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Studies on traditional medicinal plants in mid Himalayan region of Himachal Pradesh

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Abstract
The present investigation "Studies on Traditional medicinal plants in mid Himalayan region of Himachal Pradesh" was undertaken to study the traditional medicinal plants wealth of the area which lies between 31º-5´ and 31º-10´ North latitudes and 77º-22´-30´´ and 77º-30´´ East longitudes of theog forest division. This area is mostly situated in the west of Shimla District and comes under Theog and Kotkhai Sub-divisions. The traditional medicinal uses of 48 species have been documented, based on the interactions with herbal healers, local Vaids, rural women, graziers and old experienced and knowledgeable informants. There is a great scope for further pharmacological research on some of these species. It is of prime importance to document the existing plant resources, which would be beneficial in formulating policies for their sustainable use, conservation and propagation. This fundamental approach of local inventory will help to enrich and strengthen the holistic approach of national and global biodiversity enumerations.

Keywords: Ethnobiology, traditional medicine, medicinal plants

Introduction
Plants are used by man for medicinal purposes since time immemorial. Ethnobiology encompasses the entire studies concerning plants which describe local people's interaction with the natural environment (Martin, 1995) [14]. This interaction has been classified by Jain (1995) [10] into two categories, *viz.* abstract and concrete. The former aspect includes taboos, avoidance, sacred plants, worship and folklore while the latter mainly deals with the material use and the acts of domestication, conservation, improvement or destruction of plants. More importantly, this study of the plants in relation to people includes both the wild and domesticated plants (Heiser, 1995) [7].

"There is no man on this earth who is incompetent and there is no plant which is of no medicinal use. Where everything is present, in fact, a man to manage them properly is seldom available" (Prabhuji *et al*., 2005) [19]. The man has been dependent on nature, particularly on the plants for its sustenance and survival since his existence on the earth. In ancient times, he knew how to relieve his sufferings by using the plants growing around him. The civilizations' records shows that a number of drugs used today were already in use during ancient times. The credit goes to Indian Rishies and Physicians, who were acquainted with a large number of medicinal plants compared to the other countries in the world. The *Materia Medica* of the Greeks, Romans, Egyptians, Babylonians, Persians, Chinese and Arabians did not possess extensive uses and knowledge of medicinal plants and drugs as compared to Indian *Materia Medica* (Dhiman, 2005) [6]. Indian diversity in medicinal flora is unmatched. In India, medicinal plant sector has traditionally occupied an important position in the socio-economic, cultural and spiritual arena of rural and tribal lives and over 7,500 medicinal species are being used by 4,635 ethnic communities for human and veterinary healthcare across the various ecosystems. Himachal Pradesh has been regarded as a veritable emporium of plant genetic resources majoring in medicinal and aromatic plants. There is an urgent need to identify our natural wealth, study it and make the people aware to know their utilities and its repercussions if they extinct. The exploration is so much important otherwise many more unexplored species will disappear forever without knowing their existence in nature, (Singh and Parabia, 2003) [28]. With the inception of participatory approaches and recognition of local knowledge systems in community-level development and conservation programmes, progressive change has taken place in the way applied traditional medicinal research is conducted (Rastogi, 1999) [22]. The search for biologically active compounds to combat new and existing diseases is ongoing and the plants have often been targeted as part of this search because they contain an abundance of potentially active secondary metabolites (Lavekar, 2006) [13]. There are a large number of herbs, shrubs and trees in the tract yielding products of medicinal importance and the local

people have rights for extraction of these medicinal plants but their exploitation is not systematic and scientific. There is no proper record available about the inventory of plant diversity of this study area and no systematic information has been documented about indigenous traditional medicinal knowledge. The study was carried out to gather knowledge about the different medicinal plants and their uses to conserve the traditional medicinal wisdom of the area.

