bronchitis. It is one of major constituents of 'Triphla Churan'. Bark is diuretic, useful in anaemia and leucoderma. The powder of fruits in the dose of 20 g is used as tonic and laxative. It is also used thrice a day for one week in piles and dyspepsia.
- Latin name : *T. chebula* Retz. (Combretaceae)
- Local name(s) : Harad.
- Distribution : Localized in Hardi area.
Hardi, 1050 m. (Verma, S. 7812).
- Description : A large deciduous tree with dark brown bark. Drupe 1-1.5 inch long, ovoid or obovoid form a cuneate base, glabrous, more or less 5 ribbed when dry.
- Parts used : Fruits.
- Ethnobotany : If fruit is eaten as such it used is in dyspepsia (Ajiran). If eaten as powder, it is laxative and if used after boiling cures dysentery and after roasting it cures Tridosha (Vat, Pitt and Kapha). Harad cures stomachache and other disease of stomach. Triphla powder is soaked in water for a night in an earthen pot. In the morning filter the water and wash the eyes with this water. It cures all the problems of the eyes and if this water is drink with common salt, it cures cough and phlegm. In constipation take 15 g Harad powder and 250 ml water and cook it on sim gas/flame. When it remains 1/4th mix 2 g Sendha Salt and 1 g dried ginger and drink it. It is much effective. In excess sweating take powder of Harad and massage it on body. After some time take bath with cold water. It reduces the excess sweating.

- Latin name : *Thalictrum foliolosum* DC. (Ranunculaceae)
- Local name(s) : Jhalamala.
- Distribution : Common.
Kajiyara-Danoghat, 1100 m. (Verma, S. 7508).
- Description : A 1.2-2.4 m. high herb. Leaves 15-20 cm., pinnules often with 3 leaflets; leaflets oblong ovate, 3-lobed, crenate. Sepals ovate green.
- Parts used : Roots.
- Ethnobotany : Root powder used in ophthalmia. The paste of root is applied around the forehead in headache and hotness. The root powder in the dose of 15 g is used thrice a day for two week in jaundice and in fever.
- Latin name : *Thevetia nerifolia* Juss. Ex. Steux. (Apocynaceae)
- Local name(s) : Pili Kaner.
- Distribution : Common on roadsides upto 1300 m.
Arki, 1200 m. (Verma, S. 7880).
- Description : An evergreen shrub with narrow, linear leaves. Flowers yellow fragrant. Fruit is a 2-celled drupe.
- Parts used : Leaves, Milky juice.
- Ethnobotany : The leaves are poisonous (Kupvish), used in leprosy, used as blood purifier, on eczema, on ringworm and used in fever. Its milk is used to make hair black. It also heals old wounds.
- Latin name : *Thysanolaena maxima* (Roxb.) Kuntz. (Graminae)
- Local name(s) : Broom grass.
- Distribution : Found below 1100 m.
Udu ka Nalah, 1100 m. (Verma, S. 7616).
- Description : An elegant perennial to 2 m, with solid reed like culms forming large clumps. Leaf blades very broad, spikelets all similar, minute, stalked in large branched, much divided clusters.



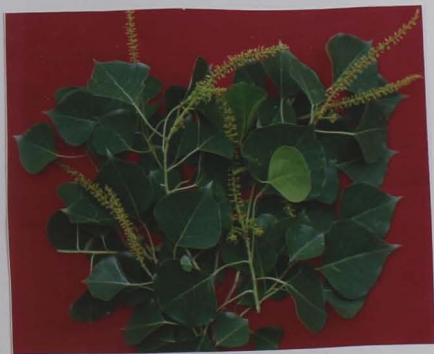
Salvia moorcroftiana,



Sapindus mukorosii,



Schefflera venulosa,



Sapium sebiferum

- Parts used : Stems.
- Ethnobotany : Stems are used as reed-pen for writing purpose. Panicles are made into soft brooms.
- Latin name : *Tinospora cordifolia* (Willd.) Miers. ex Hook and Thoms. (Menispermaceae)
- Local name(s) : Giloe.
- Distribution : Not common. Mangu, 1400 m. (Verma, S.).
- Description : A climber.
- Parts used : Entire plant.
- Ethnobotany : Giloe, dried ginger, black pepper and long pepper are powdered and taken 2 masha with in honey in cough. Powder of root bark is used with curd in asthma. This plant also used in fever.
- Latin name : *Trichodesma indicum* R. Br. (Boraginaceae)
- Local name(s) : Adhopushpi.
- Distribution : Common on roadside on sandy slopes. Piplughat, 1450 m. (Verma, S. 7899).
- Description : An annual herb with pale blue flowers.
- Parts used : Entire plant.
- Ethnobotany : It is cooling and used in fever. The decoction of plant is used to purify the blood and used as appetizer.
- Latin name : *Vallis beynei* Spreng. (Apocynaceae)
- Local name(s) : Basutti, Dhudhi-bel.
- Distribution : Common in forest area. Shakni, 1260 m. (Verma, S. 7880).
- Description : A glabrous, twining shrub. Leaves opposite, elliptic, oblong, gland dotted. Flowers white fragrant.
- Parts used : Bark leaves.

- Ethnobotany : Bark is chewed for fixing the teeth. Leaves are used for the ripening of bananas.
- Latin name : *Verbascum thapsus* Linn. (Scrophulariaceae)
- Local name(s) : Gidar-tambaku
- Distribution : Very frequent in wastelands up to 1500 m. Mangu, 1450 m. (Verma, S. 7815).
- Description : An erect herb. Stems robust with prolonged leaf base. Flowers yellow in terminal spikes. Fruit a globose, oblong capsule.
- Parts used : Entire plant.
- Ethnobotany : Plant is demulcent, astringent and pectoral, used in pulmonary diseases. The paste of flowers and root is applied as an antidote.
- Latin name : *Vicia tetrasperma* Moench. (Leguminosae)
- Local name(s) : Jangli Mattar.
- Distribution : A common weed in fields. Mangu, 1450 m. (Verma, S. 7823).
- Description : An annual herb with pale blue flowers.
- Parts used : Entire plant.
- Ethnobotany : Plant is used as fodder.
- Latin name : *Viola patrinii* Ging. (Violaceae)
- Local name(s) : Banaksha.
- Distribution : Common up to 1100 m. Udu ka Nalah, 1100 m. (Verma, S. 7654).
- Description : A glabrous, pubescent herb. Leaves triangular. Flowers usually dark lilac, scented.
- Parts used : Flowers.
- Ethnobotany : Dried flowers are used for cough and cold.

