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Market Survey of Useful Plants in the Mountain Region of Abbottabad District Pakistan

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Abstract: Present study has been carried out to explore market values of medicinally important plant species including trees, shrubs and herbs in Thandiani region Abbottabad District Pakistan. During this study 162 different plant species belonging to pteridophytes, gymnosperms and angiosperms have been collected for local dealers and traders. Plant species have been identified with the help of manuals and herbarium. *Morchella esculenta* and *Geranium wallichiana* were found to have maximum price ranging from 800-3000 rupees per kg. The present results will add new information to explore and preserve this wealth in the area.

Key words: Market survey · Medicinal plants · Mountain region

INTRODUCTION

The medicinal use of plants is well established even in modern world, which is indicated by the fact that more than 30 % of allopathic drugs are of plant origin and about 80% of the world population relies chiefly upon traditional medicines [1]. Medicinal herb is a considered to be a chemical factory as it contains multitude of chemical compounds like alkaloids, glycosides, saponins, resins, oleoresins, sesquiterpene lactones and oils [2]. Yesilda *et al.* 1993 [3]. revealed in his field survey on traditional medincine in Turkey that several plants including Cedrus libani are used for the treatment of ulcers. Arimore *et al.* 1994 has reported the effect of Chinese herbal medicine B.G 104 in two H.I.V positive haemophilliaces. Davis *et al.* 1995 [4] collected information on traditional veterinary medicines and practices by interviews with Pashtum Koochi refuges from Afghanistan in and around Quetta in Pakistan in 1992. Nishiyama *et al.* 1996 [5] mentioned a herbal drug, S-113m which consists of Biota orientalis (Thuja orientalis) seeds, panax roots and Schizandra chinensis fruits has been used in Chinese medicine to enhance memory and prevent amnesia. Pandian *et al.* 1989 [6] worked on the repellent activity of herbal smoke on the biting activity of mosquito in India with burnt of Azdadirchta indica leaves. The smoke reduces the number of mosquito in closed room. Among plants of economic importance medicinal and aromatic plants have played a vital role in alleviating human sufferings. Thandiani is a hill station about 31 kilometers Northwards from Abbottabad city at Himalayan foothills [7]. Keeping in view the importance of flora of Thundiani hills, the study was confined to collect the indigenous knowledge of local people about medicinal and other ethnobotanical uses of native plants. Since no systematic work has been done regarding market values of medicinal herbs in Thundiani hills of District Abbottabad. These findings add new insights onto to fullfill the exploration of marketable medicinal plants of the area through market survey.

MATERIALS AND METHODS

Field work in the study area was carried out during 2006-2007. Plants were collected and interviews were conducted of the local people, the latter resulting in the gathering of indigenous medicinal knowledge for 70 plant species. Several trips of the area were made for this purpose. Only wild plants at flowering stage were collected and three different methods were used for sampling and information collection.

- On site plant sampling
- Information collection through personal communication with local residents
- Market survey

On Site Plant Sampling: On site sampling was made of Thandiani hills, District Abbottabad. Plants were collected by making 1mx1m square quadrate. All necessary data was noted in field note books. Plants were collected at various altitude levels. GPS (Geographical position system) was used for altitude measurement. The collected

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samples were pressed by plant presser and were dried at room temperature. Some plants were preferably dried under shade at room temperature by wind action- because of heat-labile substances that they contain. The pressed plants were mounted on paper sheets. Collected specimens were identified with the help of identification keys [8, 9]. The literature available in the Department of Environmental Sciences COMSATS Abbottabad. Further identification and confirmation were done in the herbarium, Department of Biological Sciences, Quid-e-Azam University, Islamabad, Pakistan. The collections were recorded and documented according to their groups, Families, Botanical names, Common names, Local names, Status, Parts used and Folk medicinal uses.

Information Collection Through Personal: Data relating to folk medicinal knowledge was collected by interviewing local inhabitants of several different professions, such as hakims (local Doctors), local physicians, pansaries and old people of the area. During field trips, the questionnaires were used to interview the local inhabitants' usually older people who are familiar with traditional use of indigenous plants. Repeated quarries were made to get the data confirmed.