Material and Methods

The study area, Theog Forest Division, lies between North latitudes 31º-5´ and 31º-10´ and East longitudes 77º-22´-30´´ and 77º-30´. This area is mostly situated in the west of Shimla District and comes under Theog and Kotkhai Sub-divisions. In the north there is Kotgarh Forest Division, in the east Rohru Forest Division, in west Shimla Forest Division and in south Rajgarh and Chopal Forest Divisions. The total geographical area of the division is 64000 ha (512 Km²), out of which 32045.10 ha, i.e. 50.07 per cent of the total geographical area is under tree cover.

To collect first hand information on new sources of drugs, foods and folk knowledge regarding conservation of biodiversity, intensive traditional medicine explorations were undertaken in villages falling under the jurisdiction of the division, during 2009-2010. The collected specimens were pressed in blotting sheets in the wooden or iron presses and were oven-dried afterwards. The macroscopic characters were taken into consideration for the identification and description of plant specimens. The nomenclature has been made up to date with the help of recent taxonomic literature. The information regarding the traditional knowledge, local uses of plants of the study area, local names, part(s) used, purpose for which it is used and mode of administration were recorded through interviews and discussion with respondents. For a better understanding of local customs, beliefs and uses of plants, different categories of people like family heads, herbal healers, local Vaids, rural women, graziers and old experienced and knowledgeable informants were interviewed. Festivals and other ceremonial occasions, where plants are sometimes used, were also attended and observed. Field research in ethnobiology includes survey, prolonged stay in the area of work, interviews and discussions with knowledgeable resource persons, travels in forests with local resource persons, festivals, markets and socio-religious ceremonies (Jain, 1989) [9].

Results and Discussion

Information has been collected about the medicinal importance of 48 species. The Latin name, local name, part used and the local uses of the plants have been enumerated in alphabetical order. These plant species are frequently used for curing various major and minor ailments of human beings and domestic cattle. The local people believe in the efficacy of these herbs along with the power of tantra and mantra, but the knowledge is restricted to very few elderly folks, who neither reveal it to outsiders nor to the younger generation. The documented information in the present study may prove useful for day-to-day health care systems for the people in general and is also expected to provide useful directions for the chemists and pharmacologists to undertake further research on these medicinal plants to explore the prospects for their exploitation on commercial scale and for the discovery of new drugs. The traditional medicinal plants encountered in the study area are as under:

Botanical name : ***Abies pindrow* Royle** (Pinaceae)
Local name : Thaneira, Tosh
Part(s) used : Leaves
Uses : The paste of the leaves is applied to the udder of the cow in symptoms of clotting of milk and swelling of udder.

Botanical name : ***Achyranthes aspera* Linn** (Amaranthaceae)
Local name : Puthkanda
Part(s) used : Roots, whole plant
Uses : The roots are used in a disease-condition, locally called as 'Baishanv', characterized by symptoms of continuous body-ache, especially in head, eyes and muscles; roots are crushed and put under teeth. The plant also finds use in a local ritual called as 'Karwa Havan', which is performed to ward-off evil spirits.

Botanical name : ***Adiantum venustum* D. Don** (Adiantaceae)
Local name : Dumni
Part(s) used : Stipe
Uses : The stipe of the plant is used after piercing of ears and nose, as it is considered to have antiseptic properties.

Botanical name : ***Ajuga bracteosa* Wall. *ex* Benth.** (Lamiaceae)
Local name : Ratpacha, Nilkanthi
Part(s) used : Leaves
Uses : The leaves are crushed and made into a paste, and applied as a cure for piles. Crushed leaves along with 'desi-ghee' are given to cattle in cold.

Botanical name : ***Aloe barbadensis* Mill.** (Liliaceae)
Local name : Gwar-patha
Part(s) used : Leaves

Uses : The inner flesh of succulent leaves (after thorough washing) and tender inflorescences are made into vegetable. Inner flesh of leaves is also applied in case of severe itch in head, and after heating on abscesses, ulcers and pimples.

