ABSTRACT

The ethno medicinal study play a key role in the control of various disorders and provide a base for further study on scientific lines. The purpose of the survey was to observe the traditional medicinal plants and their uses for the various common disorders in Peerano Valley, district Malakand Khyber Pakhtoonkhwa, Pakistan. The study was carried out from March, 2015 to April, 2016 and collected the data from the local inhabitants through questionnaires, interviewed regarding the available medicinal plants. The total 35 plants are recorded as medicinal belonging to 31 families. The study showed that 20 plants species were herbs, 8 tress and 7 were shrubs. The common parts were leaf, fruit, and whole plant, which were used in greater numbers. The inhabitants used them for stomachache, fever, cough, healing of wounds, diuretic, antiseptics, hepatic disorders, diarrhea and digestive disorders. The survey aims to aware about valuable plants and to protect them from extinction. The old people are aware of the accurate knowledge of medicinal plants, it is needed to preserve this knowledge for the next generation.
Keywords: Ethno medicinal study; wild medicinal plants; Peerano Valley; District Malakand.

1. INTRODUCTION

Ethno botanical study is the branch of science related to special branch namely ethno biology, it is define as the science of the traditional use of plants [1]. Ethno botany is related with the study of direct, traditional and relationship between plants and human societies. It has been renowned as a multi-disciplinary science which comprises of many interesting and fruitful aspects of plants sciences record, anthropology, customs, traditions, and literature [2]. Ethno botany gives us an account of uses of plant species by the people relating to particular area that how they take into use plants as a foodstuff, for medicinal purposes, for clothes, as a hunting material and in local traditions [3]. Infect it is the sound study of the association between people and plants. The study have become increasingly valuable in the development of health care and conservation programs in different parts of the world [4] among the world population about 80% of people depend on medicinal plants use, which purely comes from medicinal plants [5]. More than 5000 plant species belonging to angiosperms are used worldwide for medicinal purposes [6]. Epidemiological studies have shown that many of the phytochemicals from medicinal plants possess anti-inflammatory, ant atherosclerotic, antitumor, ant mutagenic, ant carcinogenic, antibacterial, or antiviral activities, they are also associated with reduced risks of cancer, cardiovascular disease, diabetes and lower mortality rates of several human diseases [7]. The poor communities all over the world are using and get benefits from medicinal plants. Most of these medicinal plants are flowering plants [8]. However along with medicinal uses, the plant species are also playing a vital role in the improvement of the economics status of the local people [9]. Because of rapid use of medicinal plants approximately business of medicinal plant species will reach to 5 trillion dollars (US) by 2050 [10]. Six thousand species of higher plants are found in Pakistan, 12% of them are used medicinally [11]. It was studied by Hocking in 1958 that about 84% of the population of Pakistan uses plants for medicinal purposes [12]. Mostly unani system of medicine is used in Pakistan but still the people of distant areas uses plants for medicinal purposes [13]. This field is getting strength in Pakistan with the passage of time as a lot of work has been carried out in different parts of the country [14-17]. The attention must be given to these plants before the lost forever. The survey is carried out to explore the important account of the wild medicinal plants which are used by the local people, exported to other parts of the country, and the species which are over exploited and are about to get threatened either due to overgrazing, deforestation and due to the law and order situation in the area since 2007 - 2009. The objectives of this survey was to bring awareness among the people about therapeutic uses of wild medicinal plants, control the diseases, and store the knowledge and medicinal uses of plants present in district Malakand, Khyber Pakhtoonkhwa, Pakistan.

