

Traditional Knowledge and Utilization of Medicinal Plants of Himalayan Region

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Abstract: Primitive human societies have been depending on plants and plant products for various remedies. In certain areas these folk medical prescriptions are endemic and have survived through ages from one generation to next generation verbally. They do not exist as written knowledge. Generally these systems of medicines depend on old people's experiences. The person, prescribing these medicines has no so-called scientific knowledge about the disease. Indigenous systems of medicine are specially conditioned by heritage and myths.

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1. Introduction

In the past decade, there has been renewed attention and interest in the use of traditional medicine globally (Sheldon et al., 2000). The World Health Organization (WHO) has pointed out that traditional medicine is an important contributor to its health goals. Today, according to the WHO, as many as 80% of the world's people depend on traditional medicine and in India 65% of the population in the rural area use Ayurveda and medicinal plants to help care needs (Anonymous, 1992). Thus, traditional medicine practices, conserved over decades from old civilization, can serve as an effective basis for the discovery and development of modern therapeutic drugs. There are considerable economic benefits in the development of indigenous medicines and in the use of medicinal plants for the treatment of various diseases. In a report published by the World Bank, Lambert et al. (1997), pointed out that preserving and enhancing the plant knowledge and use was equivalent to rescuing a global heritage. Herbal medicines are comparatively safer than synthetic drugs. Plant-based traditional knowledge has become a recognized tool in search for new sources of drugs (Sharma and Majumdar, 2003).

The ethnobotanical survey can bring out many different clues for the development of drugs to treat human disease. Plants have been an integral part of life in many local communities for food and medicine both. India has more than 3000 years of medicinal heritage based on medicinal plants are widely used by all sections of the population either directly as folk remedies or indirectly in the preparation of modern pharmaceuticals. There has been a revival of interest in medicinal and wild plants during the last few decades among the ethnobotanists (Bhatt et al., 2000; Rajasab and Isaq2004) which is associated with an increasing desire for natural rather than synthetic medicine.

Central Himalaya is one of the biodiversity-rich zones of India in terms of vegetation and flora. Varied altitude, topography, status of soil and climatic conditions favour high species richness and support different types of forests. Deciduous and evergreen forest, semievergreen forests are the major types in the Central Himalayan region. Wide geographical and climatic diversity provides a repository of valuable medicinal and aromatic plants of the region. These plants have a valuable place in indigenous system of medicine as well as tribal dietary requirements. A review of literature revealed that ethnobotanical study in Himalayan region is limited especially the traditional knowledge. Therefore, a need was felt to document the information on medicinal drugs prepared by old people and traditional Vaidyas (one who have knowledge of herbal medicine) of the state. The Vaidyas of Uttaranchal have thus developed the medical system of therapy accordingly on the available bio-resources including wild and cultivated plant species growing in the state.

Therefore, the present investigation is an attempt to document the various herbal drugs prepared by various traditional herbal healers of Himalayan region.

2. Study Area

The present study was conducted in Uttarakhand state of central Himalaya. Uttarakhand is located in the northern region of India and span over an area of 53, 485km. The human population of the state is 8479562 of which 78% falls under rural category. The climate of the study area is referred to as monsoon warm temperate. Annual rainfall of the area is 2136 mm and mean monthly temperature varies from 7 to 27°C during summer and 2.1 to 3.8°C during winter. The winter is characterized by occasional snowfall. Of the

total precipitation, nearly 75% occurs during the three months of monsoon, mid-June to mid-September.

