

ETHNOBOTANICAL STUDY ABOUT MEDICINAL PLANTS OF POONCH VALLEY AZAD KASHMIR

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ABSTRACT

This study contributes to ethnobotanical knowledge of Poonch valley, Azad Kashmir (Northern Pakistan). In the area studied, medicinal plants play significant role among farmers, shepherds and other people who live in villages and remote areas. The plants collected, indicated by the locals, were identified according to "Flora of West Pakistan". The voucher specimens were deposited in Quaid-i-Azam University Herbarium. A total 56 medicinal plant species belonging to 36 families are listed in this paper. The botanical and vernacular names, their respective family names, part of the plant used and their uses are indicated. Acanthaceae, Asteraceae, Lamiaceae, Liliaceae, Ranunculaceae and Verbenaceae are the families most frequently present in study area, while Brassicaceae, Caesalpinaceae, Mimosoideae and Cyperaceae are almost absent. The uses of the recorded species relate to minor ailments mainly those of the urinary tract infection (UTI) and kidney stone (13 species), diarrhoea (12 species), respiratory disorder (10 species), Asthma (9 species) and rheumatic (6 species). The results of this survey suggest that the indigenous knowledge related to the recorded species uses came from women aged between 29-50 years whereas in this study the folk medicinal uses come from men.

Key words: Ethnobotanical study, Medicinal plants, Poonch valley, Phytosociology.

INTRODUCTION

The history of medicine and surgery dates back perhaps to the origin of the human race. Use of plants as a source of medicine has been inherited and is an important component of the health care system in different countries of the world.

Traditional Unani medicine is a part of Pakistan culture. Pakistan is included in those countries where traditional Unani medicine is popularly practiced among the large segment of populations, the Unani medicine system originated in Greece was found by old ancient Greek philosophers. It was documented and adopted by Muslims the glorious period of Islamic civilization.

Unani medicine system was brought to the Indo – Pak subcontinent by Muslims scholars and practiced it for centuries. It benefited from the Ayun system of medicine, which was an important component of Hindu civilization. Traditional Unani medicine heavily depends on medicinal plants, apart from the animals and minerals (Good man *et al.*; 1995).

Thus, despite the rich heritage of knowledge on the use of plant drugs, little attention had been paid to grow them as field crops in the country till the latter part of the nineteenth century. Pakistan is bestowed with unique biodiversity, comprising of different climatic zones and a wide range of plant species. The country has about 6000 species of wild plants of which about 600 are

considered to be medically important (Hamayun *et al.*: 2003).

The northern areas of Pakistan comprising Himalayas, Karakoram, Hindukush and Kashmir are under the tremendous pressure from local people generally and visitor's particularly. It is because of indiscriminate uprooting, poor collection and storage methods of medicinal plants. In an age when toxic drugs are increasing unwelcome and when thinking people are using viable alternatives Pakistan's medicinal heritage must be documented, saved and used. During the past decade, a dramatic increase in exports of medicinal plants alerts to worldwide interest in these products as well as in traditional health systems. But with most of these plants being taken from the wild, hundreds of species are now threatened with extinction because of over harvesting destructive collection techniques, and conversion of habitats to crop based agriculture. Hence it becomes necessary to conserve, cultivate and properly utilize the medicinal plants for sustainable development of the country.

Poonch Valley, from the ethnobotanical point of view, is one of the least investigated area of the Azad Kashmir with exception of a few contributions made by Ishtiaq (2001), Khan *et al.* (1985) and Sadique (1991). This research is focused on a limited area: Azad Patten, Palandri, Rawalakot, Tian, Shaheed-Galla, Toulipir, Lus Danna, Mehmood Gali, Basari, Badri Galli, Ghamir, Kharanj, Chunjal Hill and Gorah.

Study area and the people: Systematic explorations of traditional uses of plants are urgently required in Poonch Valley of Azad Kashmir especially because of its geographical, historical reasons and hilly terrain (relatively isolated). Moreover, modern development has not led to a complete decline of traditional knowledge. Azad Jammu and Kashmir is a fascinating land of people, language and culture. The texture of present population is composed of races claiming descents from Semitic, Mongoloid, Aryans, Persians, Turks and Arabs.