- Latin name : *V. serpens* Wall. ex Roxb. (Violaceae)
- Local name(s) : Banafsha.
- Distribution : Common.
Dadhog, Ghagar, Sarianj, 1300, 1210, 1500 m.
(Verma, S. 7504, 7840, 7873).
- Description : A glabrous herb with scattered white hairs. Leaves broadly ovate, sharply toothed. Flowers lilac.
- Parts used : Roots and Flowers.
- Ethnobotany : Flowers are used in cough and cold. Roots are used for removing inflammation.
- Latin name : *Vitex negundo* Linn. (Verbenaceae)
- Local name(s) : Bana.
- Distribution : Common or roadsides.
Arki, 1200 m. (Verma, S. 7519).
- Description : A shrub or small tree with blue purple flowers crowded in short cymes, forming erect, narrow, tapering, terminal panicles.
- Parts used : Leaves, Twigs, Flowering tips.
- Ethnobotany : Leaves are smoked in headache. Flowering tips are chewed in mouth ulcers. Twigs used as 'Datun'. The leaves are used in gastric problems and also in leprosy. The leaves of this plant and chuli (*Albizia chinensis*) are ground and used as paste on snake and scorpion bites. The leaves are mixed with cow dung are massaged in backache. The paste of leaves of *Vitex negundo*, *Loranthus* and *Cuscuta* is applied on wounds on shoulders of bullocks.
- Latin name : *Wendlandia exserta* DC. (Rubiaceae)
- Local name(s) : Bathua.
- Distribution : Common in forest area between 1000-1200 m.
Kunihar, 1000 m. (Verma, S. 7641).



Solanum xanthocarpum



Trichodesma indicum



Vitex negundo

- Description : A small deciduous tree with dull white fragrant flowers in cymes.
- Parts used : Wood, Leaves.
- Ethnobotany : Wood used for construction, agricultural implements and leaves are used as fodder.
- Latin name : *Withania somnifera* Dunal (Solanaceae)
- Local name(s) : Ashwagandha.
- Distribution : On wastelands, cultivated.
Aslu, 1200-1300 m. (Verma, S. 7683).
- Description : An erect under shrub. Flowers in cymes. Berry red, globose, smooth, enclosed in the persistent calyx.
- Parts used : Entire plant.
- Ethnobotany : 1 masha 'Sattu', 1 tola butter and 1 tola Mishri are mixed and used in 'Viray Vikar'. Green plant is crushed and filtered with cloth. This filtrate is put in earthen pot and filled with water. This is kept for 3-4 hours. After that water is, filtered and the material which get settled down is taken out and dried. This material is known as 'Sattu' of Asgandh. The ash of the plant is made into 'Kshar'. This kshar is used in 'Vat Vikar', throat diseases, breathing problems, cough and to kill the worms of stomach and in digestion. This plant is cooked in ghee and then boiled in milk. Add mishri to this. 7 days after menstruation this is gives to ladies. It makes them to bear child.
- Latin name : *Woodfordia fruticosa* (L.) Kuntz. (Lythraceae)
- Local name(s) : Dhawi.
- Distribution : Common. Arki, 1200 m. (Verma, S. 7534).
- Description : A large shrub with long spreading branches. Flowers bright red in short paniced, axillary cymes.
- Parts used : Flowers, Leaves.

- Ethnobotany : Powder of the flowers is given in dysentery and cough. Oil is used in uterus pain. The pate of leaves in used in skin diseases. The juice of leaves is applied three times a day for one week in conjunctivitis.
- Latin name : *Zanthoxylum armatum* DC. (Rutaceae)
- Local name(s) : Timbro, Tirmir.
- Distribution : Common in forest area 1500 m. Saryanj, 1500 m. (Verma, S. 7859).
- Description : A shrub or small tree with corky bark and strong. Prickles on branches, petioles, midrib of leaflets. Flowers are small yellow.
- Parts used : Fruits, Leaves, Twigs.
- Ethnobotany : Fruits are used in toothache. The leaves and fruits are chewed in the teeth enamel disease. The twigs are used as tooth brush and mouth purifiers.
- Magico-religious belief: On Dagyali day (fifteen days after Rakhi), people use leaves of timbrow on windows, doors against Jadu-tona.
- Latin name : *Zehneria umbellata* Thwaites (Cucurbitaceae)
- Local name(s) : Jangli Khira, Gawa kakru.
- Distribution : Moderate in forest area up to 1500 m. Aslu, 1200-1300 m. (Verma, S. 7623).
- Description : A tendril climbing herb. Fruits glabrous, pubescent, berry like, ovoid. Roots are perennial.
- Parts used : Fruits, Roots.
- Ethnobotany : Fruits are edible and are considered stomachic and tonic. The cleaned dried and powdered roots in the dose of 2 g are given twice a day with milk in seminal debility and spermatorrhoea.

- Latin name : *Zizyphus oxyphylla* Edgew. (Rhamnaceae)
- Local name(s) : Kokla Bradi.
- Distribution : Found between 1200 to 1300 m. elevation. Aslu, 1200-1300 m. (Verma, S. 7685).
- Description : A glabrous shrub. Leaves are ovate crenate or sharply toothed. Flowers glabrous, fruit a drupe, orange, ovoid. Stone one celled.
- Parts used : Fruits, Leaves.
- Ethnobotany : Fruits are edible. Leaves are used as fodder.
- Latin name : *Z. xylopyrus* Willd. (Rhamnaceae)
- Local name(s) : Jangli ber, Chulna.
- Distribution : Common between 1200-1400 m. Aslu, 1200-1300 m. (Verma, S. 7622).
- Description : A large tree. Flowers scarly 2.5 cm. in diameter. Berry orange-red when ripe.
- Parts used : Fruits, Leaves, Bark.
- Ethnobotany : The decoction of stem bark decoction with long pepper paste and ginger paste is used in hysteria treatment. Fruits are edible. Leaf paste is applied on forehead in headache. Two and a half leaves and chewed thrice a day for 15 days in urinary troubles.