3. Methodology

Field study was carried out during the period between April 2007 and May 2008 across the various districts of Uttarakhand. The standard methods as suggested by Martin (1995) and Cotton (1999) were adopted for herbarium preparation. Plant identification was done with the help of regional and local floras. (Osmoston, 1927; Babu, 1917; Naithani, 1984; Purohit and Samant, 1995). Detailed information on wild medicinal plants were gathered through oral interviews of the local people and Vaidyas. Village people information were consulted to locate and collect these plants. Throughout the interviews the useful information on wild and medicinal plants were recorded. Semi structured questionnaire survey was conducted among knowledgeable traditional Vaidyas with a view to document the knowledge on the use of medicinal plants. The data were crosschecked by interviewing more than three Vaidyas on the use of specific plant species. Also comparison was made between the information provided by Vaidyas and available literature (Jain, 1991; Gaur, 1999; Kala, 2002). Some workshops were also organized and various groups of indigenous people including Vaidyas were invited to generate and help in documenting the indigenous knowledge of such parameters. Qualitative information so gathered was verified by cross-examination with different traditional Vaidyas.

4. Results and Discussion

The study reveals that village people in the area depend on plants for medicinal purpose. During present investigation 90 species were identified as being used for treatment of approximately 45 ailments were gathered. In most of the case leaves (46%), were used for curing ailments followed by root parts (18%), fruit and seeds (14%), stem bark (12%), whole plants (8%), latex and resin (6%), flowers and other parts (4%). The drugs are prepared mainly in the form of juice, powder, decoction, paste, jam and pills.

Maximum numbers of plants were used for curing wounded parts, stomach problems, cold cough, fever, skin diseases, respiratory problems etc. It was also found that a single plant may be used for curing many ailments such as *Berberis asiatica* is used in healing ulcer, urethral discharge and jaundice. Similarly *Hedychium spicatum* is used for the treatment of many diseases (Table 1).

The results of the study indicate that most of the common species which grow in the garden and adjacent to the village areas in cultivated or forest lands are used by Vaidyas in majority of the cases for preparation of herbal drugs. Vaidyas use *Ocimum*,

Piper nigrum, *Curcuma domestica*, *Brassica campastriis*, and *Rapnhanus sativus* frequently for making various herbal drugs (Kala et al., 2005).

The Vaidyas system of medicine pursues the holistic approach and does not aim to cure only the affected organs alone but aims to find out the origin and the casual factor of the disease in order to eradicate the disease from its root (Dash, 1999).

For gathering medicinal plants from nature, the Vaidyas follow some specific guidelines. They mainly avoid collection of plants for medicinal purpose if insects, pests and or any disease have infected the plant species. The collector of plants for any medicinal use were advised not to collect plants if the plants were affected by any toxicity, sunstroke, high velocity of winds, hailstorm, fire and flood. There was restriction of collection of medicinal plants among traditional Vaidyas from cemeteries, cremation grounds, sacred places, slaughter houses, areas affected by sewer discharges or polluted water, and termite infected areas, road sides, landslide prone areas and area furrowed by rodents (Kala et al., 2005).

The plants were collected for medicinal purpose when they attain maturity and it was judged by height of plants, branching pattern, and colour and other morphological characters including right fragrance and potency. All these judgments were based on the experiences and knowledge of the collectors. There are also some guidelines for collection of different parts of the medicinal plant species. The branches are collected mainly between flowering and ripening of fruits. If the roots of trees are required for medicinal purpose, then only the bark of hard and woody roots are collected. Roots and rhizomes of annuals are collected in summer and winter after the leaf fall or when the new leaves just emerge. Milk, sap, gum, resin, latex and other liquid exudes from plants are collected in autumn yet these products are collected depending on their availability. Similarly, as per the seasonality and availability the flowers and fruits are collected (Kala et al., 2005).

The use of plants for treatment in India dates back to prehistoric times. This indigenous knowledge about medicinal plants and therapies was compose verbally and passed orally from generation to generation. Much later, some of this information was composed in treatise form like Rigveda, Yajurveda, Charak Samhita, Sushrut Samhita, etc. These systematized system of knowledge about medicinal plants and therapies are included under Ayurveda- the Indian Traditional Medicine System.