The culture of this area resembles to that of the adjacent area of Punjab. The people of Kashmir are very loud, and vocal, very persistent. They are very quick in argument and they never abandon a case unless they are convinced, and they always insist on knowing the grounds of a decision. The area has both cultures, rural and urban.

The people of Poonch valley are poor and the area is highly under developed. Local people are primarily farmers or tenants. They also rear livestock. The area, particularly, the foothills and plains, has an agricultural economy mainly dependent on rainfall. Maize, wheat, rice are the main crops and beans and peas are also cultivated in the area. Among fruits; apples, apricots, peaches, walnuts, plums, pears, and citrus are grown and are exported from the area. Some people collect medicinal plants and morels and sell it in local markets, thus earning their livelihood. The people also earn by selling handicrafts such as Namda, Gubba, Patto, Woolen shawls etc.

The traditional practitioners (herbal doctors) are playing an important role in providing health coverage to 75% of the population residing in villages and rural areas. A variety of herbal products have been used by the herbal doctors for the treatments of various diseases common in the area. The elder people of the area, even in these days, use local plant resources to cure many common diseases of children especially. The knowledge and experience of these elderly people (men and women) is a precious wealth of the area. The present study was conducted for systematic documentation of this knowledge on use and production of medicinal plants.

Medicinal plants: Medicinal plants possess active chemical constituents which produce a definite curing physiological response in the treatment of various ailments in human and animals. A simple illustration of synthetic drug versus plant extract is with aspirin and the bark of *Salix alba* (white willow). The bark of *Salix alba*, contains salicin formed the basis for making aspirin ((Chevallier, 1998)). In many people, aspirin causes a side effect that can be avoided by using an extract of *Salix* bark (Shinwari and Gilani, 2003). Non-nutrient phytochemicals are increasingly being recognized as potential health promoters in reducing the risks of cardiovascular disease and arteriosclerosis. Prominent

herbs identified were *Achillea millefolium* (yarrow), *Allium sativum* (garlic), and *Convallaria majalis* (Lily of the valley) *Crataegus laevigata* (Hawthorn), *Cynara scolymus*, *Ginkgo biloba* (gingko) and *Viburnum opulus* (cramp bark). Saint Johnswort known as johanniskra in German for centuries has been used to treat people with mild and moderate depression without the side effect of Prozac.

MATERIALS AND METHODS

The research was conducted in several potential stands of the areas. For data collection, 35 informants, mostly native to the area mainly farmers, shepherds and housewives were interviewed. Interpretation of the information received into technical or medicinal terms was carefully avoided so as to have a true picture of customs and uses. The information was usually imparted in the local dialect, and plants were indicated with vernacular names. The informants were aware of the aims and the end use of information they provided. They also collaborated in collecting and recognizing plants. Moreover, they also indicated, where plants were easily available. After having collected the species, the lists were prepared and then identified according to the nomenclature of Flora of West Pakistan by Stewart (1972). The voucher specimens were submitted to Herbarium of Quaid-i-Azam University Islamabad (ISL). The methods included two stages:

I) Field Work: The study trips were made from January to May and from July to December (twice a month) for three years (2000- 2003). The field work was based on observations, interviews and guided field trips. Two methods for collecting information were used during the field work

a) Observations: The observations were made in the upland during herbal growth of the plants species, which were collected, dried and identified. Harvesting time, processing and their utilization were recorded. All the plants were collected during their flowering season (stage). The specimens were deposited in Quaid-i-Azam University Islamabad herbarium as voucher specimens.

b) Interviews: Extensive surveys were carried out during the field work; interviews were conducted with the local inhabitants, the herbalists, 'Hakims' (local physicians). About 40 informants were interviewed on random basis. Three questionnaires were used during the survey for information about the plant resources, quantities used, rate of consumption, availability and percentage of plants species found and their utilization by the people.

