Full Length Research Paper

Ethnopharmacologically important medicinal plants and its utilization in traditional system of medicine, observation from the Northern Parts of Pakistan

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Wild medicinal plants gathering for the treatment of various human ailments is an ancient tradition that has endured in mountainous areas of Pakistan. In order to understand the pattern and uses of plants, a study on the Ethnopharmacologically important medicinal plants of Shawar valley, District Swat was conducted during summer 2008. Information’s about these plant resources were collected through semi-structured interviews, field observation and group discussion. In order to document the present use of medicinal plants growing in and around the study area an elderly person up to age group 60 was mostly interviewed. The study revealed that 87 plants species of 58 families of having ethnomedicinal importance. There were 50 Dicotyledonous families, 3 Monocotyledons families (Aliaceae, Iridacea and Poaceae), 2 Gymnosperms families (Pinaceae and Taxaceae) 2 Pteridophytes families (Polypodiaceae and Pteridaceae) and family Halvelaceae of fungi. These species were used for the curing of various human ailments in indigenous system of medicines. Some plants are used singly while many others are used in combination with other plants or edible items. Similarly, few plants species are considered for the treatment of only one specific disease while several other have multiple such medicinal uses. These are mostly used for the curing of gastro-intestinal problems, emmenagogue and antispasmodic and also for general body tonic. The detail local uses, local method of recipe preparation and application along with their local name and disease treated were reported for each species. The study also observed that the availability of pharmaceutically and therapeutically important MAP species is declining and the number of rare and threatened species among the MAPs is increasing in the area. Further study is, therefore, required to quantify the availability of species and to suggest suitable method for their production and conservation. Recommendations are, therefore, given in the spheres of training in identification, sustainable collection, value addition, trade monitoring and cooperative system of marketing of medicinal plants.

Key words: Medicinal plants, human ailments, traditional system of medicines.

INTRODUCTION

The study area “Shawar Valley” is located in the Northern most part of Pakistan. Topographically the area is rugged mountainous and varying in elevation from 1200 m at Sigram to 3600 m at Chotasar peak. The valley comprises of 5 big villages and 10 small hamlets with a population of about 15,000 people (Census Report, 1998).

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Studies have revealed that commercial collectors have increased to a large extent the harvesting practices used by untrained collectors. This has resulted in over-exploitation of medicinal plants and other important forest resources. The appropriate timing to collect the desired parts of medicinal plants of certain age will determine the yield percentage and quality of therapeutically active biochemical ingredients. Lack of knowledge concerning economic value of medicinal and aromatic plants has led to their mismanagement and least profitable exploitation not entirely by local residents but also by visiting collectors.

Gathering and processing of medicinal and aromatic plants for family use in human and livestock treatment is a centuries old practice, and have also been used virtually in all cultures (Hussain et al., 2004). The use of traditional medicine for maintenance of health in most of the developing countries has been widely observed as a custom. Furthermore, an increasing reliance on the use of medicinal and aromatic plants in the developed societies has been traced to the extraction and development of several drugs and chemo-therapeutics from these plants as well as from traditionally used rural herbal remedies. Moreover, in these societies, herbal medicines have become more popular in the treatment of minor ailments and also on account of the increasing costs of personal health maintenance.

Collection and sale of medicinal and aromatic plants and other non timber forest resources is an important economic activity in the Northern parts of Pakistan including our study valley, and about 5000 families are involved in the collection and processing of medicinal plants in the region (Olsen and Larsen, 2003). The most active members of plants gathering and processing are women and children from middle hills. These collectors receive the minimum in the trade chain of medicinal herbs (Sher et al., 2005). Therefore, the local people are losing the preservation of traditional knowledge of medicinal plants and other important forest resources. Secondly, with the growing population of human being couple with the livestock population the pressure on wild plant resources is increasing, resulting in an alarming decrease in the biomass coverage of certain economically and pharmacologically valuable plant species. Different research workers undertook some work on the documentation of ethnobotany of District Swat including the investigated area. But no literature exists on the Ethnopharmacologically important species of coniferous forest of “Shawar valley”. Therefore, the present endeavor was initiated with the aim of preparing an inventory of the ethnomedicinally and Ethnopharmaceutically important plants of the valley along with their traditional uses in traditional system of medicine, as the valley is ethnomedicinally unexplored and rich in plants resources. The finding may be of help for further research and for those working in the relevant disciplines of ethnopharmacy and medicines.
MATERIALS AND METHODS

A study on the Ethnopharmaceutically valuable plants species of “Shawar Valley” of District Swat was conducted during spring and summer, 2008. Prior to exploring the ethnomedicinally important plant resources, topo-sheet map and other general informations of the investigated area were obtained from Forest Department Swat, Pakistan. The area was accordingly divided into different sites and then frequent visits were made first in May, second in June and July, and third in August and September 2008. A semi-structured questionnaire was devised to document the traditional knowledge of local people regarding medicinal plants.