Despite significant development of rural health services, village people still use herbal folk medicine to a good extent for the treatment of common ailments like cough, cold, fever, headache and bodyache, constipation, dysentery, burns boils, ulcer, skin diseases,

respiratory trouble and others. The Himalayas have a wide range of herbal products as this region supports approximately 18,440 species of plants. Just like the ancient people, the Himalayan people have close relationship with nature for their basic needs like food, fuel, fodder, medicine, etc. in health care, they use their own medicine system, which is based on the ancient cultural traditions.

The cultivation and use of medicinal plants has a great potential for employment generation, particularly in rural sectors. The recent emphasis on tribal and rural development indicates that cultivation of medicinal plants can play a prominent role in this direction, if undertaken properly. Unfortunately the traditional system of herbal use in Uttarakhand is not much popular in the younger generation because they

thought less opportunity in this tradition for getting immediate benefits (Kala et al., 2005).

Besides, there were several other reasons, which made to decline the tradition including less promotion of Ayurvedic medicine compared to the western medicine in the Indian education system in spite of the common belief that the pure vegetable drugs are more powerful in their efficacy than those which have under several laboratory processes (Nadkarni, 1954).

However, to meet the objective of developing the effective Ayurvedic drugs based on traditionally claimed efficacies; clinical trials coupled with extensive phytochemical investigations are required to decipher the chemical nature of biologically active compounds for more scientific utility.

Table 1: Medicinal plants used by indigenous communities of Uttarakhand

| Sl | Species | Family | Part used | Diseases |
|----|----------------------------------|---------------|---|---|
| 1 | <i>Aloe vera</i> | Liliaceae | Pulp | Fresh juice is used as cathartic and cooling. It is also used in treating fever, eye disease and joint pain |
| 2 | <i>Asparagus racemosus</i> | Liliaceae | Root | Dried root powder crushed with turmeric and the filtrate taken orally, 2 spoonful twice a day for 3 days to cure gastro intestinal disorder |
| 3 | <i>Asparagus odscendens</i> | Liliaceae | Root | Strength, vitality |
| 4 | <i>Asparagus curillus</i> | Liliaceae | Root | Gonorrhoea, piles, diabetes, rejuvenating tonic |
| 5 | <i>Asparagus filicinus</i> | Liliaceae | Root | Sexual debility, urogenital disorders |
| 6 | <i>Astragalus aegacanthoides</i> | Fabaceae | Root | Burns, boils, skin diseases |
| 7 | <i>Albizia lebbek</i> | Mimosaceae | | Flowers are used to cure skin eruptions, swelling and antidote to poison |
| 8 | <i>Argemone mexicana</i> | Papaveraceae | Whole plant | Leucorrhoea, wounds |
| 9 | <i>Annona squamosa.</i> | Annonaceae | Fruit and seeds | Fruit juice is used to control dysentery. Seed paste is applied on the forehead for relief from headache. |
| 10 | <i>Achyranthes aspera</i> | Amaranthaceae | Stem, fruit, leaf, seed and whole plant | Muscular cramps, mouth blisters, snake bite, check bleeding, anti-fertility in women and gastro intestinal disorder |
| 11 | <i>Achyranthes bidentata</i> | Amaranthaceae | Whole plant | Diuretic, astringent, fever, jaundice, cough |
| 12 | <i>Aconitum atrox</i> | Ranunculaceae | Root | Rheumatism, neuralgia, paralysis, dyspepsia, phthisis, rheumatic fever, puerperal fever, asthma, snake bite |
| 13 | <i>Aconitum balfourii</i> | Ranunculaceae | Root, tuber | Septic, boils, tonsil, gastritis, leprosy |
| 14 | <i>Aconitum falconeri</i> | Ranunculaceae | Root | Paralysis, sciatica, gout, fever, rheumatism, diarrhoea |
| 15 | <i>Aconitum heterophyllum</i> | Ranunculaceae | Root, tuber | Vomiting, fever, cough, stomach ache, gastrointestinal disorders, digestive disorders, fever, piles, dysentery |
| 16 | <i>Aconitum voilaceum</i> | Ranunculaceae | Root, tuber | Stomach-ache, fever, abdominal pain, bronchitis, cough, epilepsy, headache, inflammation, neck pain, renal pain |
| 17 | <i>Acorus calamus</i> | Araceae | root | Inflammation, neck pain, asthma, gout, rheumatism, improve lost voice. |
| 18 | <i>Ajuga parviflora</i> | Lamiaceae | Leaf, seed | Leaves and seeds used to cure jaundice, ascariasis, fever, stomach-ache |

