

Full Length Research Paper

Traditional resources evaluation of district Shangla, Pakistan

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Study on traditional resources evaluation was carried out during summer 2008 in various parts of district Shangla. The potential for sustainable livelihood development in the region was assessed by analysing the forest dwellers' livelihood assets and perceptions of the forest livelihood. The study also explores the uses of forest resources and the methodology is largely based on the sustainable livelihood framework. The empirical analysis shows that local people protect forest resources with the view to producing forest goods, which are important for livelihood. The study inventoried 89 species belonging to 50 families which are used for various ethno-botanical purposes, such as multipurpose tree (9 Spp), timber wood (7 Spp), fuel wood (15 Spp), fodder (24 Spp), vegetables (9 Spp), medicinal (25 Spp), religious plants saved by Muslims (5 Spp) and Hindus (6 Spp), wild fruits (7 Spp), poisonous (8 Spp), tool making (6 Spp), condiments (4 Spp), brooming (3 Spp) and mud supported (2 Spp), thatching (6 Spp) and ornamental (5 Spp), while 24 species were recorded to have ethno veterinary medicine uses for the curing of different livestock ailments. A total of 9 medicinal plants were collected for commercial purposes and some handsome revenue was generated from their sale at local level. The study concluded that the area is rich in certain medicinal plants of commercial importance and possess great demand in the world market. They may contribute their share for the development of pharmaceutical industries in Pakistan and can become a source of sustainable income for the local community. Further study is, therefore, required to quantify the availability of species and to suggest new avenue for their conservation.

Key words: Conservation, endangered, medicinal plants, ethno-botany, multipurpose plants.

INTRODUCTION

Shangla district is traditionally rich in indigenous usage of plants and forest product. The improvement in the socio-economic uplift of the area in the form of communication, education, health facilities has changed the traditional use of plants and related knowledge system (Jinous and Fereshteh, 2012). Such traditional knowledge had existed in area since time immemorial. It is, therefore, important to document the indigenous knowledge about the uses of plants.

Plants have been used as a source of medicine throughout the world for more than 5,000 years old and

still continue to occupy important position in traditional as well as modern system of medicines. There are about 3,200 species of plants which possess the medicinal value in Pakistan (Muhammad et al., 2012; Sher and Al-yemeni, 2010). Medicinal plants collection is an economic activity for rural communities in the mountainous region of Pakistan. The collectors, the majority of whom are women, in far-flung areas invest their time and labor collecting medicinal plants and other economic plants, but receive minimal economic returns for their efforts due to myriad challenges they face in accessing markets

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(Sher and Al-yemeni, 2010; Shinwari and Kaiser, 2011).

The present study was, therefore, initiated to document the important plants of the valley, as the valley is ethnobotanically unexplored and rich in plants resources. The finding may be of help for further research and for those working in and relevant disciplines of biodiversity conservation. Ethno botanical knowledge deals with the total natural and traditional relationship and the interaction of man and surrounding with plant wealth. It is the study of how the people of a particular culture and region make use of plants. Plants are, therefore, universally and invariably used for curing diseases and earning livelihood. However, this indigenous culture loss was due to modern lifestyles and rapidly eroding traditional indigenous societies and their healing knowledge from the study area, and one of the objective of the present study is to preserve this knowledge for future use. No such reference exists on the ethnobotany of district Shangla. The present study was, therefore, conducted to prepare an inventory of plant used indigenously in the area.