II) Documentation: The ethnobotanical data obtained was checked and compared with the existing literature and was analyzed both quantitatively and qualitatively. Hence the indigenous knowledge about plant resources, religious and cultural aspects such as population diversity

was also documented. For ethnobotanical inventory, four criteria, who, what, how and when, were used. For example, who collects the plants? Who is responsible for their destruction? What are the uses of plant resources? What are destructive agencies? What types of benefit are obtained from natural resources to the local communities? How ethnobotanists and conservationists were successful in knowing what is happening to the real picture of natural ecosystem? When flora is available in full grown state with root, stem, leaves and flowers? Ethnobotanical inventory consisted of botanical names, vernacular/local names; few needed synonyms, localities, its elevation and its ecological status.

Market Assessment: Market assessment of medicinal plants available in the markets of Abbaspur, Hajira, Rawalakot and Trarkhel was carried out. Marketing chain for medicinal plants collection and people involved in medicinal plants trade was investigated. A list of economic plants was prepared with emphasis on plant market availability status, collection methods and local prices of these plants. The available literature on the market survey was also collected and made a review from it to compare it with present findings.

Recorded data were compared with specific ethnobotanical literature, not limited only to Poonch Valley, in order to identify analogies, differences or eventual uses not cited previously. Gottesfeld (1994), Bhatt and Guar (1992), Omino and Kok-Waro (1993), Leporatti and Lattanzi (1994), Khan (1985), Farooq (1990), Good man and Ghafoor (1995), Ansari *et al.* (1993), Haq (1993), Siddiqui *et al.* (1991), Haq and Hussain (1995), Sadaqat (1995), Ahmad (2003), Muhammad Ishtiaq *et al.* (2001).

RESULTS

In table 1, out of 56 species belonging to 36 families, only 14 are listed. Botanical, vernacular name, part of the plant used and approximate annual yield are reported.

Medicinal plants of Poonch valley: A large proportion of the population of the valley living in the far-flung areas still relies on medicinal plants for curing different ailments. The people of these areas depend on the local medicinal plants because no medicinal facilities are available in these areas. It was also observed that people have no accessibility and affordability for pharmaceutical medicines. Present study includes 56 medicinal plants which makes 40.23 % of the total plant species used in area for different purposes.

Some important medicinal plants were collected and used in the area are *Gallium elegans*, *Bergenia ciliata*, *Dioscoria deltoidea*, *Viola biflora*, *Trichodesma indicum*, *Pistacia integerrima*, *Podophyllum emodi*, *Polygonum amplexicaule*, *Geranium wallichianum*,

Achillea millefolium, *Desmodium podocarpum*, *Melia azedarach*, *Onoclea vecunifolium*, *Punica granatum*, *Rumex hirsuta*, *Zanthoxylum alatum* and *Micromeria biflora*.

A survey was conducted in order to see the source of indigenous knowledge about medical uses of plants in the research area. The data revealed that 72% of folk medicinal knowledge comes from people above the age of 50 years while 28% of it comes from people between ages of 30 and 50 years. Gender wise, men especially old ones were more informative of traditional knowledge of medicinal plants than women in the area. The survey also indicated that about 45% of the local population was dependent on medicinal plants for curing different ailments. The dependency on medicinal plants dropped over the last five year as the area was ramified by link roads and shops of allopathic drugs were opened. It was also observed that about 60% of the home made drugs were used by people above the age of 50 years, 30% by children below age of 15 years especially infants. While remaining 10% of the traditional medicines of plants origin are utilized by people between age of 15 and 50 years.

Marketing status of medicinal plants: The inhabitants of Poonch valley sell about 30 medicinal plant species in the local market commercially. These plant species are collected in the area during April to August. Only 8 species of them traded in national markets while rest was used locally.