2. MATERIALS AND METHODS

2.1 Ethno Botanical Survey

An ethno botanical study was carried out from March, 2015 to April, 2016 in different areas of tehsil Batkhela which are ecologically and economically important. Mostly the upper areas of tehsil Batkhela toward the south-east areas of tehsil Batkhela were selected which include the village of Peerano, Sangina, Akhtar ghwandai. The upper areas of tehsil toward west were selected because the people of these areas have less proper facility of hospital. They attend Batkhela hospital only in case of severe problems; in case of minor health diseases they use plants directly to overcome the problem. The information about the medicinally important wild plant species was collected from 42 peoples through a Questionnaire (Table 2); the questionnaire was classified into two categories. In category “A” there were information’s about the informants, in category “B” there were general information about the plant species, and their medicinal uses. Within the questionnaire there were information’s about the local name, part used in medicines, uses, marketing, distribution, availability, abundance and that in which way the part is used for diseases. A standard procedure was carried out for the information. Mostly those people were selected for the interviews who were above 40 years of age due to their knowledge and experience about local use of plants of the areas. The informants who were selected for the interviews were mostly the residents of rural areas. For further confirmation plants were taken to the local hakims (herbal practitioners)
and pansaris (traditional medicinal plants shopkeepers). The shop keepers were asked about the source of plants, that how they receive and export it to other markets within the locality especially with in the country.

2.2 Name of the Plants

Locally in the area certain places and villages are named after the name of plants species. Baghona village is present in Batkhela. “Baghona” named due to its abundant number and stone fruits.

2.3 Study Area

This place (study area) is situated in KPK, its geographical coordinates are 34° 37' 0" North, 71° 58' 17" East and its original name (with diacritics) is Batkhela (Fig. 1).

2.4 Climate of Peerano Valeey (District Malakand)

The climate of this area is broadly described as typically continental type. The weather is little bit pleasant in summer, but in winter it is very cold. The hottest temperature can be noted in the month of July i.e. (15.67ºC to 45ºC), while January and February are the coldest months and the temperature generally reaches to freezing point up to a temperature of mean maximum and minimum 8.8ºC to -5ºC. The average rain fall in the month of March is 119 mm (Fig. 2). The irrigation system of tehsil Batkhela depends on river Batkhela and Moonsoon rain totally. Maximum land part is irrigated through this river. The soil of tehsil Batkhela is mostly loamy type and irrigated through Swat River [13].

2.5 Geography District Malakand

The soil of Malakand is loamy and moist, and is irrigated by the Batkhela River, which flows from Swat, through Kohistan and joins the river Kabul near Peshawar. There are rare scenic places and tourist resorts in Malakand like Jabban and Malakand hydro-electric project. Water passes through a three-mile-long tunnel, and has a natural fall of 350 feet. The main income-generating source in Malakand is the two power houses at Dargai and Malakand Khas. There are about 11 other suitable sites for construction of Small Hydel Power projects that needed investors’ attention. Malakand already mentioned that it is surrounded by high mountains rich with mineral resources, deposits of chromite iron, china clay and fuller earth have been found in Malakand.

2.6 Data Collection, Organizing and Analysis

The information was obtained from the local informants through questionnaires and oral interviews. The questionnaire included the whole status of the plant, parts use, local name, method of collection and consumption. The interview was conducted in the local languages (Pashto, Urdu). The part of the plant was classified into different categories like seeds, fruits, leaves and whole plant etc. The uses of the plant were divided into different groups.

2.7 Data Analysis

The data is analyzed with Microsoft excel 2019.

3. RESULTS

3.1 Demographic Data

In current study, ethno botanical survey of important wild medicinal plants of Sangina valley, tehsil Batkhela was carried out of which 35 plants were listed belonging to 31, families (Table 1). The overall information’s about the local names, habit, part used and families are given in (Table 2). The list shows that 35 plants were used for medicinal purposes, in which 1 plant for blood purification, 1 plant for gastro disorders, 6 plants used for stomachache , 2 plants for cattle as vermifuge, 5 plants for treatment of fever, 2 plants for cold, and 7 plants for cough, 1 plant for make tooth brush, 2 plants for healing of wounds and other skin disorders, 12 plants useful for diuretic, 2 plants were useful in diabetes, 5 plants for relief in pain, 8 plants as a tonic or stimulant, 3 plants as sedative and 1 plant antiseptics, 4 plants for hepatic disorders, 5 plants for diarrhea and 5 plants for dysentery, 1 plant for used in Bhang, 1 plant as a source of wood and fuel, 3 plants used for heart diseases, 1 plant was found to be used as a source of vegetable and fruits by the local inhabitants, 3 plants were found to be useful as an antidandruff
Table 1. Botanical details of important wild medicinal plants