Pre-test

To identify any amendments required to the questionnaire, a pre-test was conducted in the nearby village of the valley. This was conducted in the first week of April, 2008. Any revisions needed as a result of this pre-test were noted and undertaken in the following day of the pre-test.

Field survey

The traditional uses of ethnomedicinal plant resources were gathered from the local people. Participatory techniques were used to collect information and the main techniques and tools used to gather ethnobotanical data were household surveys, key informant interviews and focus group discussions. Generally, the respondents were elderly person and their age group varies from 40 - 60 years and total 153 households out of 200 were contacted and interviewed during the household survey. Their interest as local user, collectors and traders of medicinal plants were documented through questionnaire. Generally, those 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 method preparation were known and recorded from those local people.

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; 95; Stewart, 1972). The nomenclature was later on confirmed from National Herbarium, NARC, and Islamabad. A set of voucher specimens was deposited to National Herbarium, NARC, Islamabad and Botany Department, Islamia College University, Peshawar for record and reference as well. The plants were arranged and documented according to their evolutionary division.

RESULTS

Ethnomedicinal uses

The current study revealed that the flora of the investigated area is rich and provides diverse useful species of medicinal plants. The study documented 87 plants species classified among 58 families of ethnomedicinal importance. There were 50 Dicotyledones families, 3 Monocotyledones families (Aliaceae, Iridaceae and Poaceae), 2 Gymnosperms families (Pinaceae and Taxaceae) 2 Pteridophytes families (Polypodiaceae and Pteridaceae) and family Halvelaceae of fungi. These plants were used for the treatment of various ailments in traditional system of medicines, mostly for stomach and gastro-intestinal problems. The results of the study also revealed that some plants are used singly while many others are used in combination with other plants or edible items. Similarly, few plants species are considered for the treatment of only one specific disease while several other have multiple such uses. Based upon the habit, the reported plants were classified into herbs (53), shrubs (12), trees (19), climbers (2) and one species of fungi. List of all the recorded plant species and ethnomedicinal uses are presented as follows.

Ethnomedicinal flora of Shawar Valley

Group A (Fungi)

Family: Helvelaceae
Morchella esculanta L. pers ex Fr.
Habit: Fungus
Parts used: Fruiting body
Local name: Gujay
Voucher specimen number: NH-ICUP / 08-10
Local uses: Locally the morels are fried with cow’s ghee and eaten after dinner which is considered as a general body tonic.

Group B (Pteridophytes)

Family: Polypodiaceae
Adiantum venustum D.Don.
Habit: Herb
Parts used: Frond (leaves)
Local name: Sumbal
Voucher specimen number: NH-ICUP / 08-11
Local uses: Extract from the leaves is prepared locally and is mixed with the extract taken from Cichorium intybus and is used to treat fever, backache and also as blood purifiers.

Family: Pteridiaceae
Dryopteris jaxtaposta Christ.
Habit: Herb
Parts used: Young shoots
Local name: Kwanjay
Voucher specimen number: NH-ICUP / 08-12
Local uses: It is used as a local vegetable and is believed to improve digestive power.

Group C (Gymnosperm)

Family: Pinaceae
Pinus wallichiana L.
Habit: Tree
Parts used: Resin
Local name: Srap (peoch)
Voucher specimen number: NH-ICUP / 08-13
Local uses: Locally 3-4 drops of resin are mixed with mustard oil and is applied to the ruptured skin as a healing agent.

*Picea Smethina* L.
Habit: Tree
Parts used: leaves
Local name: Kandal (Managazai)
Voucher specimen number: NH-ICUP / 08-14
Local uses: Tea made from fresh leaves is used once in a day for one week to remove kidney stone. It is also used in rheumatism.

Family: *Taxaceae*
*Taxus wallichaina* L.
Habit: Tree
Parts used: Bark
Local name: Banrara
Voucher specimen number: NH-ICUP / 08-15
Local uses: Powdered bark is used with a cup of milk orally as emmenagogue and antispasmodic.

