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# ETHNOBOTANICAL STUDIES OF SPRING FLORA OF DISTRICT DIR (LOWER), KHYBER PAKHTUNKHWA, PAKISTAN

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## ABSTRACT

*This ethnobotanical study of Dir Lower shows the exploration of the local plant species, which were used as medicinal, fuel wood, fodder, edible fruits, bees forage, agricultural tools, fencing and hedging, timber wood, ornamental plants, vegetable, sheltering, poisonous and veterinary medicines. A total of 40 plants species belonging to 30 families were collected. Among those, 48% were herbs, 17% shrubs, 17% trees and the remaining 8% were climbers. Among those 25% were medicinal, 14% fodder, 8% fuel wood, 8% forage species for bees, 7% vegetables, 7% sheltering, 6% edible fruits, 6% veterinary, 5% fencing and hedging, 5% timber wood, 3% agriculture tools, 3% ornamental plants and 3% poisonous. Plants specimen were collected, identified and preserved in the herbarium of the University of Agriculture, Peshawar. Information collected from the local communities shows that the plants have been used for diuretic, carminative, anticancer, stomachache, jaundice, sedative, diaphoretic, antispasmodic, chronic constipation and headache problems.*

**Key words:** Dir Lower, ethnobotanical study, Pakistan, spring flora.

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## INTRODUCTION

Ethnobotany is defined as the study of the relationship that exists between plants and people. It is the study of a particular culture and region and the use of local plants by the local people, because ethnobotanists wish to show plants which are used as medicine, food, shelter, clothing, hunting and for the religious programs. Conklin (1957), Strauss (1962) worked on the ethbotanical aspects of the

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society. They highlighted the relation between the environment and society. Researchers that explored the quantitative methods and amounts used and distributed by the local people were Hoft *et al*. (1999), Prance *et al*. (1987), Caballero (1992) and Phillips and Gentry (1993).

The science of ethnobotany has progressed from a documentation science to a more practical one in the last 100 years with emphasis on the usage of sustainable plant resources and their conservation. In fact, Pakistan has got diverse habitats associated with different flora due to the diverse climates, multiple ecological regions and soil conditions. In Pakistan 6000 species of wild plants in which about 400-600 are of medicinal importance (Ali and Qaiser, 2009). The Northern areas of Pakistan such as Himalayas, Karakorums & Hindukush have a unique biodiversity. The local people collect these medicinally important plants in unscientific and poor manners and even with poor storage. The local community is unaware of the endangered species, over-grazing of the animals, timber wood smuggling etc. Conservation of the endangered flora is direly needed and the people are required to be informed and trained regarding the collection of medicinally important plants.

Dir is a district of Khyber Pakhunkhawa (KPK) province of Pakistan, situated located 35° 50' & 34° 22' North and 71° 2' & 72° 3' East. It is surrounded by district Chitral in north-west, district Swat in the East and Malakand Agency in the south. Total area of the district is 5284 sq. km with a population of 1.294 million people. This district was divided into two separate districts i.e. Lower & Upper in 1996 (Hazrat *et al*., 2007)

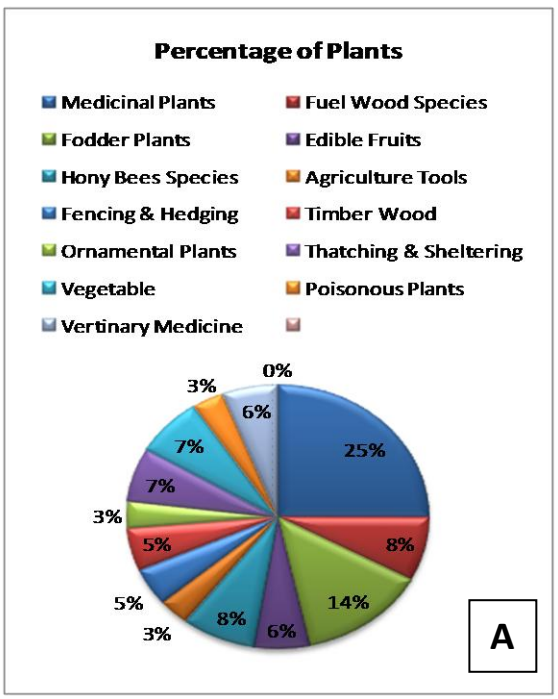
## MATERIALS AND METHODS

The research was conducted from February to June 2013 in the valley of district Dir (Lower). Regular study surveys were made to the representative areas i.e. Stanadar, Malakand Banda, Odigram, Balambat and collections were completed in the flowering season in spring and summer of 2013. During these surveys, different plants were collected, dried, and identified. The identification was done by comparing the collected specimens with the herbarium specimen and with the help of the book, 'Flora of Pakistan' by Stewart (1967) and (1982). Plants specimens were preserved in the herbarium of the department of weed science of the University of Agriculture Peshawar Pakistan for future reference.