MATERIALS AND METHODS

Study site

Upgraded as a district in 1995, Shangla is bound on the east by district Batagram and tribal area of Kala Dahka along which the river Indus flows for about 75 km on the west by district Swat, on the south by district Buner and tribal area on Kala Dahka, and on the north by district Kohistan (Figure 1). Geographically it is located at 34, 31 to 33°, 08° north latitude and 72, 33 to 73°, 01° east longitudes, at an elevation of 3,164 meters above sea level with a total area of 1,586 square kilometers (Figure 1). Total population of the district is 541,000 (that is, 341 persons per square km) living in 111 settlements of 53,539 households with an annual growth rate of 3.3%. Average household per village is approximately 107 and lies on hard and hilly remote areas. High mountains and narrow valleys dominate the topography of district Shangla. These mountains are the western extremities of the great Himalayan range. District Shangla is a complex patchwork of tribal, feudal, conservative, and above all of patriarchal norms. The people belong to different tribes including Yousafzai, Gujar, Ajar, and Syeds. Most of the people are living in joint family systems. Subsistence agriculture is the main source of livelihood. The district has 4,175 ha agriculture land. The majority of the people are working in the Middle East, Karachi, Quetta, and some other parts of the country for earning their livelihood. The district has two tehsils, namely Alpori and Poran, with 28 union councils. Major occupations include coal mining in Balochistan and Hyderabad and agriculture.

Survey procedure

An ethnobotanical survey was conducted during summer of 2008 in various parts of district Shangla. The area was divided into three different altitudinal zones with the help of map and toposheet. Accordingly, the area was visited in the months of April, May and June for plants and information collection. A semi-structured questionnaire was devised to document the traditional knowledge of local people regarding plant resources. Generally, elder persons whose practical knowledge was respected by others and those who practice popular folk medicines were contacted and interviewed about the plants. Information about the local names, local uses, parts

used, time of collection, processing and recipe preparation were known and recorded from those local peoples. Plants specimens were collected, dried, preserved and mounted on standard herbarium sheets and were identified with the help of available literature (Nasir and Ali, 1971 to 1995; Sterward, 1972). The nomenclature was later on confirmed from National Herbarium, NARC, Islamabad. The Plants were arranged and documented according to their evolutionary division.

RESULTS

There are 89 species of 50 families used by the locals for various purposes (Table 1). They included 38 dicotyledons, 5 monocots families (Aliaceae, Amcaryllidaceae, Commelinaceae, Liliaceae and Poaceae) and Pteridophytic (Polypodiaceae) family. Poaceae (9 Spp), Fabaceae (7 Spp), Asteraceae (5 Spp), Lamiaceae (5 Spp) and Rosaceae (4 Spp) were important families. The survey revealed that plants play an important role in the traditional livelihood of local folk. The plants could be classified as medicinal (25 Spp), fodder (24 Spp), timber wood (7 Spp), fuel wood (15 Spp), thatching (6 Spp), multipurpose tree (9 Spp), vegetable (9 Spp), poisonous plants (8 Spp), veterinary important plants (24 Spp), condiments (4 Spp), wild fruits (7 Spp), mud supporter (2 Spp), ornamental (5 Spp), broming (3 Spp), agricultural tool making (7 Spp), and household tool making (6 Spp), religious plants of Muslims (5 Spp) and Hindu (6 Spp).

Marketable medicinal plants

The study also revealed that total 9 species: *Berberis lycium*, *Cichorm intybus*, *Diospyrus lotus*, *Dryopteris jaxtapostia*, *Mentha longifolia*, *Morchella esculanta*, *Paeonia emodi*, *Skimmea laureola*, *Viola serpens* were collected for commercial purposes. The local people sell them either fresh or dried. Table 2 indicates that the price of these species per kilogram varies from Rs. 6 to 4000. The highest is paid for *M. esculanta* (4000/kg) followed by *V. serpens* (120/kg). Mostly these plants are collected by women and children and reach the market through a long chain of middle men and agents.

Folk lore medicinal plants

Twenty-five species are reportedly used in indigenous medicine system for curing various ailments (Table 1). Some plants are used individually while others are used in combination with each other. A plant might have single or multiple such uses. The following plants are used for medicinal purposes in the area.

1. *Ajuga bracteosa* (Boti): Whole plant is crushed to get extract. It is mixed with a glass of water and taken early in the morning before breakfast for curing throat infection especially tonsillitis. The aqueous extract is also rubbed



Figure 1. Map of the study area.

on hairs to removed head lice.