Chapter 5

DISCUSSION

The history of medicine and surgery dates back perhaps to the origin of the human race. But, as no mode of recording events existed in prehistoric times, there is no data on the methods of treatment practised in that period. In those days, the subject of human suffering and its alleviation was intimately associated with religion, myth and magic. Whenever, the curiosity of the present day man probes into the past and brings to light even fragmentary information on the indigenous methods of our ancestors, it makes a fascinating study.

Through the development of human cultures, the relationship between man and his ambient vegetation has been intimate and vital. The present investigations were carried out in Kuniyar Forest Division of Solan district of Himachal Pradesh.

As a result of the preliminary survey of the area, plants were collected during flowering/fruiting period, from January, 1999 to June, 2000 and local names and uses of plants were asked from the elderly people, local vaid, tantriks and housewives. The collected samples were pressed, identified, indexed and finally deposited in the Herbarium of Department of Forest Products of Dr. Y.S. Parmar University of Horticulture and Forestry, Nauni-Solan (HP). For the purpose of classification Benthum and Hooker's systems of classification was followed.

During the course of study, a total number of 256 species of ethnobotanical importance belonging to 213 genera and 80 families were collected from different locations. Out of these 231 species belong to dicots, 23 species to monocots

2 species to gymnosperms, 7 species of ferns belonging to 6 genera, represented by 68, 12, 1 and 6 families, respectively.

Among the dicots, the dominating families include Leguminosae (24 genera and 33 species), Labiatae (16 genera, 20 species), Euphorbiaceae (8 genera and 10 species), Compositae (8 genera and 8 species), Rosaceae (14 genera and 8 species), Urticaceae (6 genera and 9 species), Apocynaceae and Verbenaceae (6 genera and 6 species each), Rhamnaceae and Rubiaceae (5 genera and 6 species each), Ranunculaceae (4 genera and 8 species), Solanaceae (4 genera and 7 species), Anacardiaceae, Convolvulaceae, Bignoniaceae and Amaranthaceae (4 genera and 4 species each), Oleaceae (3 genera and 6 species), Acanthaceae and Rutaceae (3 genera and 4 species each), Menispermaceae, Cruciferae, Sapindaceae and Boraginaceae (3 genera and 3 species each), Polygonaceae (2 genera and 6 species), Geraniaceae and Combretaceae (2 genera and 3 species each), Tiliaceae, Meliaceae, Celastraceae, Crassulaceae, Umbelliferae, Araliaceae, Primulaceae, Scrophulariaceae (2 genera and 2 species each), Berberidaceae, Papaveraceae, Violaceae, Bixaceae, Hypericaceae, Linaceae, Oxalidaceae, Balsaminaceae, Vitaceae, Lythraceae, Punicaceae, Cucurbitaceae, Campanulaceae, Ericaceae, Plumbaginaceae, Myrsinaceae, Asclipiadaceae, Loganiaceae, Gesneraceae, Nyctaginaceae, Chenopodiaceae, Thymeliaceae, Elaeagnaceae, Loranthaceae, Santalaceae, Cannabinaceae, Fagaceae, Salicaceae and Equisetaceae contain 1 genera and 1 species each and are among least represented families among dicots.

Among monocots, the dominating families are Araceae (5 genera and 5 species), Liliaceae (3 genera and 4 species), Graminae (3 genera and 3 species), Orchidaceae (1 genera and 1 species). Among the ferns the families represented are Adiantaceae, Sinopteridaceae, Thelypteridaceae, Cryptogrammeae, Aspidiaceae and Pteridaceae.

All the plant species as collected were further classified as Medicinal and Aromatic Plants, fodder, timber, fuel wood, species yielding tans and dyes, gums

and resins tans and dyes, gums and resin, yielding species, edible parts, ornamental and having miscellaneous uses (Table 1).

Out of 256 species 197 species are classified as Medicinal and Aromatic Plants which are used in household remedies. The important ones are: *Acorus calamus*, *Abrus precatorius*, *Achyranthes aspera*, *Aloe barbadensis*, *Argemone mexicana*, *Bacopa monniera*, *Berberis lycium*, *Boerhaavia repens*, *Cannabis sativa*, *Cassia fistula*, *Celasrus paniculata*, *Centella asiatica*, *Cissampelos pareira*, *Cuscuta reflexa*, *Cynodon dactylon*, *Datura stramonium*, *Delphinium denudatum*, *Emblica officinalis*, *Evolvulus alsinoides*, *Eucalyptus citriodora*, *Euphorbia hirta*, *E. royleana*, *Ferula jaeschkeana*, *Ficus glomerata*, *F. infectoria*, *Galium rotundifolium*, *Geranium nepalensis*, *Holarrhena antidysenterica*, *Indigofera pulchella*, *Jasminum humile*, *Juglans regia*, *Mallous philippinensis*, *Malvastrum coromandelianum*, *Melia azedarach*, *Nerium indicum*, *Nicotiana tabaccum*, *Ocimum sanctum*, *Pistracia integerrima*, *Plumbago zeylanica*, *Prinsepia utilis*, *Pueraria tuberosa*, *Punica granatum*, *Randia dumatorum*, *Rauwolfia serpentina*, *Rhododendron arboreum*, *Ricinus communis*, *Salvia moorcroftiana*, *Solanum khasianum*, *S. nigrum*, *S. xanthocarpum*, *Terminalia bellirica*, *T. chebula*, *Thalictrum foliolosum*, *Thevetia nerifolia*, *Viola serpens*, *Withania somnifera* and *Zanthoxylum armatum*.

People grow *Acacia catechu* on field buds and grasslands and cut for katha extraction. They also collect daru (*Punica granatum*) from forest and dry them for sale as ANARDANA which fetches them good return. Flowers of banafsha (*Viola serpens*) are collected by people and are sold in the market. The practice of herbal remedies include the cure for simple ailments to the most complicated ones such as asthma, bronchitis, cough, diarrhoea, dysentery, eye diseases, skin diseases, snake bites, jaundice, stomachache, malaria, cholera, fevers, bone fractures, malignant sores and the like.

Pipal (*Ficus religiosa*) and Barh (*Ficus benghalensis*) are regarded highly sacred by the people. They worship them. There is a taboo regarding these plants which says:

पीपल पात न तोड़िए, बड़ी न बाईए घाव !
बुरे की संगत न करिए, भले की पत भी जाव !!

Meaning

This means don't pluck the leaves of Pipal, don't injure the Banyan tree and never associate with bad people otherwise even a good man lose his prosperity and reputation.

