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Medicinal Plant Diversity in Tungal Valley of District Mandi, Himachal Pradesh (India)

Suresh Kumar and Praveen Kumar

Deptt. Of Botany, Abhilashi Institute of Life Sciences, Tanda, Nerchowk, Distt. Mandi (H.P.) INDIA
Email ID: shahriask@gmail.com

ABSTRACT: Medicinal plants constitute a major segment of the flora throughout the world which provides raw materials for use in the pharmaceuticals, cosmetics and drug industries. Himachal Pradesh, one of the pioneer Himalayan States is a rich repository of medicinal flora. People of the state inherit a wide range of traditions, dialects, beliefs and cultures. Indigenous communities living in the state rely, to a large extent, on native plant species for curing various ailments. Tungal Valley in Mandi District of Himachal Pradesh is richly endowed with a large variety of plant species, many of which have medicinal properties. A large proportion of the rural population in the region depends on locally available medicinal plants to meet their health care requirements. The study aims at documenting medicinal plant diversity in Tungal Valley.

Keywords: Medicinal Plants, Tungal Valley, Himachal Pradesh, Pharmaceuticals, Indigenous Knowledge.

INTRODUCTION

Medicinal plants are the most important source of life saving drugs for the majority of the world's population. It is estimated that 70-80% of people worldwide rely chiefly on traditional, largely herbal, medicines to meet their primary healthcare needs [1]. Medicinal plants are considered as rich resource of ingredients which can be used in drug development and synthesis. The chemical constituents present in them are a part of the physiological functions of living flora and hence they are believed to have better compatibility with the human body[2]. Approximately one quarter of prescribed drugs contain plant extracts or active ingredients obtained from or modeled on plant substances[3]. Most of these plant-derived drugs were originally discovered through the study of traditional cures and folk knowledge of indigenous people and some of these could not be substituted despite the enormous advancement in synthetic chemistry[4]. The high cost of modern medicines (mostly imported), their unavailability in remote areas and most importantly, the serious side effects of certain drugs, have resulted in a significant return to traditional medicine[5]. The global market value of pharmaceuticals derived from genetic resources is estimated at US$ 75000–150000 million annually[6]. The demand for medicinal plant based raw materials is growing at the rate of 15 to 25% annually, and according to an estimate of WHO, the demand for medicinal plants is likely to increase more than US $5 trillion in 2050. In India, the medicinal plant-related trade is estimated to be approximately US $1 billion per year[7].

India is one of the 12 mega biodiversity centers having 45, 000 plant species; its diversity is unmatched due to the 6 different agro climatic zones, 10 vegetative zones, and 15 biotic provinces. The country has a rich floral diversity[8]. There is a vast indigenous knowledge on the use of medicinal plants. The Himalayas including North East India harbor about 8,000 plant species of which 2,500 (21.3%) have been reported to have important medicinal properties[9]. For the Indian Himalayan Region, a total of 1748 species of medicinal plants - 1020 herbs, 338 shrubs, 339 trees, apart from 51 pteridophytes – have been listed. These include several of the endangered medicinal plant species[10].

The herbal medicine is gaining wide acceptability and the documentation of valuable indigenous knowledge about medicinal plant species is assuming urgent priority[11, 12]. Indigenous societies all over the world in different geographical regions have discovered multiple uses of natural resources around them in

the form of traditional knowledge[13]. Undeniably, traditional knowledge survives usually among the indigenous and local community as they maintain a balanced ecological rhythm in their surroundings. In this regard Chandra (1990) states: "These groups of people are not to be pitied for primitive existence; they rather deserve to be honoured and respected for their richness of human existence in harmony with nature"[14]. Traditionally, local communities worldwide are extremely knowledgeable about the local plant resources on which they are so intimately and immediately dependent. Indian region is also no exception as it has also been very rich in such traditional heritage and believed to evolve through sacred Vedas[15]. Unfortunately, much of the accumulated extraordinarily abundant knowledge on plants which have been acquired due to their long-term practices and handed down usually orally, from one generation to another, is dwindling because of the loss of their main culture and changes in sustenance economy[16]. With the disappearance of indigenous culture all over the world the biodiversity is also disappearing, and the loss is beyond retrieval. Therefore, the need of hour is to give priorities to activities related to documentation of this knowledge before it is being lost forever to posterity

MATERIAL AND METHODS

The general procedure for collecting the medicinally important plants was based on the field tours in different villages of Tungal Valley, District Mandi (Himachal Pradesh). Interviews and group discussion were held with medicine men, healers, family heads, old experienced people and many local informants for getting a better understanding of local herbal practices. The voucher specimens were collected and mounted as per the standard herborizing techniques[17]. The collected plant specimens were identified with the help of treatises on Indian flora. The information pertaining to botanical name, family, vernacular name, locality, part used, medicinal use and mode of administration was recorded in the field note book for future reference and use.