2. *Allium sativa* (Ouga): The locals take two bulbs early in the morning before breakfast for controlling blood pressure. It is also believed to be a blood purifier.

3. *Artemisia maritime* (Tarkha): The leaves are boiled in water for an hour and the decoction is taken early in the morning and evening before meals for curing of profuse menstrual bleeding.

4. *Commeliana obliqua* (Narray): Mustard oil is placed on the leaves and slightly warmed. It is wrapped around the swollen points and skin for removing pus, to ensure early healing of wounds etc.

5. *Cuscuta reflexa* (Zelai): The plant is boiled with the bark of *Juglans regia*. The extract is used for gargling 2 to 3 days and before going to bed for curing toothache.

6. *Cynodon dactylon* (Kabal): The decoction of the plant is taken with a glass of water 3 times a day for checking nose bleeding.

7. *Diospyros lotus* (Tour amlock): The dried fruit is eaten as fruit and helps to cure constipation. It is considered a nutritious food during winter.

8. *Datura stramonium* (Dautura): The flowers are collected early in the morning with dew drops on them and crushed. This extract is used for curing earache. A drop or two are also taken with a glass of milk as a remedy for bronchial and respiratory problems. The recipe is locally administered 3 times a day for 10 to 15 consecutive days. The juice from fruit is used for committing suicide by especially women and girls.

9. *Fragaria visica* (Dazmakoy tont): Whole plant boiled in water is mixed with crushed coconut and left over night. It is taken as a brain tonic early in the morning to enhance nerve strength. Their fruits are edible.

10. *Fumaria indica* (Papprra): Whole plant is boiled on water for an hour and the extract is taken in the morning during summer for curing fever and to keep the body cold.

11. *Ficus carica* (Inzar): The dried and fresh fruits are considered good for curing of various kidney problems. The fruit is dried in the sun and 4 fruit are eaten early in the morning before breakfast to remove kidney stone. The latex from leaves and branches are used for removing

Table 1. Ethno veterinary medicinal plants of District Shangla. Medicinal plants used in ethnoveterinary practices in shawar valley.

S/No	Family Name	Botanical Name	Local Name	Diseases, Treated	Animals
1	Aliaceae	<i>Allium sativum</i>	Ouga	Digestive tract diseases	Buffaloes, cows
2	Araceae	<i>Arisaema jacuemonitii</i>	Marjarrai	Cough and respiratory tract infection	Cows and buffaloes
3	Asteraceae	<i>Artemisia brevifolia</i>	Tarkha	Digestive disorders	All types of livestock
		<i>Cichorium intybus</i>	Han	Fever	Sheeps, goats, cow and buffaloes
1	Berberidaceae	<i>Berberis lyceum</i>	Kwaray	Digestive and tonic	Buffaloes, cows, goats and sheep
2	Brassicaceae	<i>Lepidium sativum</i>	Halam	Takoo (Charmekh)	Cows and Buffaloes
3	Caryophyllaceae	<i>Stellaria media</i>	Oulalai	Digestive disorder	All livestock
4	Fagaceae	<i>Quercus dilatata</i>	Banj	Urinary tract diseases	Cows and Buffaloes
5	Fumariaceae	<i>Fumaria indica</i>	Papra	Fever	All types of livestock
6	Geraniaceae	<i>Geranium wallichianum</i>	Srazela	Promote lactation	Cows and buffaloes
7	Hypericaceae	<i>Hypericum perforatum</i>	Shin Chay	Wound healing	Cows, buffaloes, goats and sheep
1	Lamiaceae	<i>Mentha longifolia</i>	Valenay	Flatulence	Cow, buffaloes and goats
		<i>Origanum vulgare</i>	Shamakay	Increase lactation	Cows, buffaloes and Goat
		<i>Salvia moorcroftiana</i>	Khardag	For removal of placenta	Cows and buffaloes
1	Meliaceae	<i>Melia azadirach</i>	Shandai	Carminative and deworming agent	Cows, buffaloes goats and sheeps
2	Paeoniaceae	<i>Paeonia emodi</i>	Mamekh	Increase lactation and tonic	Cows, buffaloes and goats
3	Phytolaccaceae	<i>Phytolacca latbania</i>	Tamakoo sag	Fever and body tonic	Buffaloes
4	Polygonaceae	<i>Bistorta amplexicaulis</i>	Tarwa panra	Paralysis	Cows, buffaloes and goat
5	Ranunculaceae	<i>Delphinium denudatum</i>	Qaziband	As deworming agent	All types of livestock
6	Saxifragaceae	<i>Berginia ciliate</i>	Makanrr patt	Diarrhea	Cows, buffaloes, sheeps and Goats
7	Rutaceae	<i>Skimmea laureola</i>	Namer	For the removal of liver fluke and other intestinal worms	Sheep, goats, cows and buffaloes
8	Thymeliaceae	<i>Daphne mucronata</i>	Laighunary	For killing ticks, lice etc	Cows and buffaloes
9	Urticaceae	<i>Urtica dioica</i>	Seezonkay	Increase milk amount	Cows and buffaloes