**Group D (Angiosperm)**

**Sub group a:** Dicot
Family: *Amaranthaceae*
*Amaranthus viridis* L.
Habit: Herb
Parts used: Shoots and leaves
Local name: Chalwai
Voucher specimen number: NH-ICUP / 08-16
Local uses: Leaves and shoots are boiled in water and the extract is used for curing of cough and asthma after dinner. Also used as a local vegetable.

Family: *Anacardiaceae*
*Pistacea integerrima* Stew. ex Brandis.
Habit: Tree
Parts used: Leaves and Bark
Local name: Shnai
Voucher specimen number: NH-ICUP / 08-17
Local uses: Powdered bark and leaves are taken with a cup of milk as a tonic for jaundice. Powdered bark and leaves are taken with a cup of milk for curing of dysuria. Dried fruits are also considered as laxative.

Family: *Apiaceae*
*Coriandrum sativum* L.
Habit: Herb
Parts used: Fruit
Local name: Dhanial
Voucher specimen number: NH-ICUP / 08-18
Local uses: The powdered fruit is mixed with sugar and is taken orally for the curing of stomachache. It is also used as a carminative agent.

*Foeniculum vulgare* Mill.
Habit: Herb
Parts used: Fruit
Local name: Kaga Velanay
Voucher specimen number: NH-ICUP / 08-19
Local uses: Powdered fruit is mixed with sugar and is taken with a cup of milk for curing of dysuria. Dried fruits are also considered as laxative.

Family: *Asteraceae*
*Artimisia vulgaris* L.
Habit: Herb
Parts used: Young shoots
Local name: Tarkha
Voucher specimen number: NH-ICUP / 08-20
Local uses: The floral parts and leaves are taken in powdered form with a glass of water as antispasmodic and stomachache.

*Taxaxacum officinale* Weber.
Habit: Herb
Parts used: Leaves and roots
Local name: Ziarr Gulay
Voucher specimen number: NH-ICUP / 08-21
Local uses: Leaves are ground and are taken with a glass of milk as tonic. Decoction of roots is used orally to cure the disorder of kidney and liver.

Family: *Berberidaceae*
*Berbiris lycium* Royle.
Habit: Shrub
Parts used: Root
Local name: Kwaray
Voucher specimen number: NH-ICUP / 08-22
Local uses: Locally the dried bark of roots in powdered form is used as astringent in Gynecological disorders. It is also used in jaundice.

Family: *Bracissicaceae*
*Capesella bursa pastoris* L.
Habit: Herb
Parts used: Leaves and stem
Local name: Bambesa
Voucher specimen number: NH-ICUP / 08-23
Local uses: The fresh leaves are crushed into paste and two-table spoon are taken with milk to treat diarrhea.
Nasturtium officinale R. Br.
Habit: Herb
Parts used: Young shoots
Local name: Talmira
Voucher specimen number: NH-ICUP / 08-24
Local uses: Its leaves and young shoots are boiled in water and are taken as local vegetable for the treatment of constipation and stomachache.

Family: Buxaceae
Sarcococa saligna (D.Don) Muell.
Habit: Herb
Parts used: Leaves
Local name: Ladanrr
Voucher specimen number: NH-ICUP / 08-25
Local uses: The leaves are heated in mustard oil and are applied to muscular pains, twice a day. Infusion of leaves is also taken orally for curing of rheumatism.

Family: Canabinaceae
Cannabis sativa L.
Habit: Herb
Parts used: Shoots and leaves
Local name: Bhang
Voucher specimen number: NH-ICUP / 08-26
Local uses: The leaves are used in bandage (poultice) for wounds healing. In powdered form leaves are taken orally twice a day as anodyne (Pain relieving agent).

Family: Caprifoliaceae
Viburnum grandiflorum Wall. Ex, Dc
Habit: Shrub
Parts used: Fruit
Local name: Ghaz meva (Asos)
Voucher specimen number: NH-ICUP / 08-27
Local uses: The fresh mature fruits of Viburnum grandiflorum are eaten to cure stomach disorders.

Family: Caryophyllaceae
Silene vulgaris (D.Don) Muell. Arg.
Habit: Herb
Parts used: Leaves and shoots
Local name: Bashka
Voucher specimen number: NH-ICUP / 08-28
Local uses: Young shoots and leaves are used as a local vegetable for stomachache. It is also used as emollient.

Stellaria media (L.) Cyr.
Habit: Herb
Parts used: Whole plant
Local name: Oulalai
Voucher specimen number: NH-ICUP / 08-29
Local uses: The decoction of plant is considered as purgeative.