The medicinal plant species are under intense pressure; as market provide main source of supply to herb trades and herbalists practicing in urban areas. The species like *Abies pindrow*, *Berberis lyceum*, *Bergenia ciliata*, *Caryopteris odorata*, *Dioscoria deltoidea*, *Gallium elegans*, *Geranium wallichianum*, *Mallotus philippensis*, *Pistacia integerrima*, *Punica granatum*, *Rumex hirsuta*, *Trichodesma indicum*, *Viola biflora*, *Zanthoxylum alatum*, *Ziziphus oxyphylla*, *Sapindus saponaria* and *Daphne papyracea* are traded to local and national markets.

A survey conducted during present study showed that medicinal plants gatherers include men (52%), women (21.26%) and children (26.74%) . About 95% of these medicinal plants are sold in the local market in fresh form, as gatherers are poor and needy. Some species are cleaned, dried in the sun and stored in plastic bags. The collectors carry with them digging tools and dig medicinal plants wherever found.

The study also showed that the number of medicinal plants decreased during the past 15 years. Response to the question “ what is the availability status of medicinal plants of the area, an aged villager said, medicinal plants were abundant in the vicinities of human settlements some 15 years back. However, the population of the medicinal plants drastically decreased due to the

high rate of population growth, stimulus of commercial trade in the medicinal plants and increased marketing pressure on the medicinal plants. It was also observed that the potential area of the valley visited by the

commercial gatherers (Nomad and Quack) during summer and raining season with their goats and sheep herds collect useful medicinal plants.

Table: 1. Important medicinal plant species of Poonch valley

No	Botanical Name	Local Name	Part used	Approximate annual yield (Kg.)
1	<i>Berberis lyceum</i>	Sumbalu	Roots	180
2	<i>Bergenia ciliata</i>	Butpue	Rhizome	165
3	<i>Caryopteris odorata</i>	Bahata jari	Leaves	155
4	<i>Dioscoria deltoidea</i>	Kala ganda	Roots	200
5	<i>Galium elegans</i>	Jari pneumonia	Roots	140
6	<i>Geranium wallichianum</i>	Ratanjo	Roots	160
7	<i>Mallotus philippensis</i>	Kamela	Fruits	175
8	<i>Pistacia integerrima</i>	Kakra	Pod	165
9	<i>Punica granatum</i>	Daruna	Fruits	190
10	<i>Trichodesma indicum</i>	Handusi	Plant	150
11	<i>Viola biflora</i>	Banafsha	Flower/whole plant	155
12	<i>Zanthoxylum alatum</i>	Timber	Fruits	195
13	<i>Sapindus saponaria</i>	Rantha	Fruits	500-600
14	<i>Colchicum luteum</i>	Mamona	Rhizome	140

Table: 2. Methods of traditional medicine preparation

Method of preparation	Number of species	Percent
Aqueous extract	28	46.67
Powdering	14	23.33
Decoction	09	15
Poultice	03	05
Smoking	03	05
Mixture	02	3.33
Pasting	01	1.67
Ointment	01	1.67
Ashing	01	1.67

The medicinal plants are collected in large number from remote areas of Lus Danna, Mehmood Gali, Gohri Mar, Pirdkot, Char Biar and Gala Kanut. Most of the medicinal plants of the valley are sold in the local market of Bagh, Kahuta, Hajira, Rawalakot, Khai Gala and Palandri. The data relating to botanical name, local name, plant part used and approximate annual yield (Kg) was given in table 1.

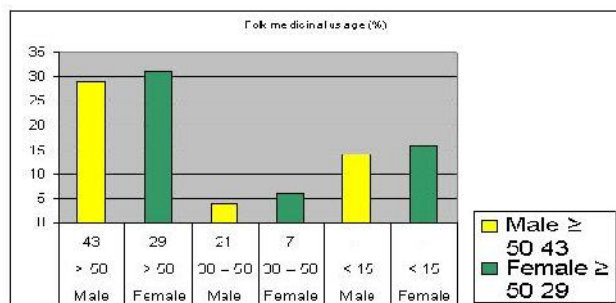


Fig.1. Gender and age wise distribution of folk medicinal knowledge and its utility in Poonch valley.