warts. The fresh latex is spread on the warts 2 to 3 per day within 10 to 15 days.

12. *Berberis lycium* (Kwaray): Fresh roots are boiled in water for curing jaundice and chronic fever. Some people prefer to use the powdered root mixed with raw sugar for curing various intestinal and stomach problems. Locally it is also recommended for the curing of throat infection.

13. *Malva neglecta* (Panirak): The roots are boiled in water and the extract is mixed with seeds of

Lepidium sativum. The mixture is given to the body as purgative.

14. *Mentha arvensis* (Pudina): The fresh leaves are used in chatnai. A table spoonful powdered leaves are taken with a glass of water for the curing of stomach pain and indigestion.

15. *M. longifolia* (Valaney): The powdered leaves are mixed with boiled eggs. It is used at bed time for curing cough and chest pains. The decoction of the fresh leaves is also used for controlling vomiting.

16. *Narcissus communis* (Gulinargas): The flowers are boiled in water for 15 min. A cup of the extract is administered 3 times a day to combat epilepsy.

17. *Opuntia dellenii* (Zoqam): The fruit juice is extracted. A cup of this juice three times a day is taken for curing diabetes.

18. *Oryza sativa* (Chawal): The rice is boiled for an hour and the extract along with the rice is taken to treat dysentery, constipation and diarrhea.

Table 2. Economic utilization of multipurpose trees in District Shangla.

S/No.	Botanical Name	Local	Uses
1	<i>Ficus carica</i>	Inzar	Use in native medicine, fuel wood, wild fruit, soil stabilization and having religious value
2	<i>Juglans regia</i>	Ghoz/ Akhrote	Timber wood, fuel wood, furniture, turnery, curving and handicrafts, tannin/dyes, wild fruit, native medicine, fruits are used in lips decoration during weeding, also used as a rootstock of improved varieties of walnut
3	<i>Morus alba</i>	Spin tout	Both <i>Morus alba</i> and <i>nigra</i> are used as wild fruit, native medicine, timber/fuel wood, furniture fodder, shade, sport goods and also used as rootstock of <i>Morus lavigiata</i> , agricultural implements
4	<i>M. nigra</i>	Tour tout	Both <i>Morus alba</i> and <i>nigra</i> are used as wild fruit, native medicine, timber/fuel wood, furniture fodder, shade, sport goods and also used as rootstock of <i>Morus lavigiata</i> , agricultural implements
5	<i>Diospyros lotus</i>	Tour amluk	<i>D.lotus</i> are used as a native medicine and both species are used as fuel wood and dry leaves are used as fodder for goats, wild fruit and also used as rootstock of <i>D.Kakkai</i> ar Japaneses
6	<i>D.Kakki</i>	Sour amluk	Native medicine, agricultural tool making, wild fruits, timber wood, fuel wood, locally the fruit is collected in summer
7	<i>Olea ferruginea</i>	Khone	Native medicine, agricultural tool making, wild fruit, timber wood fuel wood, locally the fruit is collected in summer and used in pickles also used as rootstock for Italian variety
8	<i>Melia azadarach</i>	Toura Bakayana	Timber wood, fuel wood, fruits are locally used in enthnoveterinary medicine, furniture, soil stabilization and sports goods
9	<i>Platanus orientalis</i>	Chinar	Timber/fuel wood, furniture thatching, shade, tool making turnery covering and handicrafts