Botanical name : ***Artemisia roxburghiana* Wall. *ex* Besser** (Asteraceae)
Local name : Chhambar
Part(s) used : Leaves
Uses : The leaf-paste is applied on burns and wounds. Leaves also find their use in offerings to Lord Shiva on the occasion of 'Mahashivratri' festival.

Botanical name : ***Bauhinia variegata* Linn.** (Caesalpiniaceae)
Local name : Kachnar, Karail
Part(s) used : Floral buds, wood, leaves
Uses : Tender floral buds are made into vegetable and pickle. Wood is burnt and made into charcoal, which is used to cleanse teeth and get relief from the toothache; also believed to kill tooth-germs.

Botanical name : ***Berberis lycium* Royle** (Berberidaceae)
Local name : Kamashal
Part(s) used : Roots, fruits
Uses : Fruits are edible. Roots are boiled in water until the total volume reduces to one-third. The resulting decoction is locally called as '*Rasout*' and finds its application in eye-troubles and in piles.

Botanical name : ***Bergenia ciliata* (Haw.) Sternb.** (Saxifragaceae)
Local name : Dhakochru
Part(s) used : Rhizome
Uses : The root-paste is mixed with mustard oil and applied as a cure for piles.

Botanical name : ***Cissampelos pareira* Linn. var. *hirsuta* (DC.) Forman** (Menispermaceae)
Local name : Patendu, Patha
Part(s) used : Leaves, roots
Uses : Leaves are given to calves along with butter or cereals, in case of diarrhoea. The roots are given to the cattle in case of rheumatism.

Botanical name : ***Daphne papyracea* Wall. *ex* Steud.** (Thymelaeaceae)
Local name : Bursha
Part(s) used : Roots, stem
Uses : Roots or stem is crushed and applied to the gums, to assist in extraction of teeth.

Botanical name : ***Desmodium elegans* DC.** (Papilionaceae)
Local name : Mooti
Part(s) used : Leaves
Uses : The leaves are used as a fodder; considered to increase milk and butter yield.

Botanical name : ***Dioscorea deltoidea* Wall. *ex* Griseb.** (Dioscoreaceae)
Local name : Radkh
Part(s) used : Rhizomes
Uses : Used for washing woollen articles and also as medicine.

Botanical name : ***Ficus palmata* Forssk.** (Moraceae)
Local name : Phegra
Part(s) used : Latex, fruits, leaves, wood
Uses : Milky latex is applied as a cure for warts. Fruits are edible. It yields a good quality fodder and fuelwood.

Botanical name : ***Ficus sarmentosa* Buch.–Ham. *ex* J. E. Smith** (Moraceae)
Local name : Kamedu
Part(s) used : Leaves, fruits
Uses : The leaves and twigs are fed to milch-cattle, as it is considered to increase the yield of butter from the milk. Fruits are edible.

Botanical name : ***Fumaria indica* (Hausskn.) Pugsley** (Fumariaceae)
Local name : Jhinchra
Part(s) used : Whole plant

Uses : It reportedly causes dysentery in cattle.

Botanical name : ***Galium aparine* Linn.** (Rubiaceae)
Local name : Barik-munjtu
Part(s) used : Whole plant
Uses : The plant is crushed and juice sieved through a clean cloth and applied into eyes; considered to have a cooling effect.

Botanical name : ***Geranium nepalense* Sweet** (Geraniaceae)
Local name :
Part(s) used : Roots
Uses : The red coloured roots are kept in mouth between the teeth to get relief from intermittent fever and body ache.

Botanical name : ***Gnaphalium affine* D. Don** (Asteraceae)
Local name : Nanehi
Part(s) used : Whole plant
Uses : Dried plants are pulverized and the plant dust is taken from nose to cure the nasal infections.

Botanical name : ***Grewia optiva* J. R. Drumm. *ex* Burret** (Tiliaceae)
Local name : Beol
Part(s) used : Leaves, wood, bark of young branches
Uses : The best quality fodder in winters, especially for milch-cattle, when there is scarcity of green fodder. Wood is used for making agricultural implements; also, gives excellent quality fuelwood. Bark of young branches yields a good quality fibre after retting, which is used in rope-making.

