



# ETHNOBOTANICAL STUDY OF WILD MEDICINAL PLANTS USED BY LOCAL PEOPLE OF TIRTHAN VALLEY IN DISTRICT KULLU OF HIMACHAL PRADESH, INDIA

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## Abstract

Use of medicinal plants by ancient people and inheritance of this information from one generation to next has led to the study of relationship between humans and plants. The most important component of indigenous knowledge is traditional use of local floristic diversity which is widely practiced by people around the world from the time immemorial. Indian Himalayan region with its unique topography, large altitudinal range, glaciations and diverse habitats is one of the biodiversity hotspots in the world. Himachal Pradesh, located in the lap of Himalayas has diverse climatic conditions due to wide altitudinal variation and therefore is bestowed with a vast variety of plants used for various ethnobotanical purposes. Tribal people living in the foothills of Himalayas are highly dependent on local plants for various ethnobotanical uses like food, fodder, medicines fuel and fiber. Present study enlists medicinal plants used by rural people for various purposes in the Tirthan valley which falls in Kullu district of Himachal Pradesh. This information can be used to systemize health care programs, to explore various useful medicinal plant species and at the same time to design for their conservation strategies.

**Key words:** Topography, Himalayan, Ethnobotanical, Medicines and Conservation.

## Introduction

Herbal medicines are getting popularized in the modern world due to their natural origin (Sharma and Samant, 2013; Radha *et al.*, 2019a; Radha 2019b). Use of medicinal plants by ancient people and handing over the uses from one generation to next generation by tribal people led to the study of plants covered under ethnobotany, where relationship between humans and plants can be taken care of in health care programs and also for exploration of various lives supporting species (Radha and Puri, 2019c). It also studies useful information about socio-cultural, medico-religious lures and more, phrases and proverbs, taboos and totems prevailing in an area or in a society (Sharma *et al.*, 2014; Radha and Puri, 2019d).

However, the indigenous knowledge of wild edible plants is diminishing rapidly but their use still persists in many parts of the world and it is crucial for sustainable utilization and conservation of these plant species (Rodgers *et al.*, 2002; Sawian *et al.*, 2007; Ali-Shtayeh, 2008; Radha and Puri, 2019e; Radha and Puri, 2019f). The present study focuses on the ethnobotanical study of some of the important medicinal plants of five villages of Tirthan valley *viz.* Shoja, Jibhi, Sairopa, Gushaini and Bathad. Main occupation of the villagers in the study area is agriculture and most of the families also rear livestock (goats and sheep). The whole valley is richly endowed with a vast variety of medicinal plants. Collection of medicinal plants has been the only traditional occupation of the locals. These people know the art of identification and extraction of medicinal plants and go to higher altitudes from May to October.

## Material and Methods

### Study Area

Himachal Pradesh has a network of 34 protected areas covering about 7214.36sq. km or ca 12.95 percent of the total geographical area of the State. This includes two National Parks, *viz.* the Great Himalayan National Park (GHNP) and the Pin Valley National Park (PVNP) and 32 Wildlife Sanctuaries (Rodger *et al.*, 2002). Of the two national parks, GHNP is located in the biogeographical province O2A between the coordinates 31°38' 28" to 31° 51' 58" N latitudes and 77°20' 11" to 77°45' 52" E longitudes in the Kullu district of Himachal Pradesh. The altitude of the area ranges from 1344 m to 6205 m from mean sea level. The park along with Sainj Wildlife Sanctuary, Tirthan Wildlife Sanctuary and Eco-development zone together constitute the Great Himalayan National Park Conservation Area (GHNPCA) (Das *et al.*, 2017). The study area lies in Tirthan valley which is in Kullu district.

### Data collection

A questionnaire containing the vernacular name, plant habit, part/parts used, mode of application and medicinal uses was prepared for documentation of the ethnomedicinal details. To gather on this information, personal interviews were conducted with local residents, medicine men and some local practitioners. 52 villagers were interviewed and 32 medicinally important plants used by locals to treat various ailments in the study area were enlisted and documented according to the information provided by the villagers. Herbarium was prepared and the plants were identified by Botanical Survey of India, Dehradun, Uttarakhand.