19. *Plantago lanceolats* (Jabbai): The roots are boiled in water, cooled and taken early in the morning before breakfast to cure chronic dysentery. The seeds are crushed and mixed with mustard oil and the poultice is applied to rheumatism and gouty swelling. The seed mucilage obtained in water is applied on the forehead to cure headache.

20. *Salvia moorcroftiana* (Khardag): The leaves are boiled and extract is used as a mouth wash and for gargling to cure inflammation of mouth and throats (tonsillitis). Mustard oil is spread over leaf and gently warmed. It is applied as poultice to wounds for early healing.

21. *Solanum nigrum* (Kamachu): The mature fresh fruits are mixed with honey and is used for the

treatment of chronic fever. The leaves are applied as poultice to relieve pain muscles.

22. *Viola serpens* (Banapshah): The whole plant is boiled in water for an hour. One cup of this decoction is taken 3 times a day to cure cough and general body weakness. The flowers are mixed with the leaves of *Zizyphus sativa* and used for the curing of diabetes.

23. *Vitex negundo* (Marwandai): An extract is obtained by boiling the leaves. It is sprayed within the granary for eliminating pest of wheat and maize.

24. *Xanthozylum armatum* (Dambara): Fruits and bark is crushed along with *M. arvensis* to prepare a decoction. It is given 3 times a day for treating various stomach problems. The fruits are also used in preparing chatnai and pickles.

25. *Zea mays* (Jawar): The maize flour boiled in milk and administered for relieving backache.

Plants of veterinary medicinal importance

It is found that following twenty four species are used for curing various diseases in livestock (Table 2).

a) Family: Asteraceae

1. *Artemisia brevifolia* Wall. ex DC.

Local uses: Powdered leaves and floral parts are mixed with wheat flour and is given in bolus form to live stock and improving their digestive power.

2. *Cichorium intybus*

Local uses: Fresh or dried ground roots are mixed with wheat or corn flour, locally and is given to cattles for the treatment of fever.

b) Family: Berberidaceae1. *Berberis lycium* Royle.

Local uses: Dried ground bark of the root is mixed with wheat flour and is given to buffaloes, cows, goats and sheeps for improving digestion. It is also considered to maintain health.

c) Family: Brassicaceae1. *Lipidium sativum* L.

Local uses: A decoction of mature seeds is given orally to cows and buffaloes for curing of a disease locally called Takoo (Charmekh), and colic. It is also considered as purgative.

d) Family: Caryophyllaceae1. *Stellaria media* (L.) Cyr.

Local uses: The plant is mixed with other fodder crops and is considered as appetizer agent.

e) Family: Fagaceae1. *Quercus dialatata* Lindl. ex, Royle.

Local uses: Powdered fruit is mixed with wheat or corn flour and is given to cattle for the treatment of urinary tract diseases.

f) Family: Fumariaceae1. *Fumaria indica* (Husskin)

Local uses: Decoction of plants is given to all type of livestock for curing of fever and also considered as refrigerant agent.

g) Family: Geraniaceae1. *Geranium wallichianum* D.Don

Local uses: The powdered rhizome is mixed with milk and is given to cows and buffaloes especially in winter to promote lactation.

h) Family: Hypericaceae1. *Hypericum perforatum* L.