Family: Chenopodiaceae
Chenopodium album L.

Family: Cuscutaceae
Cuscuta reflexa Romb.
Habit: Climber (parasite)
Parts used: Whole plant
Local name: Niladaria
Voucher specimen number: NH-ICUP / 08-31
Local uses: The powdered plant is taken with a glass of milk twice a day after meal for the treatment of diabetes.

Family: Convolvulaceae
Convolvulus arvensis L.
Habit: Climbing Herb
Parts used: Whole plant except root
Local name: Prewathai
Voucher specimen number: NH-ICUP / 08-32
Local uses: Decoction of the plant is used to remove dandruff, when hairs are washed with it.

Family: Ebenaceae
Diospyrus lotus L.
Habit: Tree
Parts used: Fruit
Local name: Tor Amlook
Local uses: Local people, boil the fruit in milk and takes the decoction twice a day orally to cure dysentery and constipation.

Family: Eleagnaceae
Eleagnus umbellata Thumb.
Habit: Shrub
Parts used: Flowers heads
Local name: Ghanam ranga
Voucher specimen number: NH-ICUP / 08-34
Local uses: The decoction of flowers is used twice a day to combat the heart problem, cough and chest pain.

Family: Euphorbiaceae
Euphorbia helioscopia L.
Habit: Herb
Parts used: Root and milky juice
Local name: Mandanroo
Voucher specimen number: NH-ICUP / 08-35
Local uses: Locally it is considered as poisonous but Hakims use it in the tablets of other plants and are used as laxative.

Euphorbia wallichii Hook.f
Habit: Herb
Parts used: Shoots
Local name: Shangla
Voucher specimen number: NH-ICUP / 08-36
Local uses: Dried leaves and seeds are given to children in small amount in bowl complains and also used for the removal of ring worms.

Family: Fagaceae
*Quercus incana* (Hussk.) H.N
Habit: Tree
Parts used: Fruit
Local name: Banj

Voucher specimen number: NH-ICUP / 08-37
Local uses: The powdered fruit is given to children before going to bed for curing of enuresis and dysuria, for a period of three weeks.

*Quercus dilatat* Lindle, ex. Royle.
Habit: Tree
Parts used: Fruit
Local name: Toor Banj

Voucher specimen number: NH-ICUP / 08-38
Local uses: The powdered fruits are used to treat gonorrhea and urinary tract diseases.

*Quercus semicarpifolia* Sm.
Habit: Tree
Parts used: Fruit
Local name: Mer (tarra)

Voucher specimen number: NH-ICUP / 08-39
Local uses: Powdered fruits are mixed with wheat flour and then fried in desi ghee which is considered as a general body tonic.

Family: Fumariaceae
*Fumaria indica* (Husskin)
Habit: Herb
Parts used: Whole plant
Local name: Paprra

Voucher specimen number: NH-ICUP / 08-40
Local uses: Powder of the whole plant is mixed with honey and milk and is used for curing jaundice also used as blood purifier.

Family: Geraniaceae
*Geranium wallichianum* D.Don ex. Sweat
Habit: Herb
Parts used: Rhizome
Local name: Srazela

Voucher specimen number: NH-ICUP / 08-41
Local uses: Root decoction in combination with pods of *Pistacea integerrima* is used for the curing of kidney diseases, cough and fever.

Family: Hippocastanaceae
*Aesculus indica* (Wall ex Comb) H.K.F
Habit: Tree
Parts used: Fruit
Local name: Jawaz

Voucher specimen number: NH-ICUP / 08-42
Local uses: Powdered fruits are eaten before breakfast and considered as anthelmentic. Oil extract from the fruit is externally applied to treat rheumatism.

Family: Hypericaceae
*Hypericum perforatum* L.
Habit: Herb
Parts used: Leaves
Local name: Shin Chay

Voucher specimen number: NH-ICUP / 08-43
Local uses: Locally green tea is prepared form their flowers especially from the petals and use three times a day for the curing of epilepsy.

Family: Juglandaceae
*Juglans regia* L.
Habit: Tree
Parts used: Fruit and bark
Local name: Ghuz

Voucher specimen number: NH-ICUP / 08-44
Local uses: Ripened fruit is used as a brain tonic. The bark of stem and root antiseptic toothbrush locally called “Dandasa”.