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|-----------|-----------------------------------|------------------|-------------------------|--|
| 19 | <i>Ajuga bracteosa</i> | Lamiaceae | Leaf, root | Leaves and roots used to cure jaundice, leucorrhoea, blood purifier, fever, worm killer |
| 20 | <i>Abies pindrow</i> | Pinaceae | Leaf, resin, bark | Cough, cold, rheumatism, ulcer |
| 21 | <i>Abrus precatorius</i> | Fabaceae | Leaf, seed | Diabetes, menstruation, cough, fever, asthma |
| Sl | Species | Family | Part used | Diseases |
| 22 | <i>Aesculus indica</i> | Hippocastanaceae | Fruit, seed, leaf, root | Fistula, Rheumatic, leucorrhoea |
| 23 | <i>Ainsliaea aptera</i> DC. | Asteraceae | Root | Stomach-ache |
| 24 | <i>Bidens pilosa</i> | Asteraceae | Whole plant | The warm juice of the fresh plant is used to treat earache and conjunctivitis and as a styptic on wounds |
| 25 | <i>Boerhaavia diffusa</i> | Nyctaginaceae | Leaf | Leaf paste is applied on the cuts and wounds to stop bleeding |
| 26 | <i>Buchanania lanzan</i> Spreng. | Anacardiaceae | Root, leaf | The roots and leaves are pounded, mixed with buttermilk and given in diarrhoea |
| 27 | <i>Bergenia ciliata</i> | Saxifragaceae | Root | Decoction of root is used to remove kidney stone. |
| 28 | <i>Berberis asiatica</i> | | Root | Roots are used in healing ulcer, urethral discharges, in leucor, ophthalmia, jaundice, fever etc. |
| 29 | <i>Basella alba</i> | Basellaceae | Leaf | Boils, blisters |
| 30 | <i>Bauhinia variegata</i> | Caesalpiniaceae | Flower, bud | Diarrhoea, dysentery, tumours, stomach disorder |
| 31 | <i>Butea minor</i> | Fabaceae | Leaf | Anthelmintic, boils, skin diseases |
| 32 | <i>Betula alnoides</i> | Betulaceae | Bark | Eye diseases |
| 33 | <i>Betula utilis</i> | Betulaceae | Bark | Cuts, burns, wounds, hysteria, jaundice, ear, pain asthma, cough, cold, internal injury, menstruation |
| 34 | <i>Capparis sepiaria</i> | Capparaceae | Leaf | Decoction of leaf is used in cough and skin diseases |
| 35 | <i>Carissa carandas</i> | Apocynaceae | Leaf | Decoction of the leaves is given for fever |