During the present investigations, it was found that the persons practising this art does not easily reveal their knowledge to others. They believe that the medicine will lose their healing power, if too many people about them. The practice of ethnobotany is still a matter of cultural heritage of the area. It was only through persistent and constant requests, persuasion and motivation during the course of survey for Medicinal and Aromatic Plants from the different parts of the division, the present information on ethno-medico-botany could be collected carefully from the practitioners. In addition to medicinal uses, the people make use of the plants growing around them for various other purposes, like timber, small wood, fuel, fodder, for dyes and tans; gums and oils; fibres and cordages; biofence, soil conservation, in oracle rites, tantras and mantras etc. This resource, thus, is an important component of sustainable rural economy.

Economic importance of different species

Botanical name	Timber furniture	Fodder	Fibre and Flosses	Tans and Dyes	Gums and Resins	Fuel Wood	Edible	Ornamental Landscape	Medicinal and Aromatic	Bee Flora	Tantra Mantra	Miscellaneous Uses
<i>Abrus precatorius</i>	-	-	-	-	-	-	-	+	+	-	+	Seeds are used by Goldsmiths as weight and in jewelry, rosaries and beads.
<i>Acacia catechu</i>	+	+	-	+	+	+	-	-	+	+	-	Katha is used in pan. Wood is used making ploughs. Host for lac insect.
<i>A. modesta</i>	-	+	-	+	-	+	-	-	-	-	-	Soft twigs used for cleaning teeth.
<i>A. nilotica</i>	-	+	-	+	+	+	-	+	+	-	-	Agriculture implements clod crushers. Host for lac insect.
<i>Acer oblongum</i>	+	-	-	-	-	+	-	+	-	-	-	For agriculture implements.
<i>Achyranthes aspera</i>	-	+	-	-	-	-	-	-	+	-	+	-
<i>Acorus calamus</i>	-	-	-	-	-	-	-	-	+	-	-	-
<i>Adiantum capillus-veneris</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>A. incism</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>Aerva scandens</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>Agave americana</i>	-	-	+	-	-	-	+	+	+	-	-	-
<i>Ainsliaea pteropoda</i>	-	+	-	-	-	-	-	-	+	-	-	-
<i>Ajuga bracteosa</i>	-	-	-	-	-	-	-	-	+	-	-	-
<i>Albizia chinensis</i>	-	+	-	-	+	+	-	+	-	+	-	For agriculture implements.
<i>A. julibrissin</i>	+	+	-	-	+	+	-	+	+	-	-	-do-
<i>A. lebbek</i>	+	-	-	+	+	+	-	+	+	-	-	Leaves make manure. Wood is used for agriculture implements
<i>Aloe barbadensis</i>	-	-	-	-	-	-	+	+	+	-	-	-
<i>Amaranthus viridis</i>	-	-	-	-	-	-	+	-	-	-	-	-
<i>Anaphalis busua</i>	-	-	-	-	-	-	-	+	+	-	-	Plant used as dhoop; cotton taken from the plant. Oil is extracted from the plant.
<i>Androsace rotundifolia</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>Anogeissus latifolia</i>	+	+	-	+	-	+	+	-	+	-	-	-
<i>Argemone mexicana</i>	-	-	-	-	-	+	-	+	+	-	-	-
<i>Arisaema helleborifolium</i>	-	-	-	-	-	-	+	-	+	-	-	Gorkha labours used the tubers as vegetable after proper hooking.

<i>Asparagus adscendens</i>	-	-	-	-	-	-	+	-	+	-	-	Plant is worshipped. Seeds used to wash clothes.
<i>Astragalus strictus</i>	-	+	-	-	-	-	-	-	+	+	-	-
<i>Atylosia mollis</i>	-	+	-	-	-	-	-	-	+	+	-	-
<i>Bacopa monniera</i>	-	-	-	-	-	-	-	-	+	-	-	-
<i>Bauhinia vahlii</i>	-	+	+	+	-	+	+	-	+	+	-	Leaves used to make doonas and plates.
<i>B. variegata</i>	-	+	-	+	-	+	+	-	+	-	-	Wood used for agriculture implements.
<i>Barleria cristata</i>	-	+	-	-	-	-	-	+	+	-	-	-
<i>Begonia amoena</i>	-	-	-	-	-	-	+	+	+	-	-	-
<i>Berberis lycium</i>	-	+	-	+	-	+	+	-	+	+	-	-
<i>Berchemia lineata</i>	-	-	-	-	-	-	-	-	+	-	-	-
<i>Bidens pilosa</i>	-	+	-	-	-	-	-	-	+	-	-	-
<i>Blumea wightiana</i>	-	-	-	-	-	-	-	-	+	+	-	-
<i>Boehmeria platyphylla</i>	-	+	-	-	-	-	-	-	+	+	-	-
<i>Boeninghausenia albifera</i>	-	+	-	-	-	-	-	+	+	-	-	-
<i>Boerhaavia diffusa</i>	-	-	-	-	-	-	-	-	+	-	-	-
<i>Bombax ceiba</i>	+	+	+	-	+	+	+	+	+	-	-	Wood used in making box for industries.
<i>Buddleia paniculata</i>	-	+	-	-	-	+	-	+	-	+	-	-
<i>Caesalpinia decapetata</i>	-	+	-	+	-	+	-	+	-	+	-	-
<i>Campanula colorata</i>	-	-	-	-	-	-	-	+	-	-	-	-
<i>Cannabis sativa</i>	-	-	+	-	+	-	+	-	+	-	-	Narcotic and hallucinogenic.
<i>Carissa carandus</i>	-	-	-	-	-	+	+	-	+	+	-	Wood used for making combs, spoons.
<i>Caryopteris wallichiana</i>	-	-	-	-	-	+	-	+	-	+	-	Wood used for making walking sticks.
<i>Cassia fistula</i>	+	-	-	+	-	+	-	+	+	+	-	Wood used for making ploughs.
<i>Casuarina equisetifolia</i>	+	-	-	-	+	+	-	+	+	-	-	Yields cedar wood oil of commerce.
<i>Cedrus deodata</i>	+	-	-	-	-	+	-	+	+	-	-	-
<i>Celastrus paniculata</i>	-	-	-	-	-	+	-	+	+	+	-	-
<i>Celosia argentea</i>	-	+	-	-	-	-	+	+	+	-	-	-
<i>Celtis australis</i>	+	+	-	-	-	+	+	-	-	-	-	Wood used for making tool handles.
<i>Centella asiatica</i>	-	-	-	-	-	-	+	-	+	-	-	-
<i>Cheilanthis farinosa</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>Chenopodium album</i>	-	+	-	-	-	-	+	-	+	+	-	-
<i>Cissampelos pareira</i>	-	-	-	-	-	-	-	+	+	+	-	-