Family: Lamiaceae
*Ajuga Bracteosa* Wall. ex Bth.
Habit: Herb
Parts used: Whole plant
Local name: Booti

Voucher specimen number: NH-ICUP / 08-45
Local uses: Decoction of the plant or powder is locally swallowed with water before breakfast for the treatment of sore throat and purifying blood. It is also used in epilepsy.

*Mentha longifolia* L. Huds
Habit: Herb
Parts used: Leaves and stem
Local name: Velanay

Voucher specimen number: NH-ICUP / 08-46
Local uses: The decoction of the leaves is taken orally thrice a day for treatment of diarrhea in children. Powdered plant is mixed with sugar and is eaten for the prevention of vomiting.

*Menetha spicata* L.
Habit: Herb
Parts used: Leaves and young shoots
Local name: Pudina

Voucher specimen number: NH-ICUP / 08-47
Local uses: The powdered plant is taken orally with a glass of water early in the morning before breakfast to control vomiting. The recipe is also considered as a carminative agent.

*Micromeria biflora* (Buch-hamp ex. D.Don) Benth
**Habit:** Herb  
**Parts used:** Whole plant  
**Local name:** Naray Shamakay  
**Voucher specimen number:** NH-ICUP / 08-48  
**Local uses:** It is an aromatic agent and locally milk dealer wash their milk containers with it to avoid bad odour, bacterial growth and milk spoilage. (Antiseptic)

*Salvia moorcroftiana* Wall. ex Benth  
**Habit:** Herb  
**Parts used:** Leaves and stem  
**Local name:** Khardag  
**Voucher specimen number:** NH-ICUP / 08-49  
**Local uses:** The leaves are warmed with mustard oil and applied on the swollen skin to release puss, while the inner part of the stem is chewed which is considered as an aphrodisiac agent.

*Thymus linearis* L.  
**Habit:** Herb  
**Parts used:** Whole plant  
**Local name:** Zangali Sperkai  
**Voucher specimen number:** NH-ICUP / 08-50  
**Local uses:** Locally the green tea is prepared from its leaves and stem, which is considered as a recipe for curing fever, cough and cold.

*Plectranthus rogosus* L.  
**Habit:** Shrub  
**Parts used:** Stem and leaves  
**Local name:** Sperkay (Butras)  
**Voucher specimen number:** NH-ICUP / 08-51  
**Local uses:** The dried leaves are chewed in mouth to get rid of toothache.

*Malva neglecta* L.  
**Habit:** Herb  
**Parts used:** Leaves  
**Local name:** Zangali Panerak  
**Voucher specimen number:** NH-ICUP / 08-52  
**Local uses:** It is used as a local vegetable (Sag) to remove constipation and enhance digestion.

*Jasminum officinale* L.  
**Habit:** Shrub  
**Parts used:** Root  
**Local name:** Chambele  
**Voucher specimen number:** NH-ICUP / 08-58  
**Local uses:** Powdered root is taken orally with a glass of water before breakfast as anthelmentic medicine.

*Oxalis corniculata* L.  
**Habit:** Herb  
**Parts used:** Whole plant  
**Local name:** Tarukay  
**Voucher specimen number:** NH-ICUP / 08-59  
**Local uses:** It is mixed in vegetables for taste. Decoction of the plant is taken after meal to enhance digestion.

*Paeonia emodi* Wall.ex Hook. F  
**Habit:** Herb  
**Parts used:** Floral parts (fruit)  
**Local name:** Inzar  
**Voucher specimen number:** NH-ICUP / 08-54  
**Local uses:** The fresh floral parts are taken orally as demulcent. Fruits are edible and are considered to improve digestion.
Parts used: Rhizome  
Local name: Mamekh (Warrd)  
Voucher specimen number: NH-ICUP / 08-60  
Local uses: Powdered rhizome is mixed with prepared halva of wheat flour and is taken with desi ghee, as a general body tonic.

Family: Pappilionaceae  
*Indigofera heterantha* L.  
Habit: Shrub  
Parts used: Leaves and roots  
Local name: Ghwareja  
Voucher specimen number: NH-ICUP / 08-61  
Local uses: The dried powdered root is taken with a glass of water to cure scabies. Powdered dried leaves are also taken with a glass of milk for stomach disorders.

*Lathyrus aphaca* L.  
Habit: Herb  
Parts used: Seed  
Local name: Kurkamanay  
Voucher specimen number: NH-ICUP / 08-62  
Local uses: The decoction of the seed is applied three times a day for healing wounds.