Study Area: Tungal Valley is located in Mandi District of Himachal Pradesh (Fig. 1) in the Mid-Himalayan Region and is situated between 31˚28′05″ to 31˚58′30″ North latitude and 76˚47′10″ to 77˚59′15″ East longitude. The region is having 10 Panchayats and 56 villages, located at an altitude range of 940m-1800m. Local inhabitants of the study area are mainly dependent on traditional farming, horticulture and dairy farming for their living. Forest produce also contribute to the economy of the area in the form of valuable timber for export and construction, grazing land, fodder for cattle and fuel wood resource

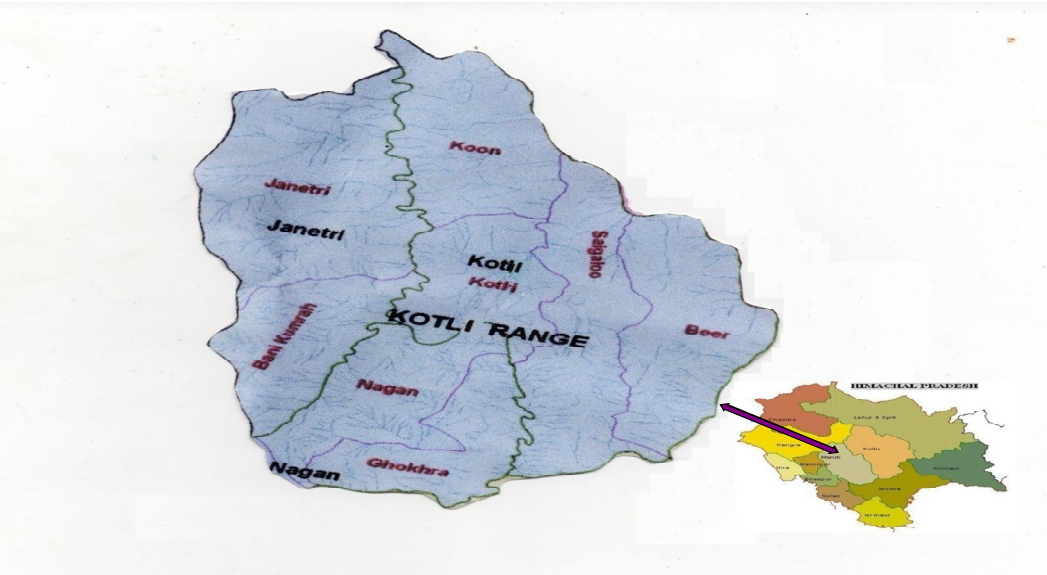

Fig. 1: Map of Study Area (Tungal Valley in Mandi District of Himachal Pradesh)

RESULTS AND DISCUSSION

The present study recorded 20 medicinal plants belonging to 17 families in Tungal Valley of District Mandi (H.P.). Of the recorded plant species in study area, herbs (9 spp) constituted the highest proportion of medicinal plants to be utilized followed by shrubs (5 spp), trees (3 spp) and climbers (3 spp). The collected plant species are used for curing various ailments like asthma, blood pressure, chest congestion, cough, cuts, dental problems, dysentery, furuncles, headache, insect bite, internal injury, mouth ulcer, pimples, skin disorders, stomach disorders, throat infection, urinary problems, vomiting and some diseases of cattle (Table 1). The plant parts used for making herbal preparations were the leaves, stem, roots, latex, whole plant, seeds, bark, flowers, rhizome, fruits and tuber. The leaves were most frequently used (44%), followed by stem (15%), roots and latex (7% each), whole plant, seeds, bark, flowers, rhizome, fruits and tuber (4% each) (Fig. 2). Majority of medicinal plant species were harvested for their leaves and utilization of leaves may not cause much harm to the local plant diversity in the region compared with plant species in which root is utilized.

Table 1: Medicinal Plants of Tungal Valley

Botanical Name	Family	Vernacular Name	Part/s Used	Use/s
Acorus calamus L.	Araceae	Barae	Rhizome & Leaves	Dried powdered rhizome prescribed to cure cough. Paste of rhizome applied on chest of the children to cure chest congestion and cough. Slightly warmed leaves applied to cure furuncles.
Ageratum conyzoides L.	Asteraceae	Ujadu gha	Stem & Leaves	Juice of stem and leaves applied to cure cuts.
Ajuga bracteosa Wall. ex Benth.	Lamiaceae	Neel Kanthi	Leaves	Leaves alongwith leaves of *Centella asiatica* chewed to cure mouth ulcer and throat infection.
Asparagus adscendens Roxb.	Asparagaceae	Satavari	Roots	Dried Powdered roots prescribed to cure urinary problems. Roots alongwith tuber of *Stephania glabra* crushed and applied to treat inflamed teats of cattle ('Bushair disease').
Berberis lycium Royle	Berberidaceae	Kashmale	Leaves & Flowers	Decoction of tender leaves prescribed for vomiting. 'Chutney' of dried flowers used for headache. Tender leaves chewed to cure dysentery.
Cannabis sativa L.	Cannabaceae	Bhang	Leaves	Leaf juice applied externally to cure skin infection. Crushed leaves applied to cure insect bite.
Cryptolepis buchananii Roem & Schult.	Asclepiadaceae	Khurme	Latex & Leaves	Latex applied to cure cuts. Paste of tender leaves applied to cure furuncles.
Eleusine coracana (L.) Gaertn.	Poaceae	Kodra	Seeds	Bread prepared from the seed flour considered effective