Market Survey: Market survey was conducted at different places by distributing questionnaire and personal communication with concerned people.

RESULTS AND DISCUSSIONS

Plants of Thundiani Hills: During the present study 162 different plant species belonging to pteridophytes, gymnosperms and angiosperms were collected. Among collected plants pteridophytes (ferns) were 7 species, Gymnosperms 7 species belonging to 3 families and Angiosperms 148 species belonging to 63 families were collected during summer and winter season 2006 and 2007. Marketing of medicinal plants of Thundiani hills. Botanical name local name, collection, part used along with their respect annual consumtion are given in Table 1.

Market Analysis of Medicinal Plants: During the market survey 27 medicinal plants were identified as marketably important. These medicinal plants were collected and supplied in considerable amount to various dealers and trading centers of Mansehra, Abbottabad, Haripure and Rawalpindi etc. The data also revealed that 2 species (*Morchella esculenta and Geranium wallichiana*,)

Table 1: Marketing of medicinal plants of Thundiani hills

Botanical name	Local name	Collection	Part used	Price/kg	Annual consumtion/Kg
Acacia modesta	Phulai	Cutting	Gum	400	400
Achellia millefolium	Atees	Digging	Whole plant	600	100
Adiantum venustum	Not known	Plucking	Leaves	40	20
Aesculus indica	Bankhore	Plucking	Fruit	30	40
Ajuga bracteosa	Manji booti	Plucking	Leaves/stem	40	50
Arisaema flavum	Soor gunda	Digging	Rhizome	60	30
Bauhinia variegate	Kulyare	Plucking	Bud/flower	60	1200
Berberis lyceum	Sunmbloo	Digging	Root	60	1500
Bergenia ciliate	Batpay	Plucking	Rhizome	130	1800
Geranium wallichianaum	Rattanjot	Digging	Root	900	1200
Hedera nepalensis	Not known	Plucking	Leaves	45	300
Indegofera hetrentha	Kainthi	Digging	Root/leaves	30	100
Isodon rugosus	Boi	Cutting	Stem/leaves	50	250
Juglans regia	Khoree	Plucking	Fruit	100	10000
Mentha longifolia	Podina	Plucking	Shoot/leave	40	700
Morchella esculenta	Guchee	Plucking	Fruit	2200	120
Paeonia emodi	Mamekh	Digging	Rhizome	120	700
Plantago major	Not known	Plucking	Seed	150	700
Podophyllum emodi	Bankakree	Digging	Rhizome	180	200
Polygonatum vercilatum	Not known	Digging	Rhizome	650	300
Punica granatum	Darunna	Plucking	Seed	180	1500
Skimmia laureola	Ner	Plucking	Leaves	100	2200
Taxus wallichiana	Burmi	Cutting	Leaves/bark	60-80	800
Valeriana jatamansi	Mushk bala	Digging	Rhizome	120	1500
Viola biflora	Banafsha	Plucking	Flower	700	300
Vitex negundo	Marwani	Plucking	Leaves	25	200
Zanthoxylum armatum	Timber	Picking	Seed	200	2500

have maximum price ranging from 800-3000 per kg followed by Viola *biflora, achellia millwefolium, Acacia modesta and Polygonatum verticillum* (Rs 400-800) and others have average price below 400 per kg. The data showed that 9 species have highest annual consumption (*Juglans regia, Bergenia ciliate, Berberis lyceum, Baahaunia verigata, Geranium wallichianum,Punica granatum, Skimmia laureola, valeriana ja*tamansi,*and Zanthoxylum armatum)* as more than 1000 Kg per annum and rest are consumed below 1000kg per annum. Properly packed, cleaned and good quality herbal material receive high price in markets. Huge losses of medicinal plants were observed from collection stage to the end of processing. In case of *Morchella eculenta* losses may reach up to 45% [10]. Main reasons for losses are inadequate methods of plant collection and then cleaning, drying, carriage and marketing facilities. Different people are involved in collection of medicinal plants and use it for different purposes.