Local uses: Dry powdered root is mixed with wheat flour and is given to cattle for the treatment of wounds.

i) Family: Lamiaceae1. *Mentha longifolia* L. Huds

Local uses: Dried ground leaves are used locally in bolus form to relive flatulence in cattle.

2. *Origanum vulgare* L.

Local uses: Dried ground leaves are used to increase lactation in cattle.

3. *Salvia moorcroftiana* Wall. ex Benth.

Local uses: Fresh leaves are given orally to all types of livestock for the treatment of fever and removal of placenta after parturition.

j) Family: Meliaceae1. *Melia azadirach* L.

Local uses: The powdered leaves, young branches and fruits are locally mixed with wheat flour and used as a carminative and de-warming agent in cattle.

k) Family: Paeoniaceae1. *Paeonia emodi* Wall. ex Hook.F

Local uses: Powdered rhizome is given to cattle in bolus form, to increase lactation, and also as general body tonic.

l) Family: Phytolaccaceae1. *Phytolacca latbonia*

Local uses: The ground rhizome is given to the buffaloes in water to treat fever and as a general body tonic.

m) Family: Polygonaceae1. *Bistorta amplexicaulis* D.Don

Local uses: Fresh ground root is given to cattle in bolus for curing of paralysis in cattle.

2. *Rumex dentatus* L.

Local uses: Fresh crushed leaves are mixed with wheat flour for the treatment of constipation in cattle.

n) Family: Ranunculaceae1. *Delphinium denudatum* Wall.

Local uses: The powdered rhizome is mixed with wheat flour and Dalda Ghee and is used as dewarming agent in cattle.

o) Family: Saxifragaceae1. *Berginia ciliata* (Haw.) Sternb

Local uses: Locally the dried leaves are crushed and mixed with wheat flour and are used to cure diarrhea in cattle.

p) Family: Rutaceae1. *Skimmea laureola* (DC) Sieb and Zucc.

Local uses: Dried ground leaves are given orally to the cattle for the removal of liver fluke and intestinal worms. Also used in stomach disorders.

q) Family: Thymelaceae1. *Daphne mucronata* Royle.

Local uses: Locally the decoction is applied superficially on skin for killing the ticks, lices and other insects in the skin of cattle.

r) Family: Urticaceae1. *Urtica dioica* L.

Local uses: The whole plant is mixed with other fodder crops in considerable amount for increase in milk production in cattle.

s) Family: Alliaceae1. *Allium sativum* L.

Local uses: Locally the ground bulb of *Allium sativum* is mixed with wheat flour and is given to buffaloes and cows to combat digestive tract diseases and to enhance digestion.

t) Family: Araceae1. *Arisaema jacquemontii*

Local uses: Its dry rhizome is boiled for a little while and then is crushed and given to cows and buffaloes in small amount with wheat flour for curing of respiratory tract infections with cough.

Multipurpose plants

Nine species namely *Platanus orientalis*, *Morus alba*, *M. nigra*, *Juglans regia*, *Melia azadarach*, *Ficus carica*, *Olea ferruginea*, *Diospyros lotus* and *D. Kakkai* serve multipurpose trees. They are used as timber/fuel wood, wild fruits, agriculture tool making such as plough, digger handles, axles handles carts and water wheel and for medicinal purposes (Table 2).

Tool making plants

Boats were made from the straw of *Oryza sativa* and writing pens were made from *Arundo donax*, *Saccharum munja* and *S. spontaneum* while bread baskets were made from *S. munja* and *S. spontaneum*. Similarly, beg baskets (Char) were made from the long branches of *Morus alba* and *M. nigra* and were utilized for humus collection during winter.