Botanical name : ***Imperata cylindrica* (Linn.) P. Beauv.** (Poaceae)
Local name : Kusha
Part(s) used : Whole plant
Uses : The grass is used in ritual ceremonies. The wood of Juniper and Tulsi (*Ocimum* sp.) are tied with Kusha and burnt with the pyre.

Botanical name : ***Iris nepalensis* D. Don** (Iridaceae)
Local name : Shalbo
Part(s) used : Leaves
Uses : The leaves are boiled and used for fomentation of body parts having pain, sprain or swelling.

Botanical name : ***Juglans regia* Linn.** (Juglandaceae)
Local name : Akhrot
Part(s) used : Nuts, root-bark, stem-bark, twigs, leaves
Uses : Nuts are edible; also used in worship. Root and stem bark, leaves and twigs are used in tooth-cleaning and to relieve tooth-ache.

Botanical name : ***Justicia adhatoda* Linn.** (Acanthaceae)
Local name : Bainshta
Part(s) used : Leaves, twigs, roots, flowers
Uses : Leaves along with twigs are boiled and used as fomentation in joint sprains. The roots are dried and powdered, and these pulverized roots are mixed with Caraway (Ajwain) and Fenugreek (Methi) and taken two times a day along with water, in case of a disease condition locally called as 'Baishanv' characterized by symptoms of continuous pain in head and eyes, and muscular spasm. Twigs are used as tooth-brush. Leaves are used as a manure. Flowers are rich in nectar and are sucked by children for its sweet taste.

Botanical name : ***Mallotus philippensis* (Lam.) Muell.-Arg.** (Euphorbiaceae)
Local name : Kaimbal, Kungu
Part(s) used : Fruits
Uses : The mature fruits are washed in a container of water, and this water is used for cleaning the injured body parts and infected eyes of the cattle. The reddish, thick and powdery covering on mature fruits was used as vermilion by the ladies in earlier times.

Botanical name : ***Malva veticillata* Linn.** (Malvaceae)
Local name : Beoli
Part(s) used : Roots
Uses : The roots are crushed and given to cow, at the time of parturition to effect ease in delivery.

Botanical name : ***Melia azedarach* Linn.** (Meliaceae)
Local name : Jek
Part(s) used : Fruits, wood
Uses : The fruits are used in making an ointment for brides. The wood is light and used for making coupling-apparatus for bullocks, used in ploughing.

Botanical name : ***Phytolacca acinosa* Roxb.** (Phytolaccaceae)
Local name : Jalga, Narail
Part(s) used : Leaves, young shoots
Uses : Leaves and succulent shoots are made into vegetable; considered to have a warming effect on the body and also a tonic.

Botanical name : ***Pistacia chinensis* Bunge subsp. *integerrima* (Stewart) Rech. f.** (Anacardiaceae)
Local name : Kakkar
Part(s) used : Galls, wood, leaves
Uses : Galls of some medicinal importance, produced on the leaves, called locally as 'Kakar-singhi', are collected and sold to the contractors. It also yields a moderate quality fuelwood. Leaves are used as manure.

Botanical name : ***Potentilla fragarioides* Linn.** (Rosaceae)
Local name : Banakru
Part(s) used : Leaves
Uses : Leaves are crushed, made into a paste and applied to cure the septic toes.

Botanical name : ***Punica granatum* Linn.** (Punicaceae)
Local name : Daru
Part(s) used : Roots, fruit-rind, fruits
Uses : Roots are crushed and boiled in water till its volume becomes half. This decoction is taken orally in early morning on an empty stomach, as a cure for stomach-worms. Fruit-rind is boiled and after adding salt to this decoction, it is applied to cotton clothes, giving black colour to the cotton. Fruits are edible; generally, kernels are dried and sold in the market by the name '*Anar-dana*', which is used in making chutney and as a flavouring agent in various food items.