| S. No. | Botanical name         | Family         | Local name     |
|--------|------------------------|----------------|---------------|
| 1      | Acacia farnesiana      | Mimosaceae     | Vilayati Kikar. |
| 2      | Acacia nilotica        | Mimosaceae     | Kikar          |
| 3      | Ajuga bracteosa        | Lamiaceae      | Boti           |
| 4      | Berberis lyceum        | Berberidaceae  | Kwarey         |
| 5      | Boerhavia procumbens   | Nyctaginaceae  | Itsit          |
| 6      | Brassica compestris    | Brassicaceae   | Sarsoo         |
| 7      | Calotropis procera     | Campanulaceae  | Spalmai        |
| 8      | Cannnabis sativa       | Cannabinaceae  | Bhang          |
| 9      | Capsella bursa-pastoris| Brassicaceae   | Chambraaka     |
| 10     | Centaurea iberica      | Celastraceae   | Kareza         |
| 11     | Chenopodium botrys     | Chenopodiaceae | Skha Kharawa   |
| 12     | Chorozophora tinctoria | Euphorbiaceae  | Kuronda        |
| 13     | Cichorium intybus      | Asteraceae     | Han            |
| 14     | Cotonaster microphyllus| Rosaceae       | Mamanra        |
| 15     | Cymbopogon citrates.   | Poaceae        | Lemon grass    |
| 16     | Daphne mucronata       | Thymelaceae    | Loghone        |
| 17     | Dedonea viscosa        | Spindaceae     | Gwarhaskey     |
| 18     | Dhatura innoxia        | Datisiaceae    | Dhatura        |
| 19     | Eucalyptus lanceolata  | Myrtiaceae     | Lachi          |
| 20     | Euphorbia helioscopia  | Euphorbiaceae  | Mandarro       |
| 21     | Filago Hurdwaria       | Fagaceae       | Spenakai       |
| 22     | Fumaria indica         | Fumaricaceae   | Shahtra/Krachy |
| 23     | Convolvulus arvensis   | Convolvulaceae | Prewata        |
| 24     | Melia azedarach        | Meliaceae      | Thora shandai  |
| 25     | Mentha arvensis        | Lamiaceae      | Pudina         |
| 26     | Mentha longifolia      | Lamiaceae      | Enaley         |
| 27     | Morus alba             | Moraceae       | Bedana Toot    |
| 28     | Morus nigra            | Moraceae       | Toot siah      |
| 29     | Olea ferruginea        | Oleaceae       | Khuna          |
| 30     | Otostegia limbata      | Lamiaceae      | Spin azghay    |
| 31     | Oxalis corniculata     | Oxalidaceae    | Tharuky        |
| 32     | Plantago lanceolata    | Plantaginaceae | Ghwajabai      |
| 33     | Platanus orientalis    | Platanaceae    | Chinar         |
| 34     | Rumex dentatus         | Polygonaceae   | Shalkhey       |
| 35     | Rumex nepalensis       | Polygonaceae   | Tharukey       |