Poisonous plants

Eight plants are considered poisonous. They include *Polygonum barbatum*, *Chenopodium ambresoides*,

Cannabis sativa, *Ranunculus arvensis*, *R. muricatus*, *Datura stramonium*, *Euphorbia helioscopia* and *Stachys parviflora*. The local extract juice from *Polygonum barbatum* and *C. ambresoides* and pour into small canal and streams to catch fishes. It makes them blind, fruits of *D. stramonium* are used for committing suicide.

Holy and religious plants

Total eleven different species were considered holy or religious plants by Muslims (5 Spp) and Hindus (6 Spp). *Olea ferruginea*, *Ficus carica*, *Vitex negundo*, *Celtis caucasica* and *Vitis vinifera* were the holy/religious plants from Muslims point of view while *Cynodon dactylon*, *O. sativa*, *V. negundo*, *Platanus orientalis*, *Olea ferruginea* and *Celtis caucasica* were considered as the religious plants by Hindus.

Plants considered holy by Muslims

These considered holy by Muslims are either grown in holy places, shrines, mosque/grave yard or they have been mentioned in the Holy Quran.

(i) *Ficus carica* (Inzar): The species is mostly found in graveyards/shrines. It has been mentioned in the Holy Quran verse 95.1 (Be oath on fig and Olive). The local believe that when the plant is grown on the grave of a person. The God Almighty will excuse all his sins and will send them to the heaven. The Gujar and nomads put the placenta (after delivery of cattle) on the branches of fig with a belief that God will increase the milking capability of cattle and the offspring will grow better. The locals also believe that some if one sees the flower of fig the person will become rich and will be a lucky man. Therefore, the people value the plant. Names such as Inzar Gul (Flower of Fig) are also derived from fig.

(ii) *Olea ferruginea* (Khona): This tree has been mentioned in the Holy Quran verses: 98 to 1 (Be oath an fig and olive) and verses 24 to 82 (We pour water in abundance and we split the earth in fragments and produce olive/dates). The tree also grows in grave yards. The local believes that the one who burns this tree as fire wood will become poor.

(iii) *Vitex vinifera* (Kwar): This plant has been mentioned in the Holy Quran verse 80-25.32 (And we produce grapes and nutrients plants for use and convenience to you and your cattle). Therefore, the local also respect the plant.

(iv) *Celtis caucasica* (Tagha) and *Vitex negundo* (Marwnadai): Both the species occur in the graveyard or along the shirne and therefore the locals respect them.

Plant considered Holy by Hindus

(i) *C. dactylon* (Kabal): According to Hindu belief, this grass appear when the sea milk was churned by the gods and demons with the help of mountain Mandara is the churning stick/the serpent vasuki as the churning rope. It is considered to be a remover of all sins because it is believed that Brahama resides in the roots. Vshi in the plant body and Silva at the tips of the leaves. In the month of September, on the 8 day of moon the aged women wear *Cynodon* with red thread on their arms as a mark of prosperity and long life. The festivity is known as "Durva Astomi". While the sikh people use this grass with blue thread around right arms to repel bad gods.

(ii) *O. sativa* (Sholay): It is considered sacred by the Buddhists as the life of Sidhartha was saved during his fast by sujata, offering him rice prepared in milk. The local aged Hindu women considered the inflorescence as sacred symbol of goddess Lakshmi that is, wealth and is used on all auspicious occasions.

(iii) *V. negundo* (Marwandai): The local Hindu believe that the fruits/flowers when offered to gods and goodness invoke blessing for the fulfillment of wishes.

(iv) *P. orientalis* (Chinar): The childless Hindus women do a number of adorations/totems for having a son. The Buddhist believe that by burning the wood of *Platanus* the person can become a pauper.

(v) *O. ferruginea* (Khona) and *C. caucasica* (Togha): The local Hindu believe that if *Olive* and *Celtis* fruits are put on the forehead of a person at the time of death, he goes to heaven.