Botanical name : ***Pyrus pashia* Buch.-Ham. *ex* D. Don** (Rosaceae)
Local name : Kainth
Part(s) used : Fruits, wood, leaves
Uses : Fruits are edible. Fruits are crushed and given along with cereals to the cattle, in case their rectum protrudes out. Wood is used for making agriculture implements and tool handles. Leaves are used as a fodder. The plant is used as a rootstock for Pear (*Pyrus communis*).

Botanical name : ***Rosularia rosulata* (Edge.) Ohba** (Crassulaceae)
Local name : Mushe-re-kan
Part(s) used : Leaves
Uses : Leaf-paste is applied on the burns.

Botanical name : ***Roylea cinerea* (D. Don) Baillon** (Lamiaceae)
Local name : Chhoti-karwi, Dargu
Part(s) used : Bark, roots, leaves
Uses : The bark is made into tea. The roots and leaves are made into a decoction, which is used to cure intermittent fever and body-ache.

Botanical name : ***Rubia cordifolia* Linn.** (Rubiaceae)
Local name : Munjtu, Manjith
Part(s) used : Roots
Uses : The roots are finely ground and the paste applied to the affected part in case of skin infections.

Botanical name : ***Rubus ellipticus* Sm.** (Rosaceae)
Local name : Heinra
Part(s) used : Root-bark, fruits
Uses : Root-bark is used in preparation of good quality liquor, which is reportedly mild in action. Fruits are edible.

Botanical name : ***Rumex nepalensis* Sprengel** (Polygonaceae)
Local name : Marmaila
Part(s) used : Roots, leaves
Uses : The paste of its roots, clay and horse droppings is applied to the affected part in case of dislocation of bones in cattle. The leaves are also rubbed on the affected part of the skin to relieve the stinging sensation, happening as a result of inadvertent contact with the Stinging-Nettle (*Urtica dioica* Linn.).

Botanical name : ***Salvia lanata* Roxb.** (Lamiaceae)
Local name :
Part(s) used : Flowers
Uses : The flowers are eaten; considered to have a cooling effect on the body.

Botanical name : ***Sapindus mukorossi* Gaertn.** (Sapindaceae)
Local name : Doda, Ritha
Part(s) used : Fruits
Uses : Fruit rinds are used for washing hairs and woolen clothes.

Botanical name : ***Solanum myriacanthum* Dunal** (Solanaceae)
Local name : Ban-bhata
Part(s) used : Seeds
Uses : The seeds are toxic and used by some people as a sedative.

Botanical name : ***Taraxacum officinale* Weber *ex* Wiggers** (Asteraceae)
Local name : Dudhli
Part(s) used : Roots
Uses : Root-paste is used in dog-bite.

Botanical name : ***Taxus baccata* Linn. subsp. *wallichiana* (Zucc.) Pilger** (Taxaceae)
Local name : Thuna
Part(s) used : Bark
Uses : The decoction of bark is refreshing and used as a substitute for tea.

Botanical name : ***Thalictrum foliolosum* DC.** (Ranunculaceae)
Local name : Pili-jari
Part(s) used : Roots
Uses : Roots are crushed and given two times a day, either mixed in water or along with cereals, in a disease condition of cattle characterized by passing-out of reddish urine.

Botanical name : ***Urtica dioica* Linn.** (Urticaceae)
Local name : Bichhu-buti
Part(s) used : Roots, tender shoots
Uses : Roots are crushed and given with feed to milch-cattle to increase the milk yield. Tender shoots are cooked as a vegetable.

Botanical name : ***Viola canescens* Wall.** (Violaceae)
Local name : Banaksha
Part(s) used : Flowers
Uses : The crushed flowers are taken along with butter as a cure for tonsillitis. A decoction of flowers is made to get relief from cold.