Family: Papaveraceae  
Papaver somniferum L.  
Habit: Herb  
Parts used: Capsule and seeds  
Local name: Qashqash (Apim)  
Voucher specimen number: NH-ICUP / 08-63  
Local uses: Dried capsule is boiled in tea, and is taken orally to cure cough, fever and headache. Seeds are eaten as a general body tonic.

Family: Plantaginaceae  
*Plantago lanceolata* L.  
Habit: Herb  
Parts used: Leaves  
Local name: Jabai  
Voucher specimen number: NH-ICUP / 08-64  
Local uses: Fresh Crushed leaves are applied to treat wounds sores and inflamed surfaces, particularly in feet.

Family: Platanaceae  
*Platanus orientalis* L.  
Habit: Tree  
Parts used: Bark  
Local name: Chinar  
Voucher specimen number: NH-ICUP / 08-65  
Local uses: Powdered dried bark is taken with a glass of milk twice in a day to control diarrhea.

Family: Polygonaceae  
*Polygonum aviculare* L.  
Habit: Herb  
Parts used: Root  
Local name: Palpoolak  
Voucher specimen number: NH-ICUP / 08-66  
Local uses: Powdered root is mixed with sugar and is eaten with a glass of milk as a tonic by female.

*Rheum webbani*um L.  
Habit: Herb  
Parts used: Leaves and Rhizome  
Local name: Shalkhay  
Voucher specimen number: NH-ICUP / 08-67  
Local uses: Both the rhizome and leaves are crushed and taken with a glass of water for the treatment of HBV and HCV.

*Rumex hastatus* L.  
Habit: Herb  
Parts used: Leaves and young shoots  
Local name: Tarukay  
Voucher specimen number: NH-ICUP / 08-68  
Local uses: The leaves are used as local vegetable, which enhances digestion. It is also used as refrigerant in cooling drinks.

Family: Primulaceae  
*Primula denticulata* D.Don  
Habit: Herb  
Parts used: Flower  
Local name: Mamera  
Voucher specimen number: NH-ICUP / 08-70  
Local uses: Powdered dried flowers are applied to eyes for control of eye diseases like opthalmia and also for the improvement of eyesight.

Family: Rhamnaceae  
*Zizyphus vulgaris* L.  
Habit: Tree  
Parts used: Fruit  
Local name: Markhanrai  
Voucher specimen number: NH-ICUP / 08-71  
Local uses: Fruits are edible and are considered as recipe for the treatment of cough and cold.

Family: Rosaceae  
*Crataegus oxycentha*  
Habit: Tree  
Parts used: Fruit
Local name: Tampasa
Voucher specimen number: NH-ICUP / 08-72
Local uses: Its fruit is edible and is believed as heart tonic.

_Fragaria vesica_ L.
Habit: Herb
Parts used: Fruit
Local name: Zmakeen toot (Katal Meva)
Voucher specimen number: NH-ICUP / 08-73
Local uses: Its edible fruits are carminative and laxative and thus improve digestion.

_Prunus cornuta_ L.
Habit: Tree
Parts used: Fruit
Local name: Changa
Voucher specimen number: NH-ICUP / 08-74
Local uses: Decoction of the fruit is taken orally after meal to enhance digestion.

_Rosa moschata_ L.
Habit: Shrub
Parts used: Flower
Local name: Zangali Gulab (Khwrrach)
Voucher specimen number: NH-ICUP / 08-75
Local uses: Decoction of fresh flowers is taken orally, before breakfast to cure stomach disorders.

_Rubus fruticosus_ L.
Habit: Shrub
Parts used: Fruit
Local name: Baganrra
Voucher specimen number: NH-ICUP / 08-76
Local uses: Ripened fruit is eaten to control stomachache and to enhance digestion.

_Spiraea chinensis_ Maxim.
Habit: Shrub
Parts used: Flower
Local name: Krachay
Voucher specimen number: NH-ICUP / 08-77
Local uses: Tea made from flowers is given to women to ease delivery.

_Family: Rutaceae
_Skimmia laureola_ (DC) Sieb and Zucc.
Habit: Herb
Parts used: Leaves
Local name: Namer (Nazar Panrra)
Voucher specimen number: NH-ICUP / 08-78
Local uses: The dried leaves are burnt to expel evils and evil eyes as it is considered as an antiseptic. Tea made form the leaves is used after meal to cure dyspepsia.

_Zanthoxylum alatum_ Steud.
Habit: Shrub
Parts used: Bark
Local name: Dambara
Voucher specimen number: NH-ICUP / 08-79
Local uses: Decoction of bark is used twice a day after meal to cure stomachache.