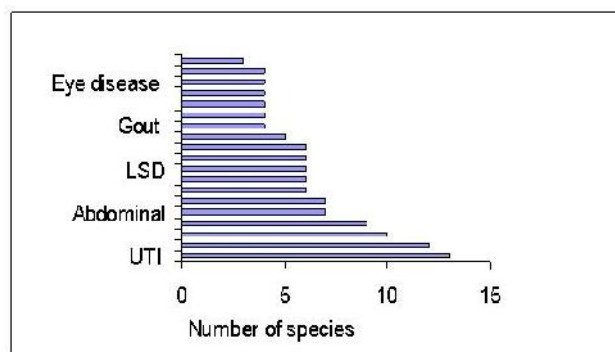


Fig. 2 Distribution of the plant species and proportion of disease treated.

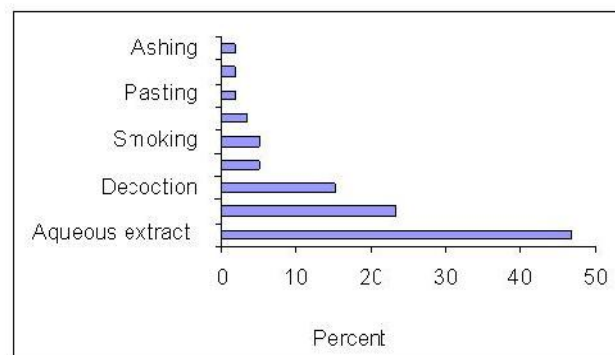


Fig.3. Percentage distribution of methods of the medicine preparation.

Common health problems in the study area: A total of 40 diseases were reported by the traditional medicine practitioners of the study area. The most recurrently reported health problems were urinary tract infection and

kidney stone, diarrhoea, cough and asthma. The local people used about 13 and 12 medicinal plants to treat the first two diseases, 10 medicinal plants to treat cough, 09 to treat asthma, 07 to treat abdominal worm and sexual disorder.

The local people employed several methods in order to prepare medicines from these plants. However, aqueous extract (28 species, 46.67%) followed by powdering (14 species, 23.33%) and decoction (09 species, 15%) were the most frequently used methods of medicine preparation. The majority of these preparations were drawn from mixture of different plant species for the treatment of a single disease. With regard to the plant parts used for medicinal purposes local people mostly

harvested leaves (22 species, 36.67%) followed by roots (15 species, 25%). The majority of the ailments were treated with fruit, flower, seeds, stem and rhizomes.

Major threats to medicinal plants of the area: Major medicinal plants in the study area were highly threatened with anthropogenic and natural factors. The majority of medicinal plants (16 species, 26.6%age) were reported to be threatened with agricultural expansion, deforestation and forest occupation. Analysis of data regarding the status of medicinal plants showed that, about 16 (26.7 %) of the medicinal plant species to be abundant whereas 19 (31.67%) species to be very rare.