Botanical name : ***Woodfordia fruticosa* (Linn.) Kurz** (Lythraceae)
Local name : Dhavsha
Part(s) used : Roots, Wood
Uses : Roots of the plant + Treacle (Gur) + Oat (Jai) are made to ferment and thereafter made into liquor, which is considered to be very strong in action. The plant also yields a good quality fuelwood.

Botanical name : ***Zanthoxylum armatum* DC.** (Rutaceae)
Local name : Timbra
Part(s) used : Twigs, wood
Uses : The twigs are admired as the best quality tooth-brush, and are used in tooth-ache. The wood is most preferred for making mortar and pestle by the local physicians and also for household use.

Botanical name	**:**	***Zizyphus mauritiana* Lamk.** (Rhamnaceae)
Local name	**:**	Ber
Part(s) used	**:**	Roots, fruits
Uses	**:**	The roots are used in the production of local liquor. Fruits are edible.

In India, Dr. E.K. Janaki Ammal initiated the studies on ethnobotany. "The Nature and Status of Ethnobotany" by Jain (1981) [8] is the first book dealing with Indian ethnobotany (Trivedi, 2002) [30]. Panda *et al.* (2005) [16] described the plants used by the Kandha tribe in the Mantriguda valley in Orissa, for various purposes. Also, they have added that those tribals fully depend on the indigenous flora and fauna for medicines. Similar studies were conducted by Sarmah *et al.* (2006) [23] on the ethno-medico-botany of Chakmas inhabiting the north-western periphery of the Namdapha National Park in Arunachal Pradesh which is one of the largest reservoirs of plant biodiversity in the North-East India. They have documented the medicinal use of 63 plant species belonging to 38 families used in different ailments by the Chakma community since a large number of medicinal plants, rare and endemic taxa occur there in the wild which they collect from the park area for their day-to-day life.

Pandey and Kumar (2006) [18] surveyed and revealed that as many as 117 plant species were being used as medicines by tribals/rural people of Vindhyan region. Likewise, Bhatt and Negi (2006) [2] reported that 66 species of plants are being used ethno-medicinally by the Jaunsari tribe of Garhwal Himalaya, Uttarakhand. Khare and Manjusha (2007) [11] conducted a survey to determine the ethnomedicinal importance of some plant species for human healthcare among the people of Chhatarpur District in Madhya Pradesh, which include *Ocimum canum, Costus speciosus, Aegle marmelos, Cassia fistula, Lantana camara, Ficus racemosa, Equisetum arvense, Cassia tora, Kalanchoe pinnata, Boerhavia diffusa, Argemone mexicana, Aloe barbadensis, Achyranthes aspera, Mirabilis jalapa* and *Cajanus cajan*. Raja *et al*. (2007) [20] studied the anti-venom effect of some herbal plants used by the Kani tribe, inhabiting mainly in Agastya forest bordering Tamil Nadu.

A total of 11 species were recorded, which were used as anti-venom against snake bites (*Anaphyllum beddomei, Gloriosa superba, Musa paradisiaca, Indigofera tinctoria, Moringa oleifera, Clitoria ternatea* and *Aristolochia indica*), spider bites (*Ruellia patula* and *Ocimum sanctum*) and scorpion bites (*Leucas aspera* and *Erythrina stricta*). In the similar way, Chiranjibi *et al*. (2007) carried out ethnobiological survey of some tribal areas of Malkangiri district in Orissa and revealed that 34 plant species are used by the tribals for cure of various diseases. They have discussed all the plants along with their uses, botanical names with family, local names, plant parts used and medicinal preparation along with dosage and mode of administration. Thakur (2007) [29] studied the diversity of medicinal and aromatic plants of Pangi Valley in Chamba District of Himachal Pradesh and collected a total number of 241 plant species belonging to 151 genera and 56 families.