Table 2. Ethno botanical use of Plant species in the local area

| Botanical name          | Habit | Part use                  | Application                                                                 | Status of uses |
|-------------------------|-------|---------------------------|-----------------------------------------------------------------------------|----------------|
| 1 Acacia farnesiana     | T     | Bark, pods                | Bark is useful in bleeding gums, and to treat prolapsed, rectum, leucorrhoea and spermatorrhoea | Common         |
| 2 Acacia nilotica      | T     | Bark, Gum, Seeds, Wood.   | Bark is used in diarrhea, dysentery, as stomachic and as astringent; branches and twigs are used to make tooth brushes (Miswak), while seeds are expectorant. | Common         |
| 3 Ajuga bracteosa      | H     | Whole Plant               | Bitter astringent, aromatic tonic; used in fever as substitute for Cardiac stimulant, diuretic, and aperients very effectively used in hepatitis | Common         |
| 4 Cannabis sativa      | H     | leaves                    | Plant is narcotic drug used for malaria, blood poisoning, anthrax and dysentery; | Rare           |
| Botanical name          | Habit | Part use       | Application                                                                 | Status of uses |
|------------------------|-------|----------------|-----------------------------------------------------------------------------|----------------|
| **leaves used as substitute for opium, as pain killer in otitis; antidandruff; relieves pain in dysmenorrheal. Chaars is valuable narcotic, appetizer and sexual stimulant.** |
| **Berberis lycium**    | S     | Roots, fruits and shoot | Use in stomachic, liver disorders, heat loss (from body), diarrhea and fruit is edible. |
| **Boerhavia procumbens** Bank.ex.Roxb. | H     | Whole plant | The roots is diuretic; laxative; expectorant; stomachic; and antiasthmatic; infusion of the herb is mild laxative and useful in dropsy, menstrual flow regulation and gonorrhea. |
| **Brassica compestris** (Linn.) Clapham | H     | Seeds, leaves | Oil used as rubifacient, counter irritant, hairs restorers’ facial acne and muscular skeletal relaxant. Leaves used as vegetables to improve digestive disorders, oil cakes given to cattle to increase milk flow. |
| **Calotropis procera** (Wild) R. Brown. | S     | Whole plant | Powdered flowers are used in cold, cough and asthma; roots bark is used in dysentery, as diaphoretic and expectorant; latex in irritant. The tincture of leaves is used intermittent fever. |
| **Capsella bursa-pastoris** (Linn.) Medic. | H     | Aerial parts | Seed are stimulant, astringent, antiscorbic, used in hematuria and dropsy, in diarrhea; due to the presence of acetyl choline it lowers blood pressure. |
| **Centaurea iberica** Trevir ex. Sprengel | H     | Seeds and Spines | Seeds; use in (body) weakness, Heart diseases, stomach pain. Spines are in sexual diseases. |
| **Chenopodium botrys** L. | H     | Whole plant | Used in coughs; as vermifuge; useful in hepatitis. |
| **Chrozophorea tunctoria** (Linn.) Raffin | H     | Whole plant | Plant is poisonous, emetic and cathartic |
| **Cichorium intybus** Linn. | H     | leaves and roots | Increase bile secretion and used to promote digestion. The plant is tonic, astringent and very useful in asthma and spleen enlargement |
| **Cotoneaster microphyllus** Wall. ex Lindley | S     | Leaves and solons | Leaves and stolon are used as astringent |
| **Cymbopogon citrates** (DC.) Stapf. | G     | leaves | Its main use is in the production of ionone, a synthetic perfume with the adour of violets, but recently it has become increasingly important as a starting point for the synthesis of vitamin-A. Infused leaves are used as herbal tea; oil is used as a relaxant in bath water and to clean oily skin. |
| Botanical name       | Habit | Part use         | Application                                                                                                                                                                                                 | Status of uses |
|----------------------|-------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 16 Daphne mucronata Royle | S     | Whole plant      | Fruit are purgative, Bark and leaves are used as poultice for tumors, swellings and rheumatism; root is gastro-intestinal irritant.                                                                         | Common         |
| 17 Dedonoea viscosa (L.) Jacq. | S     | leaves, bark and seed | Leaves are used to heal crack skill, wound, burn and swelling; fruit is used as fish poison; bark is astringent.                                                                                            | Common         |
| 18 Datura innoxia Mill. | H     | Seeds and leaves | Seeds are highly poisonous, used as sedatives, anodyne, in gout, rheumatism, lumbago, leaves juice is used in otitis and gonorrhea.                                                                       | Common         |