				against blood pressure.
Ficus palmata Forssk.	Moraceae	Phegda	Leaves & Fruits	Vegetable of tender leaves and fruits effective against skin disorders.
Justicia adhatoda L.	Acanthaceae	Basuti	Leaves	Decoction of leaves given to cure cough. Tender leaves boiled in water which is then used for bathing to remove pimples and skin infection.
Mentha spicata L.	Lamiaceae	Kasumade	Leaves	Leaf juice given to cure stomach disorders.
Murraya koenigii (L.) Spreng.	Rutaceae	Gandelu	Stem & Leaves	Stem used as tooth brush to avoid dental problems. Leaves put into tea which is considered good for headache. 'Chutney' prepared from the leaves alongwith leaves of *Zanthoxylum armatum* and *Mentha* spp. is considered effective for headache and stomachache.
Rhynchostylis retusa Blume	Orchidaceae	Dal Laichi	Roots	100 gm of its dried roots crushed with 3-4 black pepper (*Piper nigrum*) and mixed with 20-25 gm jaggery ('Gur') and tablets are made. One tablet is prescribed twice daily for cough and asthma.
Sapium insigne (Royle) Benth.	Euphorbiaceae	Balodar	Latex	Latex applied to cure tail infection of cattle.
Stephania glabra (Roxb.) Miers.	Menispermaceae	Bis Khappar	Tuber	Garland of tuber pieces tied around the neck of the cattle to treat inflamed teats ('Bushair disease')
Syzygium cumini (Linn.) Skeels	Myrtaceae	Jamun	Bark	Poultice of bark used to cure internal injury.
Tinospora cordifolia (Willd.) Hook. f. & Thomson	Menispermaceae	Gloe	Stem	Stem given to cattle to enhance lactation. Porridge prepared from the powdered dried stem prescribed for dysentery. Stem after removing bark soaked in water for whole night and the extract settled down given in the morning to cure dysentery and stomach disorders.
Verbascum thapsus L.	Scrophulariaceae	Van Tambaku	Whole Plant	Whole plant given to cattle for loss of appetite.
Vitex negundo L.	Verbenaceae	Sure	Leaves	Poultice of leaves applied to cure internal injury.
Zanthoxylum armatum DC.	Rutaceae	Tirmira	Stem & Leaves	Stem used as tooth brush to avoid dental problems. Paste of leaves applied to cure mouth ulcer.

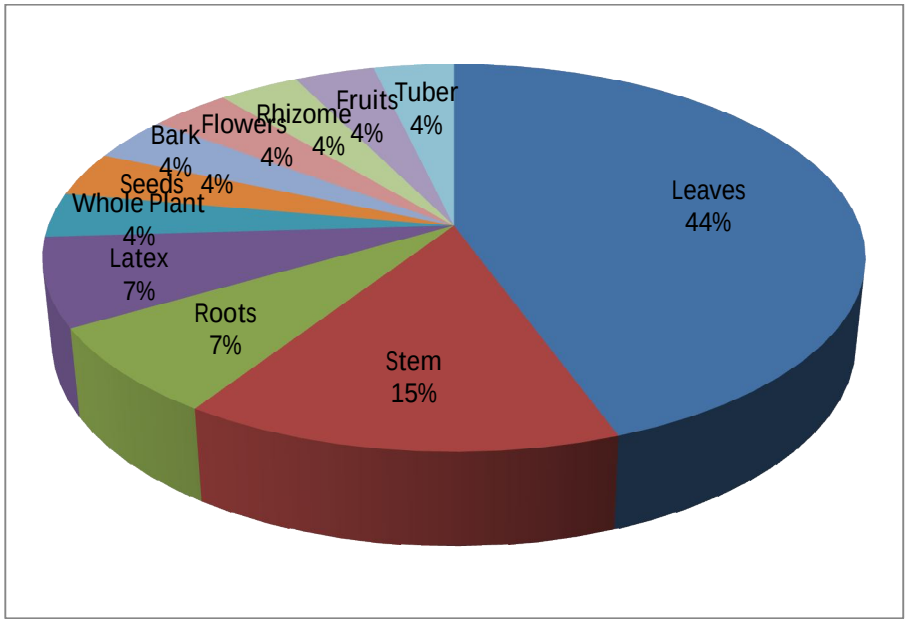

Fig. 2: Percentage of Plant Parts Used for Medicinal Purposes in Tungal Valley

The present investigation revealed that the local inhabitants of Tungal Valley in Mandi District of Himachal Pradesh are largely dependent upon the plant species available in the region for curing various ailments. The medicinal flora of the region has been exploited to a greater extent based on traditional and folk knowledge of the people.

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