Ethno-medicinal value of 45 plant species has also been documented. In the similar way, Urvashi (2009) [31] carried out the inventorization of medicinal and aromatic plants of Daranghati Wildlife Sanctuary in Himachal Pradesh and collected a total of 214 species belonging to 168 genera and 78 families. Basant *et al*. (2008) [1] conducted studies to document the ethno-medico-botanical information and traditional use of medicinal plants against kidney and urinary disorders, and thus to conserve the rapidly disappearing traditional knowledge system of Amchis of Ladakh. The information was collected from 105 villages of Leh and Kargil districts of Ladakh region by involving 47 Amchis (the herbalists), village heads and old aged persons including women. The use of 68 medicinal plants belonging to 29 families and 58 genera of cold desert was documented against the treatment of kidney and urinary disorders in the tribal communities of Ladakh region in India.

Chauhan (1974) [3] reported the use of *Ainsliaea aptera* DC. for curing acute gastritis by the Gujjars, Gaddies and Vaids residing in the remote parts of Himachal Pradesh. On the similar lines, Uniyal and Chauhan (1979) identified and reported 30 Indian medicinal plants being used in Tibetan medicines at Tibetan Medical Centre, Dharamshala, District Kangra (HP). Chauhan (1997) [5] documented the ecological and traditional medicinal studies on the flora of Spiti. Out of 477 identified species, 74 have been categorized as medicinal and aromatic plants of commercial significance, while 104 plant species are reported with their traditional medicinal utilisation. In the similar course, Sharma (1998) [26] undertook traditional medicinal studies of Gaddies- a tribal community in district Kangra of Himachal Pradesh. He collected 161 species belonging to 124 genera and 52 families. The information about the traditional uses of 67 plant species has been appended to the study. In addition, Sharma (2002) [27] has given information on the traditional uses of about 100 plants from the different parts of Parvati valley in Himachal Pradesh. Pandey *et al.* (2004) [17] have enumerated some potential economic plants of Mandi District in Himachal Pradesh. On the other hand, Sharma and Brij (2005) have provided information on the indigenous therapeutic application and other traditional uses of 9 plant species (*Achillea millefolium, Angelica glauca, Hyssopus officinalis, Juniperus communis, Origanum vulgare, Taraxacum officinale, Thymus linearis, Valeriana jatamansi* and *Viscum album*) that are used by the natives of Himachal Pradesh. Sharma *et al.* (2006) [25] documented the first hand information obtained from traditional doctors and elderly on the medicinal uses of 26 plant species during a survey conducted in the cold desert areas of Himachal Pradesh.

Elsewhere, Arvind *et al*. (2006) [18] did study the ethno-medico-botany of some important plants in Mandhala watershed of Himachal Pradesh which lies at an altitudinal range of 500-1400 m in Solan district of Himachal Pradesh. Likewise, ethno-medico-botanical studies were conducted at Kunihar Forest Division of District Solan and a total of 256 species belonging to 80 families and 213 genera have been recorded (Saroj, 2000; Saroj and Chauhan, 2006). Viraj Man and Chauhan (2009) carried out extensive field survey of the tribal district Kinnaur of Himachal Pradesh and have discussed the ethnobiological uses of a total of 103 species. In the similar studies, Rajasekaran and Joginder (2009) [21] presented a detailed ethnobiological description of Indian horse chestnut (*Aesculus indica*) collected from Chuwar valley of Mandi district in Himachal Pradesh, and described the traditional method of preparation of '*tattwakhar'* flour from the seeds of this tree.

Conclusion

In the present era, giving significant importance to the studies on plants with special reference to their utility and medicinal

value in coherence with the early references on them in ancient Indian texts would be beneficial for the humanity as a whole. This is to emphasize that the task of identification and botanical establishment of those plants is of prime importance, and can be fulfilled by their extensive survey in different zones of the country and make their best possible use for medicinal as well as other economic purposes. Such studies will also help in bringing up many more species not known hitherto in the Indian flora. The information on 48 plant species has been documented based on their traditional uses as medicine. It is of prime importance to document the existing plant resources, which would be beneficial in formulating policies for their sustainable use, conservation and propagation of these plants.

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