- <i>Clematis gouriana</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>C. nutans</i>	-	-	-	-	-	-	-	-	+	+	-	-
<i>Clerodendrum fragrans</i>	-	-	-	-	-	+	-	+	+	+	-	-
<i>Cnicus wallichii</i>	-	-	-	-	-	-	+	-	+	-	-	-
<i>Cocculus laurifolius</i>	-	-	-	+	-	-	-	-	-	-	-	-
<i>Coelbrookia oppositifolia</i>	-	-	-	-	-	-	-	+	+	+	-	-
- <i>Convolvulus arvensis</i>	-	-	-	-	-	-	-	-	-	+	-	-
<i>Corallodiscus lenuginosus</i>	-	-	-	-	-	-	-	-	-	+	-	-
<i>Cordia obliqua</i>	+	-	-	-	-	+	+	-	-	+	-	-
<i>Cotinus cogygria</i>	-	-	-	+	-	+	-	+	+	-	-	-
<i>Cotoneaster microphylla</i>	-	-	-	-	-	-	-	+	-	+	-	-
<i>Crotalaria albida</i>	-	-	-	-	-	-	-	-	-	+	-	-
<i>Cryptolepis buchanani</i>	-	-	+	-	-	-	-	-	-	+	-	-
<i>Cuscuta reflexa</i>	-	-	-	-	-	-	-	-	-	+	-	-
<i>Cydonia oblongum</i>	-	-	-	-	+	-	+	-	-	+	-	-
<i>Cynodon dactylon</i>	-	+	-	-	-	-	-	-	-	-	-	-
<i>Dalbergia sissoo</i>	+	+	-	-	-	+	-	-	-	+	+	-
<i>Daphne cannabina</i>	-	-	+	-	-	+	-	+	+	+	-	-
<i>Datura stramonium</i>	-	-	-	-	-	-	-	-	+	+	+	-
- <i>Debregeasia hypoleuca</i>	-	+	+	-	-	+	+	-	-	+	-	-
<i>Delphinium denudatum</i>	-	-	-	-	-	-	-	-	+	+	-	-
<i>Desmodium frutescens</i>	-	+	-	-	-	-	-	-	-	-	-	-
<i>D. tiliaefolium</i>	-	+	-	-	-	+	-	-	-	-	-	-
<i>Dicliptera bupleuroides</i>	-	+	-	-	-	-	-	-	+	+	-	-
<i>Dioscorea sativa</i>	-	-	-	-	-	-	+	-	-	+	-	-
<i>Dodonea viscoa</i>	-	-	-	+	-	+	-	+	+	+	-	-
<i>Duchesmia indica</i>	-	-	-	-	-	-	+	-	-	-	-	-
<i>Echinops nivens</i>	-	-	-	-	-	-	-	+	+	+	-	-
<i>Ehretia laevis</i>	-	+	-	-	-	+	+	-	-	+	+	-
<i>Elaeagnus umbellata</i>	-	+	-	-	-	+	+	-	-	+	-	-
<i>Emblica officinalis</i>	-	+	-	+	-	-	+	-	-	+	-	-
<i>Equisetum arvense</i>	-	-	-	-	-	-	-	-	-	+	-	-
<i>Eranthemum pulchellum</i>	-	-	-	-	-	+	-	-	-	+	+	-
<i>Eucalyptus citriodora</i>	+	-	-	+	-	+	-	-	+	+	-	-
<i>Euphorbia hirta</i>	-	-	-	-	-	-	-	-	-	+	-	-

Plant was used as an arrow poison in old times.

Wood used for agriculture implements.

Wood used for cabinet work. Wood suitable for turning for walking sticks.

Plant regarded poisonous and dry pods with seeds are used as toys by kids.

Used in pujas.

Narcotic and poisonous.

Good for soil conservation.

Soil conservation.

Good for hedges.

Wood used for brush backs.

Leaves yield essential oil. For agriculture implements and packing cases.

<i>E. royleana</i>	-	-	-	-	-	+	-	-	+	-	-	-
<i>Euonymus pendulus</i>	-	-	-	-	-	+	-	+	-	-	-	Wood used making wood boxes or pegs.
<i>Evolvulus alsinoides</i>	-	-	-	-	-	-	-	-	+	-	-	-
<i>Ferula jaeschkeana</i>	-	+	-	-	+	-	-	+	+	-	-	-
<i>Ficus glomerata</i>	+	+	-	+	-	-	+	-	+	+	-	-
<i>F. infectoria</i>	-	+	-	-	-	-	+	+	+	-	-	-Wood is suitable for paper pulp.
<i>F. palmata</i>	-	+	-	-	-	+	+	+	+	-	-	-
<i>F. religiosa</i>	-	+	-	+	-	-	+	+	+	-	+	Tree is worshipped.
<i>Flacourtia ramontchi</i>	-	+	-	-	-	+	+	-	+	-	-	Wood used for agriculture implements.
<i>Flemingia fruticulosa</i>	-	+	-	-	-	+	-	-	-	-	-	-
<i>Flueggia microcarpa</i>	-	+	-	+	-	+	+	-	+	-	-	Wood used for agriculture implements, poles, walking sticks, chair legs.
<i>Galium rotundifolium</i>	-	-	+	-	-	-	-	-	+	-	-	-
<i>Geranium nepalensis</i>	-	-	+	-	-	-	-	-	+	-	-	-
<i>Gerbera lanuginosa</i>	-	-	-	-	-	-	-	+	+	-	-	Wood is used for igniting fires by shepherds.
<i>Grewia optiva</i>	-	+	+	-	-	+	+	-	+	-	-	Stem bark is used for cleaning hairs.
<i>Hedera nepalensis</i>	-	+	-	-	-	-	-	+	+	-	-	-
<i>Helinus lanceolatus</i>	-	+	-	-	-	-	-	-	+	+	-	-
<i>Holarrhena antidysenterica</i>	-	+	-	-	-	+	-	-	+	+	-	-
<i>Hypericum oblongifolium</i>	-	+	-	-	-	-	-	-	+	-	+	-
<i>H. elodeoides</i>	-	+	-	-	-	-	-	-	+	-	-	-
<i>Ichnocarpus frutiscens</i>	-	-	+	-	-	-	-	-	+	-	-	-
<i>Impatiens balsamina</i>	-	-	-	+	-	-	+	+	+	-	-	Seeds edible.
<i>I. brachycentra</i>	-	+	-	-	-	-	+	+	+	-	-	-do-
<i>Indigofera pulchella</i>	-	+	-	-	-	+	-	+	+	-	-	-
<i>Ipomoea carnea</i>	-	-	-	-	-	-	-	+	+	-	-	This plant used as soil binder.
<i>Jasminum arborescens</i>	-	+	-	-	-	-	-	+	+	-	-	-
<i>J. dispernum</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>J. humile</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>J. pubescens</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>Jatropha curcas</i>	-	-	-	+	-	-	-	-	+	-	-	Wood used for agriculture implements, frames, drawing instruments. Grown as hedge on field bunds.