| 36 | <i>Cassia angustifolia</i> Vahl | Caesalpiniaceae | Leaf, fruit | Leaves and fruits are used as laxative and purgative |
| 37 | <i>Cassia auriculata</i> | Caesalpiniaceae | Seeds | Seeds are ground and paste is applied to cure skin disease |
| 38 | <i>Cassia occidentalis</i> | Caesalpiniaceae | Leaf, seed | Seeds and leaves are used in skin troubles. Leaves are also used in foot and mouth disease of cattle |
| 39 | <i>Commelina benghalensis</i> | Commelinaceae | Whole plant | Whole plant is used to treat leprosy |
| 40 | <i>Corchorus trilocularis</i> | Tiliaceae | Whole plant | Plant macerated with water yields, mucilage, prescribed as a demulcent. Seeds are used in fever and for cleaning bowls |
| 41 | <i>Crotalaria retusa</i> | Fabaceae | Whole plant | Plant is used in scabies and impetigo |
| 42 | <i>Crotalaria verrucosa.</i> | Fabaceae | Leaf | The leaf decoction is given orally to cure jaundice |
| 43 | <i>Centella asiatica</i> | Apiaceae | Leaf | Painful and slow urination, Eye trouble, fever, snake bite, brain tonic, malaria, cholera |
| 45 | <i>Cotoneaster microphyllus</i> | Rosaceae | Root | Scrofula |
| 46 | <i>Colebrooekea oppositifolia</i> | Lamiaceae | Leaf, root | Cataract, epilepsy, wounds, bruises |
| 47 | <i>Dioscorea bulbifera</i> | Dioscoreaceae | Tuber | Check conception, bronchial cough, cold |
| Sl | Species | Family | Part used | Diseases |
| 48 | <i>Dioscorea deltoidea</i> | Dioscoreaceae | Root | Spermatorrhoea, piles, dysentery |
| 49 | <i>Dioscorea belophylla</i> | Dioscoreaceae | Root | Blood purifier |
| 50 | <i>Dioscorea kemaonensis</i> | Dioscoreaceae | Tuber | Arthritis, rheumatism |
| 51 | <i>Diploknema butyracea</i> | Sapotaceae | Seed | Skin diseases |
| 52 | <i>Dalbergia sissoo</i> | Papilionaceae | Seed | Rheumatic pain, skin diseases, breast cancer |
| 53 | <i>Daphne papyraceae</i> | Thymeliaceae | Whole plant | Purgative, febrifuge |
| 54 | <i>Datura metel</i> | Solanaceae | Leaf, seed, root | Fistula, gum trouble, pyorrhoea, asthma |
| 55 | <i>Delphinium</i> | Ranunculaceae | Leaf | Cut and burn |