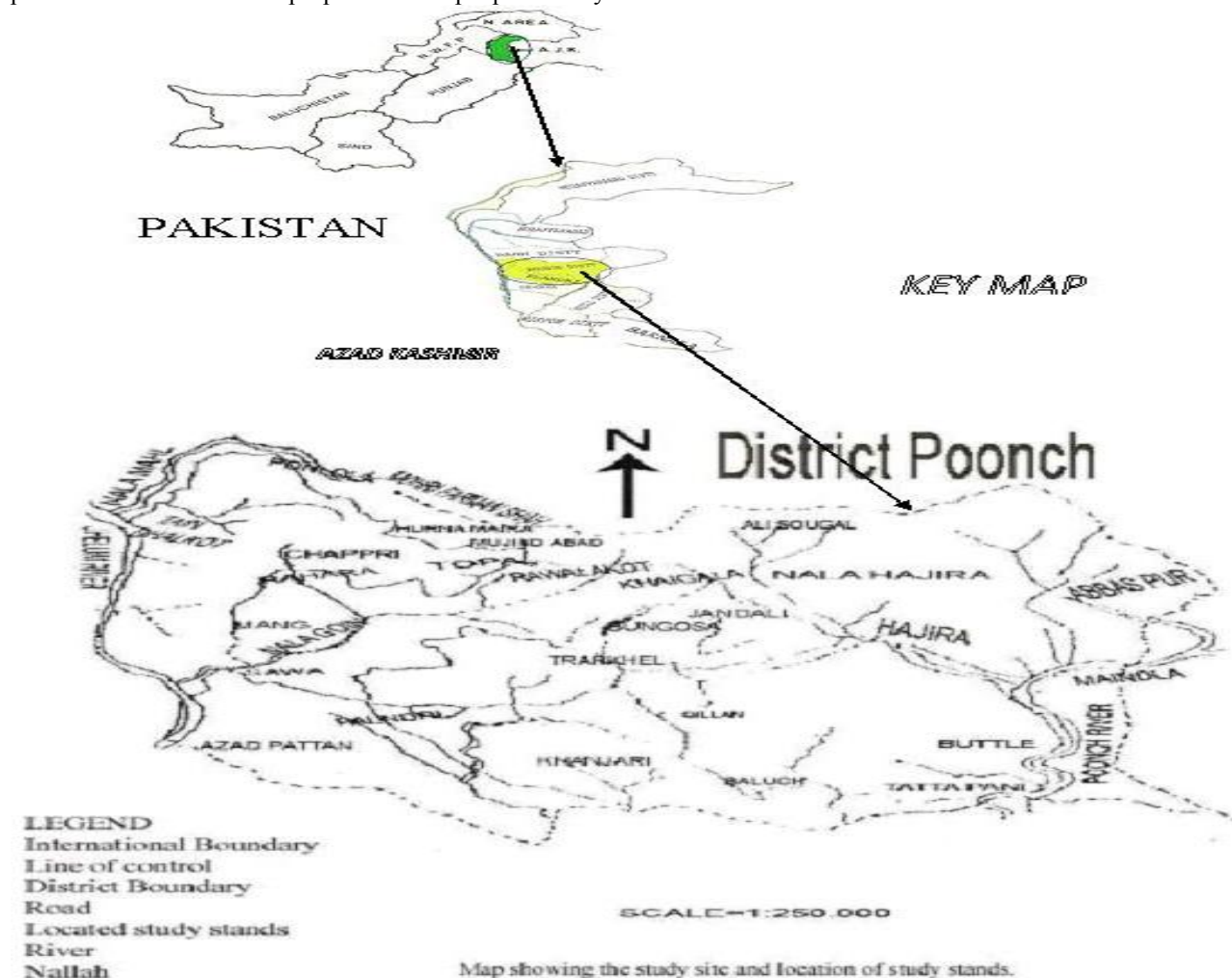


Fig. 4.

Medicinal plant conservation efforts of the local people: About 21.62% of the informants interviewed had some kind of awareness in conserving some medicinal plant species that were relatively scarce in their surroundings. These informants were practicing some conservation activities like cultivation in and around home gardens of about 26.67% of the total medicinal

plant species. The rest of the informants were not practicing any pronounced conservation effort. They simply went to the field, home garden or farmland to collect medicinal plants as their need arose and did not bother about the long term survival of these plants.

The plants collected are washed with water to remove mud attached to the plants. Major proportions of

plants collected are sold in fresh while some plants are stored in bag and sacks from one week to one year. Before storing these plants are washed and kept under the sun for drying. The plants are sold in the local markets while some of them are kept in homes for curing different ailments. During storage considerable amount of medicinal plants are wasted due to humidity, insect attacks, inappropriate storage facilities and lack of awareness on the part of the collectors.

The collectors included men, women, children, gipsy and professional quacks. The woman and children collect plants while on their way to work in the fields and surrounding area of their work place. The women and children of gipsy families collect medicinal plants while grazing their livestock.