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## Results and Discussion

In all 32 medicinally important plants were collected and documented from the study area. Out of these 32 plants, 19 plants used by locals as medicines were herbs, 7 were trees and 6 plants were shrubs. These documented plants used ethnomedicinally for various purposes belonged to 25 different families. Maximum genera used belonged to families Asteraceae and Berberidaceae followed by families Rosaceae, Rutaceae, Ranunculaceae, Achyranthaceae, Acoraceae, Acanthaceae, Sapindaceae, Lamiaceae, Apiaceae, Betulaceae, Dioscoreaceae, Urticaceae, Zingiberaceae, Fabaceae, Juglandaceae, Lamiaceae, Phytolaccaceae, Rubiaceae, Polygonaceae, Taxaceae, Valerianaceae, Violaceae and Fagaceae (Table 1).

Leaves of 13 plants, roots of 9, bark of 9, fruits of 4, flowers of 3, rhizomes of 3, seeds of 2 and twigs of 2 plants were used ethnomedicinally. The common diseases/ailments treated were cough and cold, fever, sore throat, muscle sprains and joint pains, wounds and boils, toothache, jaundice, urinary problems, acidity, diarrhea, dysentery, hypertension, urinary problems, intestinal worms, skin problems, asthma, heart ailments and insect bites. Traditional practices of the plant resources for medicine, wild edible, fodder, fuel, timber, agricultural tools, religious and various other purposes are very popular among the inhabitants of the study area. The unsustainable harvesting such as uprooting of whole plant for medicinal use purposes from the wild is resulting into a serious decline in plant populations of the medicinal plants. Therefore, various cultivation techniques should be designed and employed.

## Conclusion

Further, information collected on ethnobotanical aspects of plants of high medicinal utility can be helpful in the selection and preservation of gene pool of these highly medicinally important and endangered plant species for future plantation programs that can help in sustainable development of the valley.

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**Table 1: Ethnomedicinal plants used in study area**

| S. No. | Botanical Name              | Family         | Vernacular Name | Habit | Part Used        | Mode of application and medicinal uses  |
|--------|-----------------------------|----------------|-----------------|-------|------------------|---|
| 1      | <i>Achillea millefolium</i> | Asteraceae     | Chabu/Merri     | H     | Leaves and Roots | Leaves are used to cure cough and cold, roots are used for treating mouth sore  |
| 2      | <i>Achyranthesa spera</i>   | Achyranthaceae | Puthkanda       | H     | Stem and Roots   | Fresh stems are chewed to cure toothache, roots paste is applied to cure joint pain   |
| 3      | <i>Acorus calamus</i>       | Acoraceae      | Bare            | H     | Rhizomes         | Dry rhizomes are grounded to make Powder and is taken orally to cure stomachache, fresh rhizomes are inhaled to cure cold and nasal allergy |