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|-----------|------------------------------------|----------------|-------------------|--|
| | <i>brunonianum</i> | | | |
| 56 | <i>Delphinium denudatum</i> | Ranunculaceae | Root | Contusion, ulcer, toothache, abdominal pain, respiratory disorder, ulcer |
| 57 | <i>Delphinium vestitum</i> | Ranunculaceae | Whole plant | Snake bite, cuts, wounds, fever, diarrhoea |
| 58 | <i>Desmodium oojainense</i> | Fabaceae | Bark | Low blood pressure |
| 59 | <i>Desmodium heterocarpon</i> | Fabaceae | Whole plant | Cough, fainting, convulsion |
| 60 | <i>Ficus palmate</i> | Moraceae | Latex, root | Boils, dysentery |
| 61 | <i>Ficus religiosa</i> | Moraceae | Leaf, latex, bark | Bronchial asthma, improve female fertility,, ear trouble, snake bite |
| 62 | <i>Flemingia strobilifera</i> | Fabaceae | Whole plant | Rheumatic pain |
| 63 | <i>Foeniculum vulgare</i> | Apiaceae | Whole plant | Vomiting |
| 64 | <i>Fragaria vesica</i> | Rosaceae | Root , leaf | Headache inflammation |
| 65 | <i>Fritillaria roylei</i> | Liliaceae | Bulb | Asthma, bronchitis, burns, stomach trouble |
| 66 | <i>Galinsoga parviflora</i> | Asteraceae | Leaf | Earache |
| 67 | <i>Galium acutum</i> | Rubiaceae | Whole plant | Antiscorb, diuretic, skin diseases |
| 68 | <i>Geranium nepalense</i> | Geraniaceae | Root | Renal diseases, cuts, jaundice, toothache, ulcer, wounds, stomach disorder |
| 69 | <i>Geranium ocellatum</i> | Geraniaceae | Whole plant | Diuretic |
| 70 | <i>Geranium wallichiana</i> | Geraniaceae | Root | Dysentery, diarrhoea, astringent, ear trouble, toothache |
| 71 | <i>Gerbera gossypina</i> | Asteraceae | Root | Menstrual disorder, blood pressure, gastric |
| 72 | <i>Hedera nepalensis</i> | Araliaceae | Leaf, flower | Rheumatism |
| 73 | <i>Hedychium spicatum</i> | Zingiberaceae | Root | Gastric trouble, asthma, vomiting, blood purifier, inflammation, liver complaints, etc. |
| 74 | <i>Hedychium accuminatum</i> | Zingiberaceae | Root | Dyspepsia, piles |
| 75 | <i>Heracleum candicans</i> | Apiaceae | Root, flower | Leucoderma, menstrual disorders |
| Sl | Species | Family | Part used | Diseases |
| 76 | <i>Hypericum cernuum</i> | Linaceae | Flower | Wounds, boils |
| 77 | <i>Impatiens gigantean</i> | Balsaminaceae | Aerial part, seed | Wounds, scarcity, burns |
| 78 | <i>Inula cappa</i> | Asteraceae | Root | Stomach-ache, dysentery, indigestion |
| 79 | <i>Ipomoea carnea</i> | Convolvulaceae | Leaf | Rheumatism, gout, cuts, boils |
| 80 | <i>Iris kumaonensis</i> | Iridaceae | Root, leaf | Urinary, kidney disorders, fever |
| 81 | <i>Litsea glutinosa</i> | Lauraceae | Bark | Bone fracture |
| 82 | <i>Litsea umbrosa</i> | Lauraceae | Seed | Skin diseases, wounds |
| 83 | <i>Malaxis muscifera</i> | Orchidaceae | Bulb | Wounds, bone fracture, burns |
| 84 | <i>Meconopsis aculeata</i> | Papaveraceae | Whole plant | Fever, renal pain, colic, backache |
| 85 | <i>Oxalis corniculata</i> | Oxalidaceae | Leaf, root, seed | Cuts, wounds, swelling, insect stings, snakes bite, scorpion sting, appetite, corns, dysentery, fever, jaundice, rickets, stomach-ache |
| 86 | <i>Rubia cordifolia</i> | Rubiaceae | Whole plant | Used to increase memory |
| 87 | <i>Swertia chirayita</i> Karst. | Gentianaceae | Whole plant | Used for blood purification |
| 88 | <i>Saussurea obvallata</i> | Asteraceae | Leaf | Paste of leaf applied to treat cut and wounds |
| 89 | <i>Valeriana jatamansi</i> | Valerianaceae | Root | Roots are used in hysteria, hypochondriasis, nervous unrest, and emotional troubles, carminative, sedative etc. |
| 90 | <i>Thalictrum foliolosum</i> DC | Ranunculaceae | Leaf, root | Diuretic, purgative, tonic dyspepsia ; valued for ophthalmia |
| 91 | <i>Rauwolfia serpentina.</i> | Apocynaceae | Whole plant | To control high blood pressure |
| 92 | <i>Ocimum sanctum</i> | Lamiaceae | | A handful of leaves boiled in water and the infusion taken orally till pain relief |