The men collectors are mostly the quacks and 'hakeems' of the area. They are selective in their collection and collect only those plants, which are profitable and can be sold easily in the local markets. They also collect morels from the forest. These people are very expert, as they know the exact locations from where they can get their required plants. Their collection trips are long as it compromise 2 to 5 days in the forest. In majority of the circumstances the collection is sold in the local market in fresh for there are two pansaries shops (medicinal plant purchasers) own by Asrar and Kala Khan in Hajira, one shop in the Abbaspur, Khai Gala, Trarkhel, two shops in Rawalakot and Palandri.

DISCUSSION AND CONCLUSION

The use of plants traditional purposes is an old practice. The primitive people of all ages had knowledge of medicinal plants which they acquired as a result of trial and error. It is clear that folk phytotherapy today is greatly reduced and largely abundant, swept away by pharmaceutical technology. What remains of this centuries old knowledge relates mainly to minor disease and ailments. This knowledge is still alive and several hundred species were used in herbal remedies, where the whole plant part or its extraction was used. However as modern medicines and drug research advanced, chemically synthesized drugs replaced plants as the source of most medicinal agents in industrialized countries. Although research in plant sources continued and plants were still used as the raw material for some drug development, many of the today's drugs have been derived from plant sources. Since 1990 there has been a growing shift and interest once more in plants remedies. Industries are now interested in exploring parts of the world where plant medicines remain the predominant method of dealing with illness. Medicinal plants are widely used in household remedies and by practitioners of traditional system of medicines, particularly in the developing world, where public health care services were limited. At the same time, interest in the traditional and

contemporary and alternative medicine in industrialized countries has grown rapidly. According to recent estimates, 25 % of all described medicines in the developed world contained ingredients derived from plants and roughly 80 % of the world population living in the developing world depends on herbal remedies for their primary health care Shinwari *et al.* (2003). Choudhary *et al.* (2000) reported that 500 families were involved in medicinal plants collection in district Swat and they collected 5000 ton of medicinal plants annually. It has been estimated that the world market for plant derived chemicals, pharmaceuticals, fragrances, flavors and color ingredients, alone exceeds several billion dollars per year. Trade in medicine plants is growing in volume and in exports. It is estimated that the global trade in medicinal plants in US \$ 800 million per year. The botanical market, inclusive of herbs and medicinal plants, in the USA, was estimated approximately US \$ 1.6 billion per annum. China with exports of over 120,000 tons per annum and India with some 32,000 tons per annum dominate the international market. It was estimated that Europe, annually, import about 400,000 tones of medicinal plants with an average market value of US \$ one billion from Africa and Asia. A growing awareness of this new contributor to the foreign exchange reserves of several national treasuries is beginning to emerge. To satisfy growing market demands, surveys are being conducted to unearth new plant sources of herbal remedies and medicines (Hoareau and Da silva 1999). Majority of the world population currently depends on tradition medicine for their primary health and needs. The world market for herbal products based on traditional knowledge was now estimated to be worth US \$ 60 million (WHO, 2002).

Hamalayas, for example, has an extraordinary diversity of plant species and has been regarded as a treasured groove of medicinal plants. The study area of Poonch valley was also gifted with a variety of herbs, medicinal and aromatic plant resources. Medicinal plants had continued to be used extensively as a major source of drugs for the treatment of many ailments.

However, there is an urgent need for sustainable use of plant resources in the area as ruthless use of these plant resources will result in the loss of valuable flora and fauna. The people of Poonch valley like most other native people had depended upon plant resources for their medicinal requirements and in this way a traditional system of folk recipes had evolved in the area over a period of time. As discovered in present research, people used 56 plant species for curing different ailments and more than 50% of the local population is dependent on medicinal plant for primary health care. People utilize different parts of the plant for medicinal purposes. For instance, the powder of leaves and bark of *Caryopteris odorata* is sprinkled on the wounds for speedy cures. The drug is highly effective on cancerous tumors. Similarly