_Family: Saxifragaceae
_Bergenia ciliata_ (Haw). Sternb.
Habit: Herb
Parts used: Rhizome
Local name: Makanrr path (Gat panrra)
Voucher specimen number: NH-ICUP / 08-80
Local uses: Powdered rhizome is eaten with a glass of water as anti-diabetic and expectorant.

_Family: Scrophullariaceae
_Verbascum thapsus_ L.
Habit: Herb
Parts used: Leaves
Local name: Khardag
Voucher specimen number: NH-ICUP / 08-81
Local uses: Fresh leaves are mixed with mustard oils and applied on swellings as poultice, as it has antibiotic activity.

_Family: Simarubaceae
_Alianthus altisima_ Mell.
Habit: Tree
Parts used: Seeds
Local name: Bakyanrra (Shandai)
Voucher specimen number: NH-ICUP / 08-82
Local uses: The ripened seeds are crushed to extract oil, which is used for the treatment of a skin disease, “urticaria” locally called larrama.

_Family: Solanaceae
_Solanum nigrum_ L.
Habit: Herb
Parts used: Leaves and fruit
Local name: Karmachu
Voucher specimen number: NH-ICUP / 08-83
Local uses: Leaves in the form of paste are applied to skin to cure eczema. The fruits are edible and are used to cure fever.

_Datura stromonium_ L.
Habit: Herb
Parts used: Root and flowers
Local name: Harhanda
Voucher specimen number: NH-ICUP / 08-84
Local uses: The decoction of fresh root is taken orally twice a day for a weak to treat fever. Drops of the decoction are also applied to the ear for the treatment of earache.

_Family: Thymelaeaceae
_Dahne mucronata_ Royle.
Habit: Shrub
Parts used: Shoots and root
Local Name: Laighunay
Voucher specimen number: NH-ICUP / 08-85
Local uses: Infusion of leaves is used for the treatment of gonorrhea. Decoction of roots is used before breakfast as anthelmentic.

Family: Ulmaceae
*Celtis australis* L.
Habit: Tree
Parts used: Fruit
Local name: Tagha
Voucher specimen number: NH-ICUP / 08-86
Local uses: The fruits are edible and are used to cure colic and amenorrhoea.

Family: Urticaceae
*Urtica dioica* L.
Habit: Herb
Parts used: Whole plant
Local name: Seezunkay
Voucher specimen number: NH-ICUP / 08-86
Local uses: It is used as a local vegetable (Sag), for curing constipation, also used in pulmonary diseases.

Family: Valerianaceae
*Valeriana jatamansi* Jones.
Habit: Herb
Parts used: Rhizome
Local name: Mushkebala
Voucher specimen number: NH-ICUP / 08-87
Local uses: The powdered rhizome is mixed with desi ghee and is used for the curing of epilepsy. It is also considered an antispermic agent.

Family: Verbinaceae
*Verbena officinalis* L.
Habit: Herb
Parts used: Whole plant
Local name: Shamakay
Voucher specimen number: NH-ICUP / 08-88
Local uses: The decoction of the fresh plant is taken orally twice a day as anti-malarial and coolant agent.

Family: Violaceae
*Viola serpens* L.
Habit: Herb
Parts used: Flowers and leaves
Local name: Banafsha
Voucher specimen number: NH-ICUP / 08-89
Local uses: Its flowers are eaten directly for the treatment of sore throat, and as carminative agent.

Sub group b: Monocot
Family: Aliaceae
*Allium sativum* L.
Habit: Herb
Parts used: Whole plant
Local name: Ouga
Voucher specimen number: NH-ICUP / 08-90
Local uses: The plant is boiled and the decoction gotten is cooled and is taken twice a day for lowering the high blood pressure.

Family: Iridaceae
*Gynandrisis sisyrinchium* L. Parl.
Habit: Herb
Parts used: Corms
Local name: Gandechar
Voucher specimen number: NH-ICUP / 08-91
Local uses: Decoction of bulb is mixed with *Digitalis* and is taken twice a day as diuretic.

Family: Poaceae
*Avena sativa* L.
Habit: Herb
Parts used: Fruit
Local name: Jamdaray
Voucher specimen number: NH-ICUP / 08-92
Local uses: The fruit is fried in ghee and milk and the obtained paste is considered as general body tonic and an aphrodisiac.

*Cynodon dactylon* L.
Habit: Herb
Parts used: Whole plant except root
Local name: Kabal
Voucher specimen number: NH-ICUP / 08-93
Local uses: The decoction of plant is used as blood purifier and controlling bleeding from nose.