|    |                                  |                |                      |   |                              |  |
|----|----------------------------------|----------------|----------------------|---|------------------------------|--|
| 4  | <i>Adathoda vesica</i>           | Acanthaceae    | Bashti               | S | Leaves                       | Decoction of leaves is used to cure cough, cold and fever  |
| 5  | <i>Aesculus indica</i>           | Sapindaceae    | Khanor               | T | Bark and seeds of the fruits | Dried seeds of the fruits are ground into flour and is used as tonic for ladies, bark paste is applied to cure dislocated joints |
| 6  | <i>Ajuga bracteosa</i>           | Lamiaceae      | Neelkanthi           | H | Leaves                       | Juice of the leaves is taken to cure hypertension  |
| 7  | <i>Angelica glauca</i>           | Apiaceae       | Chaura               | H | Roots                        | Extract of roots is used to cure gastric problems  |
| 8  | <i>Artemisia vulgaris</i>        | Asteraceae     | Nagdana              | H | Whole plant                  | Leaves are used to cure nasal allergies, root powder is taken for curing breathing problems                                      |
| 9  | <i>Alnus nitida</i>              | Betulaceae     | Kosh                 | T | Bark                         | Paste of bark is applied to treat swellings and body pain  |
| 10 | <i>Berberis aristata</i>         | Berberidaceae  | Kashmal/<br>Kashmale | S | Flowers and fruits           | Fresh or dried flowers are used to cure jaundice, fruits are used to cure acidity  |
| 11 | <i>Berberis lycium</i>           | Berberidaceae  | Kashmal              | S | Fruits and Leaves            | Fresh leaves and fruits are used to cure acidity, decoction of root is taken with honey to cure jaundice                         |
| 12 | <i>Cotoneaster microphyllous</i> | Rosaceae       | Chamyor              | S | Fruits                       | Fruits are used to cure intestinal worms   |
| 13 | <i>Delphinium denudatum</i>      | Ranunculaceae  | Nirvisi              | H | Roots                        | Powder of the roots is used in liver disorders   |
| 14 | <i>Dioscorea deltoidea</i>       | Dioscoreaceae  | Shingli-<br>mingli   | H | Roots                        | Juice of roots is used to cure roundworms and constipation   |
| 15 | <i>Gerardinia heterophylla</i>   | Urticaceae     | Kugus                | H | Leaves and twigs             | Leaves and soft twigs are cooked and consumed to cure jaundice and to purify blood   |
| 16 | <i>Hydechium spicatum</i>        | Zingiberaceae  | JangliHaldi          | H | Rhizomes                     | Paste or dried powder of rhizomes is applied on wounds for quick healing, powder is consumed to purify blood                     |
| 17 | <i>Indigofera heterantha</i>     | Fabaceae       | Kali kathi           | S | Leaves and flowers           | Juice of leaves and flowers is used to cure diarrhea and dysentery   |
| 18 | <i>Juglans regia</i>             | Juglandaceae   | Akhrot               | T | Leaves and Bark              | Leaves and bark is used to cure tooth decay  |
| 19 | <i>Mentha longifolia</i>         | Lamiaceae      | Pudina               | H | Leaves                       | Leaves are taken as fresh or made into paste to cure indigestion, vomiting   |
| 20 | <i>Phytolacca acinosa</i>        | Phytolaccaceae | Jharka               | H | Roots                        | Extract of roots is used for the treatment of urinary disorders  |
| 21 | <i>Podophyllum hexandrum</i>     | Berberidaceae  | Ban Kakari           | H | Roots                        | Paste of the roots is used for relieving from stomach pain and gastric problems  |
| 22 | <i>Rubia cordifolia</i>          | Rubiaceae      | Masoos               | H | Roots                        | Powder of roots is used for the treatment of boils and skin troubles roots are also used to cure heart ailments                  |

|    |                                 |               |            |   |                    |   |
|----|---------------------------------|---------------|------------|---|--------------------|---|
| 23 | <i>Rubus ellipticus</i>         | Rosaceae      | Aakhe      | S | Fruits and bark    | Fruit juice is used to treat diabetes, bark juice is used to cure kidney problems, bark juice is also used to treat common cold and fever |
| 24 | <i>Rumex nepalensis</i>         | Polygonaceae  | Malori     | H | Leaves and twigs   | Leaves and twigs are consumed to treat acidity and to cure skin problems  |
| 25 | <i>Solidago virgaurea</i>       | Asteraceae    | Chhalak    | H | Flowers and leaves | Dried leaves and flowers are used for healing of wounds and to treat worm infections  |
| 26 | <i>Skimmial aureola</i>         | Rutaceae      | Nyaar      | T | Leaves and Bark    | Infusion of leaves is taken to cure headache, powder of bark is used for healing of wounds and burns                                      |
| 27 | <i>Taxus baccata</i>            | Taxaceae      | Rakhal     | T | Leaves and barks   | Leaves and barks are used to treat asthma and insect bites  |
| 28 | <i>Thalictrum foliosum</i>      | Ranunculaceae | Mamiri     | H | Roots              | Decoction of roots is used in eye disorders   |
| 29 | <i>Valeriana wallihchii</i>     | Valerianaceae | Mushakbala | H | Rhizomes           | Powder of rhizomes is used for muscle relaxation  |
| 30 | <i>Viola odorata</i>            | Violaceae     | Banafsha   | H | Flowers and leaves | Decoction of flowers and leaves is used to cure cough, cold and sore throat   |
| 31 | <i>Quercus leucotrichophora</i> | Fagaceae      | Baan       | T | Leaves, bark       | Leaves and bark powder is used for skin diseases and urinary problems   |
| 32 | <i>Zanthoxylum</i>              | Rutaceae      | Timru      | T | Twigs and          | Young twigs and seeds are chewed to relieve toothache, the seeds are also used to cure fever and cold                                     |