In the present study it is reported that about 11 plant species are known to be used by the people for curing cattle diseases in the project area. Similarly 8-10 ripened seeds of *Arisaema flavum* are given to hens for curing disease locally called Rani Khait. It is estimated that medicinal plants, for several centuries, have been widely used as a primary source of prevention and control of livestock diseases. The people of Thundiani, like most other indigenous people also depend upon plant resources for their medicinal requirements and in this way a traditional system of folk recipes has evolved in the area over a period of time. The use of plant as a source of traditional medicine was also reported by Sadaqat (1995) [11]. Nearly 80% of the world population depends upon traditional system of health care. Allopathic drugs have brought a revolution throughout the world, but the plant based medicines have its own status [12]. It was observed that in the Thundiani area when females and children go to the forest for collecting fuel wood or grazing their live stock, they collect the medicinally important plants. Present study also revealed that in Thundiani, *Cedrus deodara, pinus roxburgii* and *Pinus willichiana* is under immense fuel wood pressure as bulk of the population of the area use these three plants for their fuel wood requirements. During market survey, it was noticed that there is a monopoly of few persons in the whole market. While all other shops situated in the area sell drug plants at small scale. Due to this monopoly, these big dealers buy items from the locals on a very low price and sell them at very high prices in national markets. Many of the important medicinal plants are sold at higher prices in the market. The data revealed that 2 species *(Morchella esculenta and Geranium wallichiana)* have maximum price ranging from 800-3000 per kg followed by Viola *biflora, achellia millwefolium, Acacia modesta* and *Polygonatum verticillum* (Rs 400-800). Elisabetsky (1990) [13] reported that annual world market value of the medicines derived from the medicinal plants by the indigenous people is US $ 43 billions. Most of the plants used by the local people are not conserved but are over exploited. It is therefore necessary to find the ways of promoting the local people towards conservation as Shingji 1994 suggested that Ethnobotany is the science of documenting the traditional knowledge on the use of plants by the indigenous people and for further assessing human interactions with the natural environment [14]. In Pakistan out of 600 species used as medicine, only 300 species are available in the market [15]. Due to less communication means, poverty, ignorance and unavailability of medicinal facilities, most people of especially rural people still forced to practice traditional medicines for their treatment. Most of these people form the poorest link in the trade of medicinal plants [16].

The results of this work can later be applied to biodiversity, conservation and community development. Research is greatly needed for exploitation of indigenous knowledge of local people about medicinal and other ethnobotanical uses of native plants and to improve the agronomy of cultivated medicinal plants, promote the exchange of information on agricultural production and investigate the social and environmental impact of medicinal plant cultivation and collection. The collection is done mostly by traditional approach not scientifically that is why some very important species of enthnomedicinal use are becoming extinct. After collection the herbs are dried by the local people. The processing is done by the traditional methods, which mostly causes contamination in the material. The people of the area are ignorant about the importance of biodiversity and conservation status of the area. As a result valuable indigenous flora is used as fuel wood species [17]. Awareness programs at grass root level should be introduced in the area to solve the problem. Fodder crops should be introduced in the area on arable lands. It would bring an important additional fodder production possibility. Deforestation results in habitat loss especially for those species which grow under shade. Habitat protection is important. A massive forestation programme is recommended to be launched. Adopt measures and provide facilities for research on indigenous plants. Ethno botanical studies of various traditional

indigenous plants must be undertaken and document the knowledge scientifically. Develop proper legislation to protect threatened species. Seed banks for this purpose should be established. In situ and ex situ conservation of medicinal plants should be made. For this purpose grow plants in nurseries as conservation practice. Establishment of botanical garden and kitchen garden may be the best ex situ conservation strategy that can be adopted for sustainable utilization of plant resources of the area. Alternate sources and substitutes for livelihood should be provided by the government to local communities. Natural gas and fuel efficient stoves should be introduced in the area as an alternate fuel source will also help reducing pressure on forests for fuel wood requirements. Black marketing and smuggling of timber should be stopped. Strict measures needed to discourage the forest officials of their involvement in such practices.

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