*Zea mays*
Habit: Herb
Parts used: Grains
Local name: Jwar
Voucher specimen number: NH-ICUP / 08-94
Local uses: The flour of maize is poured on fire in a small quantity to get fumigation, and then the body infected from urticaria (*Larrama*) is exposed to the fumes for curing.

**DISCUSSION**

Ethnopharmaceutical knowledge deals with the traditional uses of plants in the indigenous system of medicine. The present study area is rich in medicinal plant diversity, which is most significantly associated with the life and practices of the hill side dwellers of the area. The present study reported that the people of the area rely on plants for medicines and other daily products. There were 87 such medicinal species used in traditional system of medicine by the inhabitants of the investigated site for
curing various diseases. These plants are used to treat about 20 different types of human ailments. Among various classes of traditional uses, all across the globe, various types of gastrointestinal disorders are predominant, and a sizeable number of plant species have been discovered to cure such illness across different ethnic communities (Sher et al., 2010). This finding agrees to that of Yazicioglu and Tuzlacı (1996). Who reported 88 medicinal plants along with their preparation and administration in Turkey used by the local people for the treatment of bronchitis and wound healing. 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. Arshad and Akram (1999) reported that most of the wild plants were used for curing constipation, diarrhea and intestinal disorder by the people of Rawalpindi, 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 items such as sugar and wheat floor etc. Similar information were gathered from local people in Shushunia Hills, India, where in most cases medicines were prepared by the combination of 2 or more medicinal plants (Goshi, 1997).

The present study also revealed that with the increase in elevation and remoteness of the area within the study valley, the involvement of children and women in the collection of, and dependence on medicinal plants increased. This agrees with the studies of Sher et al. (2005) who reported that women and children usually collect medicinal plants as a part time business, in the northern areas of Pakistan. The inhabitants of the area get significant benefits from forest which comes mainly in the form of vast array of forest products especially medicinal plants. Similar observation on the use and dependence of hill side community on forest resources were reported by Sher et al. (2004). However, the natural bio-resources are not scientifically managed and, therefore, they are disappearing in many parts of the world (FAO, 1995). In-spite of the economic and pharmaceutical importance of many of these species is either endangered or appears at the verge of extinction in local area. The medicinal flora of the study area is under heavy pressure as a result of overgrazing, illicit cutting, unabated urbanization and unauthorized collection of medicinal plants and conversion of forest land into agricultural land. Although, these plants have varied ethnomedicinal uses, yet they are not properly managed.

The Chinese scientists extracting oil that is used to cure cancer and the juice extracted from the fruit is sold and used as tonic. Similarly, the Chinese scientists have developed small-scale enterprise from the species like preparation of Jams and prickles etc. The Chinese are earning an annual profit of 05 million US$ from this single species. R. webbanium can develop similar scope in their country especially in the remote pocket District Swat. The approach to improve or restore the ill effects of resources misuse and economic degradation should be in multiple

CONCLUSION AND RECOMMENDATIONS

The area also host many endemic and endangered species of medicinal and aromatic plants, many of them containing medicinal and economic importance. The study also revealed that only few species were known while several species of medicinal and aromatic plants were completely unknown to the community as a whole. Therefore, this study suggests that local community should get education about the identification and importance of indigenous medicinal and aromatic plant species. Indigenous knowledge behind the uses, collection and management of medicinal and aromatic plant species is fastly eroding. One reason for this is the lack of awareness among the local community regarding the economic and pharmaceutical importance of medicinal and aromatic plants. Another factor contributing in the declination of medicinal and aromatic plants cover and eroding of indigenous knowledge is the inadequacy of the medicinal and aromatic plants market and lack of government support. This is, therefore, an issue of national policies and must be address. The study recorded highly valuable informations about some MAP species. For instance R. webbanium is widely distributed and quite common in the study area.

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directions, from improving the economic standard to changing the attitudes of the local people should be adopted in future. One important lesson learned from this study is that the establishment of a community based enterprise that depends on local biodiversity can be a strategy to provide more equitable returns to community groups and hence incentives for conserving the resource base. This type of study may help in better understanding of local forest resources and potential medicinal and aromatic plants. Lack of knowledge regarding the local potential at the national level would eventually lead to the genetic erosion of medicinal and aromatic plant species and the related indigenous knowledge system. In order to ensure the management and conservation of medicinal and aromatic plants, documenting of indigenous knowledge system and its constant and consisting support is essential.

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