DISCUSSION

The natural renewable resources are not scientifically managed and therefore, these resources along with traditional knowledge are rapidly disappearing in many parts of the study area. Similar results were also reported by Choudhary et al. (2008) from Rajasthan of India, who reported that indigenous knowledge of plant resources is fast eroding and its inventorying is urgently needed. Therefore, there is an urgent need for recording and documenting ethnobotanical knowledge of different ethnic communities. This paper has documented various ethnobotanical uses of plants of district Shangla and it is reported that many of these plants have dual importance, firstly they can be a promising future food and secondly can be used as future pharmaceutical analyses. The results are in line with the finding of Shengo et al. (2013) who reported that plants active ingredients are promising source of pahramceutical study. In spite of the economic importance, many of these species are either endangered

or appear at the verge of extinction in local area. Among the documented species some are used as a wild fruit, recognizing the role of such trees. The Food and Agriculture Organization (FAO) (1989) reported the major links between forestry and food security: Environmental, production and socio-economic linkages which are inter-related. Although the production and sustainability of food is the job of an agriculturist, yet forests or farm trees do provide a critical support to agricultural production. Therefore, forestation with the participation of local masses play a useful role in raising the living standard of rural people as forests or just one element within the complex fabric of rural life.

The present study revealed 25 plant species used by the inhabitants of the investigated site for curing various diseases. Most of the species, including *V. serpens*, *Z. Mays*, *P. lanceolatus* and *B. lycium* were used for the curing of various intestinal and stomach problems. Shinwari and Kaiser (2011) reported that most of the wild plants were used for curing constipation, diarrhea and intestinal disorder by the people of Pakistan. However, the species used by them were different from those of the present study. The plants were used either individually or in mixture with other plants or even in combination with item such as sugar and wheat flour etc.

The present investigation revealed 24 plants species used for the treatment of livestock diseases. Mostly the women and children have been found to be the active gatherers and collectors of the 9 economically important plants. They receive very limited reward in the trade chain of medicinal herbs, so they do not take care during collection and processing of the plants. Therefore, most of the economically important plants species are becoming rare and endangered and on the verge of local extinction in the area. Some of the plants species were considered holy or religious plants by both Muslims and Hindus. Their illicit cutting was prohibited by the religious scholars of both Muslim and Hindus. Therefore, these religious plants were conserved and protected since time immemorial. Shinwari and Gillani (2003) besides highlighting the improvement aspect in multipurpose trees, also touched upon fruits and fodder aspects of these species. The present study revealed that multipurpose trees and other woody perennial are important sources of nutrition and income generation for the rural household. In addition to this major advantage, few species have other end uses as fodder, fuel/timber wood and medicine etc.

The presented study also inventoried multipurpose fruit trees and reported that several indigenous species of fruit trees have as genetic resources base for improvement of commercial species, some are used as root stock for grafting/budding of commercial fruits varieties (Volpato et al., 2009). A thorough survey regarding distribution, fruit development, growth and ecological characteristic may be under taken to initiate *ex-situ* and *in-situ* conservation measure for the endangered or vulnerable species in the

area. Exchanger of germplasm in species having wider range of distribution would be very useful. Species like *J. regia*, *D. lotus*, *F. carica*, *P. communis*, *M. alba* and *M. nigra* are taken on priority basis. For medicinal plants a demonstration plot of the economically important species for *ex-situ* study should be established to encourage their management/conservation in their native habitats (*In-situ* study). These ecological efforts with the involvement of local masses might lead to the rehabilitation of the deteriorated ecosystem, further this will uplift the socio-economic status of the inhabitants of the area. These bio-resources along with its bio-diversity must survive for the survival of mankind.

The need to conduct the present ethnobotanical survey was realized that there is a need to obtain information on the available inventory and conservation status of high potential medicinal plants in the study area. Therefore, there is a need to come up with a plan that promotes optimal benefits to collectors and other stakeholders in the medicinal plants sector, which will ensure sustainable uses and production of high value medicinal plants.

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