<i>Juglans regia</i>	-	+	-	-	+	-	-	+	-	+	-	-	-
<i>Justicia adhatoda</i>	-	-	-	-	-	+	-	+	+	+	-	-	Leaves used for ripening of bananas.
<i>Kalanchoe spathulata</i>	-	-	-	-	-	-	-	+	+	-	-	-	-
<i>Lansea coromandelica</i>	+	-	-	+	-	-	-	-	-	-	-	-	For agriculture implements.
<i>Lantana camara</i>	+	-	-	-	-	+	+	+	+	+	+	-	Twigs used for making baskets and charcoal for gun powder.
<i>Lathyrus aphaca</i>	-	-	+	-	-	-	+	-	+	-	-	-	-
<i>Lepideza stenocarpa</i>	-	+	+	-	-	+	+	+	+	+	+	-	-
<i>Lepideza gerardiana</i>	-	-	+	-	-	-	-	-	+	+	-	-	-
<i>Leucas cephalotes</i>	-	-	+	-	-	-	-	+	+	+	-	-	-
<i>Leucaena leucocephala</i>	-	-	+	-	-	+	-	+	+	+	-	-	-
<i>Lippia nudiflora</i>	-	-	-	-	-	-	+	-	+	+	-	-	-
<i>Lotus corniculatus</i>	-	+	-	-	-	-	-	+	-	+	-	-	It is a good soil binder. Good hay for cattle. Wood used for tool handles. Seeds is fatty oil..
<i>Mallotus philippinensis</i>	-	+	-	+	-	+	-	+	+	+	+	-	-
<i>Malvestrum coromandelianum</i>	-	+	-	-	-	-	-	+	+	-	-	-	-
<i>Mangifera indica</i>	+	-	-	-	+	+	+	+	+	+	+	+	-
<i>Melia azedarach</i>	+	-	-	-	+	-	-	+	+	-	-	-	For agriculture implements and boxes.
<i>Milletia auriculata</i>	-	+	+	-	-	-	-	-	+	-	-	-	-
<i>Mentha longifolia</i>	-	-	-	-	-	-	+	+	+	+	-	-	-
<i>Meriandara strobilifera</i>	-	-	-	-	-	+	-	+	+	+	-	-	-
<i>Micromeria biflora</i>	-	-	-	-	-	-	-	+	+	+	-	-	-
<i>Mimosa pudica</i>	-	-	-	-	-	-	-	+	+	+	-	-	-
<i>M. rubicaultis</i>	-	+	-	-	-	+	-	+	+	+	-	-	-
<i>Morus serrata</i>	+	+	+	-	-	+	+	-	-	-	-	-	Wood used of agriculture implements.
<i>Murraya koenigii</i>	-	-	-	-	-	-	+	-	+	-	-	-	-
<i>M. paniculata</i>	-	-	-	-	-	-	+	+	+	-	-	-	-
<i>Myrsine africana</i>	-	+	-	-	-	-	-	+	+	-	-	-	-
<i>Nasturtium officinale</i>	-	-	-	-	-	-	+	-	-	-	-	-	It is source of vitamin C.
<i>Nerium indicum</i>	-	-	-	-	-	-	-	+	+	+	-	-	-
<i>Nicanandra physaloides</i>	-	-	-	-	-	-	-	+	+	+	-	-	-
<i>Nicotiana tabaccum</i>	-	-	-	-	-	-	-	+	+	+	-	-	-
<i>Nyctanthes arbortristis</i>	-	-	-	-	-	-	-	+	+	+	-	-	-
<i>Ocimum canum</i>	-	-	-	-	-	-	+	-	+	+	-	-	-
<i>O. sanctum</i>	-	-	-	-	-	-	+	-	+	+	+	+	Plant is worshipped..
<i>Olea glandulifera</i>	+	-	-	-	-	-	-	-	+	-	-	-	-

<i>Onychium contiguum</i>	-	-	-	-	-	-	+	+	-	-	-	-
<i>Opentia dillenii</i>	-	-	-	-	-	-	+	+	+	+	-	-
<i>Origanum vulgare</i>	-	-	-	-	-	-	-	+	+	+	-	-
<i>Osyris arborea</i>	-	-	-	-	-	-	-	+	+	+	-	-
<i>Ougenia oojenensis</i>	+	+	+	-	-	+	-	+	+	+	-	-
<i>Oxalis corniculata</i>	-	-	-	-	-	-	+	-	+	+	-	-
<i>Parthenium hysterophorous</i>	-	-	-	-	-	-	-	-	+	+	-	-
<i>Phoenix humilis</i>	-	-	+	-	-	-	+	+	+	-	-	-
<i>Pinus roxburghii</i>	+	-	-	-	+	+	-	-	+	-	-	-
<i>Pistacia integerrima</i>	+	-	-	-	+	-	+	+	+	+	-	-
<i>Plectranthus Gerardiana</i>	-	+	-	-	-	+	-	-	+	+	-	-
<i>P. incanus</i>	-	+	-	-	-	+	-	-	+	+	-	-
<i>Plumbago zeylanica</i>	-	-	-	-	-	-	-	+	+	+	-	-
<i>Pogostemono benghalensis</i>	-	-	-	-	-	-	-	+	+	+	-	-
<i>Polygonum alatum</i>	-	-	-	-	-	-	-	+	+	+	-	-
<i>P. hydropiper</i>	-	-	-	-	-	-	-	+	+	+	-	-
<i>P. plebejum</i>	-	-	-	-	-	-	-	-	+	+	-	-
<i>Premna latifolia</i>	-	-	-	-	+	-	-	-	+	+	+	+
<i>Prinsèpia utilis</i>	-	-	-	-	-	-	+	+	+	+	-	-
<i>Prunus cerasoides</i>	-	-	-	+	+	+	+	+	+	+	-	-
<i>Psidium guyava</i>	+	-	-	+	-	+	+	-	+	-	-	-
<i>Pueraria tuberosa</i>	-	-	+	-	-	-	+	+	+	+	-	-
<i>Punica granatum</i>	-	-	-	+	-	-	+	+	+	+	-	-
<i>Pyrus pashia</i>	+	+	-	-	-	+	+	+	+	+	-	-
<i>Quercus leucotrichophora</i>	+	+	-	-	-	+	-	-	+	-	-	-
<i>Q. rubra</i>	+	-	-	-	-	-	-	+	-	-	-	-
<i>Rabdosia rugosa</i>	-	+	-	-	-	+	-	+	+	+	-	-
<i>Randia dumetorum</i>	-	-	-	-	-	+	+	+	+	+	-	-
<i>R. tetrasperma</i>	-	-	-	+	-	+	-	+	+	+	-	-
<i>Ranunculus arvensis</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>R. sceleratus</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>Rauvolfia serpentina</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>Rhamnus triquetra</i>	-	-	-	-	-	+	+	-	+	-	-	-