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References

- [1] Sheldon JW, Balick MJ and Laird SA, Medicinal Plants: Can utilization and conservation coexist? *Econ Bot*, 2000, 12: 1-104.
- [2] Anonymous, Traditional Medicinal Strategy Report, World Health Organization, Rome, 1992.
- [3] Lambert, J., Srivastava J. and Vietmeyer N, Medicinal plants. Rescuing a Global Heritage, The World Bank, Washington DC, 1997, P.61.
- [4] Sharma PP and Majumdar Am, Traditional knowledge of plants from Toranmal Plateau of Maharashtra, *Indian J Trad knowledge*, 2003,2: 292-296.
- [5] Bhatt I, Rawal D, Ranbeer S and Dhal U, The Availability, Fruit Yield, and Harvest of *Myrica esculanta* in Kumaun (West Himalaya), India, *Mountain Res Develop*, 2000, 20(2):146-153.
- [6] Rajasab, AH and Mahmad Isaq, Documentation of folk knowledge on edible wild plants of North Karnataka, *Indian J Trad Knowledge*, 2004,3(4):419-429.
- [7] Martin G, *Ethnobotany, A Methods Manual*, Chapman and Hall, London, 1995.
- [8] Cotton CM, *Ethnobotany: Principles and Applications*, John Wiley and Sons, Inc., 605 Third Avenue, New York, NY 10158-0012, USA, 1999.
- [9] Osmoston AE, *A forest flora for Kumaun*. International Book Distributors, Dehradun, India, 1927.
- [10] Babu CR, *Herbaceous flora of Dehradun*, Council of Scientific and Industrial Research, new Delhi, India, 1917.
- [11] Naithani BD, *Flora of Chamoli*, Botanical Survey of India, Howrah, Delhi, 1984.
- [12] Purohit AN and Samant SS, *Fodder trees and shrubs of central Himalaya*, Gyanodaya Prakashan, Nainital, 1995.
- [13] Jain SK, *Dictionary of Indian Folk Medicine and Ethnobotany*, Deep Publications, New Delhi, India, 1991.
- [14] Gaur RD, *Flora of District Garhwal, North West Himalaya with Ethnobotanical Notes*, Trans Media, Srinagar, Garhwal, India, 1999.
- [15] Kala CP, *Medicinal Plants of Trans Himalaya*, Bishen Singh, Mahendra Pal Singh, Dehradun, India, 2002.
- [16] Kala CP, Farooquee NA, and Majila BS, Indigenous knowledge and medicinal plants used by Vaidyas in Uttaranchal, India, *Natural Product Radianc*, 2005,4 (3):195-204.
- [17] Dash VB, *fundamentals of Ayurvedic Medicine*, Sri Satguru Publications, Delhi, India, 1999.
- [18] Nadkarni KM, *Indian Materia Medica*, Popular Book Depot, Bombay & Dhootapapeshwar Prakashan Ltd, Panvel, 2 vols, 3rd edn, revised & enlarged by A.K. Nadkarni, 1954, 1319 pp.

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In the Indian Himalayan Region (IHR), Medicinal and Aromatic Plants (MAPs) form one of the important components for the socio-economic development of native communities. Most of the MAPs are used in the Indian systems of medicine, pharmaceutical and oil industries and have great potential as an income-generating resource. In view of the importance of MAPs, the present study was conducted to: study the diversity, distribution and utilization patterns; identify nativity, endemism, indigenous uses, rarity and propagation methods; review phytochemistry; and suggest phytochemical investigations, an The Indian Himalayan Region (IHR) harbors a wide variety of medicinal plants. However, there have been minimal documentations of medicinal plants from many protected areas of the IHR. Kanawar Wildlife Sanctuary (KWLS), a part of North Westerns Himalaya, supports a large number of sensitive biodiversity elements including medicinal plants which is being utilized by local inhabitants for curing ...^Â Considering the importance of medicinal plants wealth and gradually decreasing traditional knowledge, an attempt has been made to; i) assess diversity and distribution pattern of medicinal plants in KWLS; (ii) analyse medicinal plants for nativity and endemism; (iii) document indigenous uses and traditional practices; and (v) suggest strategy for the conservation and management. PDF | Himalayan forests are the most important source of medicinal plants, which are used by local people. Renuka Forest Division (RFD) lies in Sirmaur | Find, read and cite all the research you need on ResearchGate.^Â utilization of plants for medicinal purposes in India has. been documented long back [3]. However, organized. studies in this direction were initiated in late fifties [4]. and off late such studies are gaining recognition and. popularity due to loss of traditional knowledge and. declining plant population. A great amount of. traditional knowledge about the use of medicinal plant. species is still carried and orally transmitted by.^Â knowledge and folk use of medicinal plants by. the tribal communities of Hazar Nao Forest, Malakand District, North Pakistan.