| 19 Eucalyptus Lanceolata L. | T     | Dried gummy exudates | Used as astringent in pharyngitis and laryngitis, as antiseptic and mosquito repellant.                                                                                                                     | Common         |
| 20 Filago Hurdwarica (Wall.ex DC.) Wagenitz | H     | Whole plant      | Leaves and young branches are used in decoction form for treating skin allergies and itching.                                                                                                              | Rare           |
| 21 Fumaria indica | H     | Whole plant      | Use in asthma, paralyses, cough                                                                                                                                                                               | Common         |
| 22 Euphorbia helioscopia L | H     | Root, Areal parts | Milky juice is poisonous; causes skin scrofula; stem is use for constipation; oil from the seed has purgative properties; root are use as anthelmintic.                                                   | Common         |
| 23 Convulvulus arvensis (Linn.) Roth. | TW    | Seeds, Root      | Used as purgative; cause nausea; disturbances of Central Nervous System (CNS), like blurred vision, dilation of pupil and hallucinations                                                                       | Common         |
| 24 Melia azedarach L | T     | Whole plant      | Leaves, fruit, and bark used in scrofula and leprosy; leaves juice is useful diuretic, anthelmintic and emmenanegogue; seeds are used in rheumatism                                                              | Rare           |
| 25 Mentha arvensis L. | H     | Leaves           | Used as antispasmodic, carminative, stomachic, stimulant and diuretic; Its oil is invaluable anti-neuralgic and is applied externally in alcoholic solution.                                                   | Frequently     |
| 26 Mentha longifolia L. | H     | Leaves           | Used as carminative, in diarrhea, dysentery. It is also very valuable is colic.                                                                                                                               | Common         |
| 27 Morus alba L. | T     | Bark and fruit   | Fruit is refrigerant in fever and used as remedy for sore throat, dyspepsia and melancholia; excessive use cause diarrhea; bark is purgative and anthelmintic.                                                    | Common         |
| 28 Morus nigra L. | T     | Bark and fruit   | The bark is purgative and vermifuge; fruit is useful laxative, nutritive, refrigerant, chicth thirst; used as diuretic, expectorant and lower decreases blood sugar and inhibit tumors formation. | Common         |
| 29 Nerium oleander L. | S     | Whole plant      | The plant is poisonous, used as substitute for Digitalis; very useful diuretic, rarely it acts as a cathartic.                                                                                             | Common         |
| Botanical name            | Habit | Part use       | Application                                                                                                                                                                                                 | Status of uses |
|---------------------------|-------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| **30** Olea ferruginea Royle. | T     | Fruit, bark and leaves | Leaves are used cure gonorrhea, in fever and debility; Oil from the fruit as rubefacient and taken for digestive disorders. Bark is astringent.                                                                 | Common         |
| **31** Otostegia limbata (Benth) Boiss. | S     | Whole plant    | Used in gum diseases and cure wounds.                                                                                                                                                                       | Common         |
| **32** Oxalis corniculata  | H     | Whole plant    | Useful in high fever and stomachache                                                                                                                                                                         | Common         |
| **33** Plantago lanceolata L. | H     | Leaves and seed | Boiled leaves are used mainly for persistent bronchitis and as mild purgative; seed are drastic purgative.                                                                                            | Common         |
| **34** Platanus orientalis L. | T     | Leaves and Bark | Fresh bruised leaves are applied in ophthalmic; boiled bark with vinegar is used in hernia, toothache, diarrhea and dysentery.                                                                              | Common         |
| **35** Rumex dentatus L.    | H     | Root and leaves | Root are astringent, used in cutaneous disorders, while leaves are used as emollients                                                                                                                      | Common         |