It is a chronic weed and causes allergies. Leaves are used for making mats.

Fruits are edible.

Plant used as fish poison.

Fatty oil from seeds used in cooking and as illuminant. Plant used in making Bedis in marriages.

Wood used for walking sticks and tobacco pipes. Wood used for agriculture implements.

Plant used for making brooms.

Wood used for walking sticks.

<i>Rhododendron arboreum</i>	-	-	-	-	-	+	+	+	+	+	-	Flowers are used for preparing chutneys and Rhodo syrups.
<i>Rhyncostylis retusa</i>	-	-	-	-	-	-	-	+	+	-	-	Seed oil used for soaps, typewriter ink, varnishes, paints etc.
<i>Ricinus communis</i>	-	-	-	-	-	-	-	-	+	+	-	
<i>Rosa moschata</i>	-	-	-	-	-	-	+	+	+	+	-	-
<i>Roylea calycina</i>	-	-	-	-	-	-	-	-	+	-	-	-
<i>Rubia cordifolia</i>	-	-	-	+	-	-	-	-	+	-	-	-
<i>Rubus ellipticus</i>	-	-	-	-	-	-	+	+	-	+	-	-
<i>Rumex hastatus</i>	-	-	-	+	-	-	+	+	+	-	-	Leaves used for cleaning silver ornaments.
<i>R. nepalensis</i>	-	+	-	+	-	-	-	+	+	-	-	-
<i>Sageretia oppositifolia</i>	-	-	-	-	-	+	+	-	-	-	-	-
<i>Salix alba</i>	+	+	+	-	-	+	-	+	+	-	-	Wood used for making axe handles, cricket bats.
<i>Saliva coccinia</i>	-	-	-	-	-	-	-	-	+	-	-	Poisonous to goats and sheep and also cause abortion in cattle.
<i>S. moorcroftiana</i>	-	-	-	-	-	-	-	-	+	-	-	-
<i>Sapindus mukorosii</i>	+	-	-	-	-	-	-	+	+	+	-	Fruits used for washing hairs and clothes.
<i>Sapium insegue</i>	+	-	-	-	-	-	-	-	+	+	-	Juice is corrosive to the skins.
<i>S. sebiferum</i>	+	-	-	-	-	-	-	+	+	-	-	-
<i>Sarcococca saligna</i>	-	-	-	-	-	-	-	-	+	+	-	-
<i>Schefflera venulosa</i>	-	-	-	-	+	+	-	-	-	-	-	-
<i>Scindapsus officinalis</i>	-	+	-	-	-	-	-	-	+	-	-	-
<i>Scutellaria repens</i>	-	+	-	-	-	-	-	-	+	+	-	-
<i>Sedum adenotrichum</i>	-	-	-	-	-	-	-	-	+	+	-	-
<i>Senecia chrysanthemoides</i>	-	-	-	-	-	-	-	-	+	+	-	-
<i>Sisymbrium wallichii</i>	-	+	-	-	-	-	-	-	-	+	-	-
<i>Smilax aspera</i>	-	-	-	-	-	-	-	-	+	+	-	-
<i>S. parviflora</i>	-	-	-	-	-	-	-	-	+	+	-	-
<i>Solanum khasianum</i>	-	-	-	-	-	-	-	-	+	+	-	-
<i>S. nigrum</i>	-	-	-	-	-	-	+	-	+	+	-	-
<i>S. verbasifolium</i>	-	+	-	-	-	-	-	-	+	+	-	-
<i>S. xanthocarpum</i>	-	-	-	-	-	-	-	-	+	+	-	-
<i>Spermadictyon suaveolens</i>	-	-	-	-	-	+	-	-	+	+	-	-
<i>Stephania glabra</i>	-	-	-	-	-	-	-	-	-	+	-	-

<i>Tecoma stans</i>	-	-	-	-	-	-	-	+	+	+	-	-
<i>Terminalia bellirica</i>	-	-	-	-	-	-	+	+	+	-	-	-
<i>T. chebula</i>	-	-	-	-	-	-	+	-	+	-	-	-
<i>Thalictrum foliolosum</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>Thevetia nerifolia</i>	-	-	-	-	-	-	-	-	+	-	-	-
<i>Thysanolaena maxima</i>	-	+	+	-	-	-	-	-	-	-	-	-
<i>Tinospora cordifolia</i>	-	-	+	-	-	-	-	+	+	-	-	-
<i>Toona ciliata</i>	+	-	-	+	-	+	-	-	-	+	-	-
<i>Trichodesma indicum</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>Vallis heynei</i>	-	+	-	-	-	+	-	+	+	+	-	-
<i>Verbascum thapsus</i>	-	-	-	-	-	-	-	-	+	-	-	-
<i>Vicia tetrasperma</i>	-	+	-	-	-	-	-	-	-	-	-	-
<i>Viola patrinii</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>V. serpens</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>Wendlandia exserta</i>	+	+	-	-	-	-	-	+	+	-	-	-
<i>Withania somnifera</i>	-	-	-	-	-	-	-	+	+	-	-	-
<i>Woodfordia fruticosa</i>	-	+	-	-	-	+	+	+	+	+	-	-
<i>Zanthoxylum armatum</i>	+	-	-	-	-	-	+	+	+	-	+	-
<i>Zehneria umbellata</i>	-	-	-	-	-	-	+	-	-	-	-	-
<i>Zizyphus oxyphylla</i>	-	+	+	-	+	+	+	-	-	-	-	-
<i>Z. xylopyrus</i>	-	-	-	-	-	-	+	-	+	-	-	-

Stems used for reed pen and as brooms.