the paste of bark and leaves of *Daphne papyracea* is used as poultice for tumor and swellings. An ointment of the bark of stem and root is used to promote discharge from indolent ulcers, and it is also used for snake and other venomous bites. It is taken internally for chronic rheumatism. The tincture is used to cure neuralgic pain and toothache. Similarly, Hamayun *et al.* (2003) reported that medicinal plants collected in district Buner (Pakistan) are used by the inhabitants to cure various ailments. For instance leaves decoction of *Ajuga bracteosa* used for the treatment of jaundice, hypertension and sore throat. Root of *Justicea adhatoda* is used in rheumatism, pneumonia and cough, while leaves are used as antiseptic, expectorant, antispasmodic and demulcent. As pointed out by local people the roots of *Adhatoda vesica* emerged as the excellent remedy for rheumatism. Further research is required on this aspect. Gum of *Acacia modesta* is used as tonic and stimulant. Leaves of *Datura innoxia* is used in toothache, headache and epilepsy. The seeds are antipyretic and narcotic. Similar reports were also documented by Shinwari *et al.*; (2002), Sadaqat (1995) and Ahmad *et al.*; (2004) from other parts of Pakistan.

In study area 30 medicinal plants out of 56 had been found as the most commonly utilized plants which had been collected during different months of the year. Only 8 of them are traded in national market while the rest are used locally. Trade of medicinal plants in the valley could be promoted through selection of good quality and easily cultivated medicinal plants in large amount in local conditions of the area. Folk knowledge on medicinal plants would be helpful in this respect. In my opinion *Bergenia ciliata*, *Caryopteris odorata*, *Gallium elegans*, *Desmodium podocarpum*, *Ceterach dalhousiae*, *Agrimonia pilosa*, *Lygodium japonicum*, *Daphne papyracea*, *Geranium wallichianum* and *Asparagus filicinus* plant species would prove to be useful if they have been brought into cultivation in this area.

A survey conducted during present study shows that the number of medicinal plants declined during the past 15 years. It was observed that commercial gatherers (Gypsy and local people) collect medicinal plants in large amount from remote areas of the valley. One can see a person coming from hill top with a bundle of fuel wood on his head and a bag of medicinal plants in his hands. He hands over this bag of medicinal plants to local Pansaries (Herbal shopkeepers) and put in his pocket whatever money he gets for it. Such activity is causing a rapid depletion of medicinal plant resources in the area.

Majority of medicinal plants collected are rhizomatous. These plants are primarily collected in summer and during this period the plants utilize the root chemistry and nutrition for the development of aerial parts and fruit yield. As a result the rhizomes collected are depleted of active chemical constituents. The ideal

time for the collection of these plants is winter or early spring when the plants are dormant. During this period the plants convert the nutritional chemistry of aerial parts into alkaloidal contents and store it in the underground parts. Beside this the rhizome collection has resulted in a drastic decrease of these medicinal plants in the area. Similar results were reported by Shinwari (2003).

The current investigation showed that leaves are the most collected plant parts for medicinal purposes and this situation can be a severe threat for some rare and slowly reproducing medicinal plants. However, the collection of the roots for medicine preparation could be regarded as harmful as for as some roots are left on the parent plant which proves to be a hindrance for the growth of the plant. Similar results were also reported by Tabuti *et al.* (2003) and Debela Hunde *et al.* (2004).

The majority of medicine preparations were drawn from mixture of different species for the treatment of a single ailment and similar result was reported by Hamayun (2004). Various methods of medicine preparations were apparent in this study. However, the most frequently used methods were aqueous extract followed by powdering as well as decoction. Similar result was reported by Shinwari (2002).

The results of this study revealed that medicinal plants were collected and utilized in fresh forms due to the fear of decline or loss in their medicinal properties. Habitat loss and degradation as well as agricultural expansion, deforestation and forest occupation are the most serious threats to medicinal plants as a whole and recurrent drought for herbaceous plants species specifically.

In conclusion it is necessary to point out that what remains of folk uses of medicinal plants survives and still plays a role in public health of the study area must be preserved and documented.

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