Note: H= HERB, S=SHRUB, T= TRESS, TW= TWINER

Fig. 1. Map of study area
and anti-hair fall, 3 plants as thatching material (craft of building), 1 plant for ornamental purpose. Most of the species were found to be used for multiple purposes by the local inhabitants of the area (Table 2). The most dominant part of plant were leaves and fruit with 26.1 and 21.5 respectively, followed by stem, whole plant, root and flower (Fig. 3).
4. DISCUSSION

Ethno botany deals with the collection of valuable medicinal plants by a group of people and describes their different uses [15]. Ethno botany is an integral part of indigenous/local knowledge of a particular society. People used several traditional medicines for the cure of different ailments. Our surrounding nature is the habitat of many unknown medicinal plants that indigenous people use for treating their ailments. Different societies or communities have their own knowledge about plants and their uses [16]. This study provided information on the ethno botanical uses of 35 plant species. Most of these species were, Acacia farnesiana L, Acacia nilotica L, Berberis lyceum, Brassica compestris L, Calotropis procera, Dedonoaea viscose L, Rumex dentatus L, Morus nigra L, Morus alba L. are common using as ant diabetic, dysentery, expectorant, diarrhea, antiuretic, purgative, anthelmintic, antiasthmatic, carminative, stomachic for constipation, skin allergies, fever etc. The plant was also used in more than one type disorders for their medicinal properties [17]. Zaman et al. (2013) reported Mentha longifolia L used as carminative, diarrhea, dysentery and for colic, Dedonoaea viscose L. used for wounds and softening of wound and powdered flower of Calotropis procera are used for cough and asthma. The people of the area were mostly dependent on indigenous plants for the cure of ailments as Melia azedarach L, are frequently used for scrofula and leprosy; leaves juice is useful for diuretic, anthelmintic, Morus alba L. for fever and used as remedy for sore throat, dyspepsia and melancholia and Dedonoaea viscose were used for heal crack skill, wound, burn and swelling, fruit is used as fish poison, and bark is astringent [18]. Khan et al. (2015) reported that Fumaria indica is using for cough, Morus alba and Morus nigra L are used for throat sore, to treat constipation, dyspepsia [19]. Shah et al. (2020) reported Convolvulus arvensis L used as purgative, Euphorbia helioscopia L for skin diseases. Some species, Cannabis sativa L, Filago Hurdwari, Melia azedarach L. were rare their local uses less in the area and used for one type of disorders, diuretic, anthelmintic, rheumatism, skin allergies and itching. Acacia nilotica L, Calotropis procera, Fumaria indica and Dhatura innoxia species were found to be at high risk, and going to be extinct promptly due to certain abiotic and biotic factors. In Pakistan little attention has been paid to the ethno botanical values of medicinal plants [20,21]. The utilization of medicinal plants by residents, collectors and
herbal drug suppliers was increasing with increasing demand of medical industry. This caused extreme decrease in the existence and products of medicinal plants. Browsing, soil erosion and deforestation were mostly responsible for reduction in the medicinal plant species. So the most significant thing is that to protect the medicinal plants and promote consciousness between the local inhabitants.

5. CONCLUSION

The current survey conducted will generate widespread interest in exploring and preserving wild medicinal plants in Perano Valley, District Malakand. At present time transmission of such knowledge from herbalists to the public had been enormously decreased. However due to the involvement of ethnomedical research, awareness in the local community and overall global trend towards recovery of the transmission of knowledge from the herbalist to the public has been introduced. It is noted that Pansaries (local medicinal plant sellers), herbalist (Hakims), are reluctant in the prescription of medicinal knowledge to the local people. The present research in this area proved that most of the indications prescribed are related to the local society diseases like, diarrhea, diabetes, fever, asthma etc. which will be definitely helpful for the society members of developing country like Pakistan.

6. RECOMMENDATION

It is recommended that the more exploratory visit are needed to explore the hide medicinally important plants of the concern area. It is further recommended that biochemical assay should be developed to investigate the specific constituents present in plants to develop specific drugs using chromatographic techniques. Development of conservative strategies for the conservation of medicinally important flora the respective area. Peoples of the locality should be educated regarding the importance of Medicinal plants. Wise use of local resources is recommended. Hiring inspective committees are recommended.

CONSENT

As per international standard or university standard, participants’ written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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