Wood used for agriculture implements.

Wood used for sticks.

Chapter 6

SUMMARY

The present investigation entitled, "Studies on Ethno-Medico-botany of Kunihar Division, District Solan (HP)", was undertaken for conducting preliminary survey of the Medicinal and Aromatic wealth of this area. Geographically Kunihar Forest Division is situated between 33°52' to 31°22' longitudes and 76°36' to 77°09' latitudes. This division has four ranges viz., Kunihar, Arki, Darlghat and Kutharh with head quarters at respective areas. The area varies in elevation from 300 to 2200 m above mean sea level.

A total of 256 species belonging to 80 families and 213 genera were collected from different parts and locations of the study area. Out of these 231 species belong to dicots, 23 species to monocots and 2 to gymnosperms. Predominantly woody elements included. *Acer oblongum*, *Albizia chinensis*, *Acacia catechu*, *Anogeissum latifolia*, *Bomax ceiba*, *Celtis australis*, *Cedrus deodara*, *Dalbergia sissoo*, *Toona ciliata*, *Sapium sebiferum*, *Pinus roxburghii*, *Olea glandulifera*, *Quercus leucotrichophora* etc. The shrubby and herbaceous components included *Clematis gouriana*, *Boeninghausinia albiflora*, *Agave americana*, *Aloe barbadensis*, *Cotoneaster microphylla*, *Celastrus paniculata*, *Centella asiatica*, *Cissampelos pareira*, *Cuscuta reflexa*, *Dodnoea viscosa*, *Delphinium denudatum*, *Evolvus alsinoides*, *Euphorbia hirta*, *E. hirta*, *E. royleana*, *Ferula jeaschkeana*, *Geranium nepalensis*, *Holarrhena antidysenterica* species of *Jasminum*, *Rubia cordifolia*, species of *Solanum*, *Viola serpens*, *Woodfordia fruticosa*, *Zehneria umbellata* etc.

Most dominating families are Leguminosae, Labiatae, Euphorbiaceae occupying first, second and third places, Compositae, Urticaceae, Apocynaceae, Verbenaceae, Rhamnaceae, Solanaceae, Anacardiaceae, Amaranthaceae, Oleaceae

occupying fourth, fifth, sixth, seventh, eighth, ninth and tenth places, respectively. The least dominating families are Berberidaceae, Papaveraceae, Violaceae, Bixaceae, Linaceae, Vitaceae, Lythracea, Cucurbitaceae, Campanulaceae, Myrsinaceae, Chenopodiaceae, Thymeliaceae, Elaeagnaceae, Santalaceae, Fagaceae, Orchidaceae, Sinopteridaceae, Thelypteridaceae, Aspidiaceae and Pteridaceae.

Out of 256 species, the trees, shrubs (including climbers) and herbs were in the ratio of 35:46:47, respectively. Out of total, 195 species were used as Medicinal and Aromatic Plants 35 as timber species, 72 as fodder species, 20 as fibre and flosses yielding species, 36 as tans and dyes yielding species, 17 as gum and resin yielding species, 76 fuel wood species, 75 edible species, 135 as ornamental/landscaping species, 59 as bee flora, 9 species were used in tantra-mantra and 70 species used for miscellaneous purposes. The percentage of trees, shrubs (including climbers) and herbs was 27.34 per cent, 35.94 per cent and 36.72 per cent, respectively.

The results of my study in Kunihar Division indicate that the people still are making maximum use of the plant species for meeting their day to day household demands like constructional timber, fodder, fuel wood, magico-religious beliefs, fertilizer and above all as medicines. The indigenous traditional knowledge about use of plants against diseases like rheumatism, cardiac disorders, headache, diarrhoea, dysentery, fever, stomachache etc. is still practised in majority of households, despite the fact that the facilities of modern systems of medicines and Ayurveda in the form of Civil Hospitals, Primary Health Centres/Sub Centres and Ayurvedic Dispensaries providing health care needs to the people of the area. Of course, scientific investigations through bio-chemical, clinical and pharmacological screening are required for verification of the folklore and bring out newer and potential sources of medicament for the welfare of the society.



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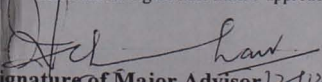
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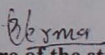
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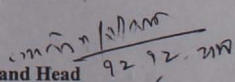
ABSTRACT

Human culture has been augmented by plants and plant products since time immemorial. This assemblage of plant species has now been acknowledged as the foundation for sustainable livelihood and food security. The present course of study was undertaken for making preliminary survey of plant wealth of Kunihar Forest Division, District Solan of Himachal Pradesh. The study area boasts of rich plant diversity. The study revealed 256 plant species of ethnobotanical importance belonging to 213 genera and 80 families. Out of these dicots are represented by 231 species and 68 families; monocots are represented by 23 species and 12 families; gymnosperms are represented by 2 species and 1 family and 7 species of ferns belonging to 6 genera and 6 families were collected. Out of total 256 species, 197 species were used as Medicinal and Aromatic Plants; 35 as timber species, 72 as fodder species, 20 as fibre and flosses yielding species, 36 as tans and dyes yielding species, 17 as gum and resin yielding species, 76 fuelwood species, 75 edible species, 135 as ornamental/landscaping species, 59 as beeflora, 9 species used in Tantramantia and 70 species used for miscellaneous purposes. The latin name, local name and ethnobotanical uses of plants have been enumerated. These plants find great usage in various major and minor diseases occurring commonly in the area and there is a great potential of pharmacological investigations of some of these species which possess high medicinal value.. This grass root approach of ethnobotanical studies will help to enrich and strengthen the macro-approach of national and global biodiversity enumeration's.


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