A questionnaire was used for interviewing the local people and herbalists (who practiced medicine regularly) for collecting the data about plants and their indigenous usage that practice medicine regularly.

## RESULTS AND DISCUSSION

Most of the flora was used in multi purposes such as medicinal, fuel wood, fodders, edible fruits, bees forage, agriculture tools, fencing and hedging, timber wood, ornamental plants, vegetable, sheltering and poisonous etc. Similar results were shown by Sardar and Khan (2009). A total of 40 plant species belonging to 30 families were collected. Among them, 48% were herbs, 17% shrubs, 17% trees and remaining 8% were climbers. In another angle, 25% medicinal, 14% fodder, 8% fuel wood, 8% bees forage species, 7% vegetables, 7% sheltering, 6% edible fruits, 6% veterinary, 5% fencing and hedging, 5% timber wood, 3% agriculture tools, 3% ornamental plants and 3% poisonous. The local flora was medicinally important used for treatment of various diseases (Qureshi *et al.*, 2007). The information collected from the local communities and herbalist showed that the plants were used as diuretic, carminative, anticancer, stomachache, jaundice, sedative, diaphoretic, antispasmodic, chronic constipation and headache. Some of the people specifically used those plants and recommend different local plants for different diseases. In Pakistan, 50,000 herbalists are registered who are using the same traditional knowledge for treating local people with local and inexpensive medicine (William and Zahoor,1999). However, unfortunately we are losing this important knowledge. This research was a part of those efforts, to conserve this important knowledge. Detail of each plant is given below.



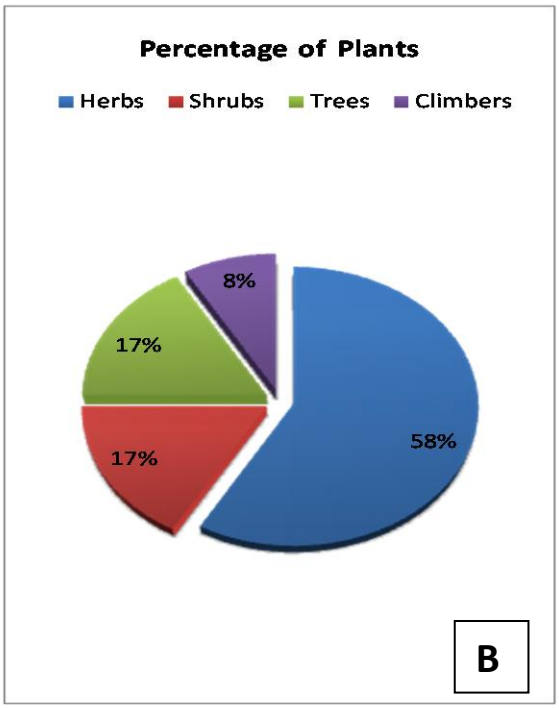



**Figure 1(A)**. Percentage of ethnobotanically
**Figure 1(B)** Percentage of herbs, shrubs, used plants in Dir (Lower) valley of Pakistan trees and climbers collected from the research area.

The list of the ethnobotanical information collected from the local people and herbalists with their family and local names are given below.

***Nostortium officinale* R. Br.**
Local name: Tarmeera
Family: Brassicaceae
Part used: Whole plant
Ethnobotanical uses: Use as vegetable, salad and fodder for animals. Oils were extracted from the plants and used as (masaaj) to relax body. Plants were cooked then used for tetanus.

***Oxalis corniculata* L.**
Local name: Tarokay
Family: Oxalidaceae
Part used: Root, stem and leaves
Ethnobotanical uses: Use as vegetable, the fresh leaves for eating purposes, fodder for animals, used for body cooling, to relieve stomach troubles, dysentery, piles and dyspepsia.

***Cannabis sativa* L.**
Local name: Bhang

Family: Canabidaceaes
Part used: Leaves and stem
Ethnobotanical uses: Used in cigarette, also as diuretic and stimulants; leaves are taken with sugar water and used for treatment of liver, indigestion and inflammation of stomach. Used in "tandai" help in cooling of body during summer.

***Euphorbia helioscopia* L**
Local name: Mandanuo
Family: Euphorbiaceae
Part used: Whole plants
Ethnobotanical uses: It is poisonous and it can cause skin swelling. Seeds were given to cholera patients. Plants used as cathartics. Oil is obtained from the seeds which has purgative property. Root is anthelmintic. Milky juice is used for eruption.

***Mentha longifolia* (L.) Huds.**
Local name: Velanay
Family: Labiatae/ Lamiaceae
Part used: Leaves
Ethnobotanical uses: Plants were use as vegetable, salad in food, burgers, as bubbles gum, digastrics medicine, stomachic and carminative. It is used in diarrhea and dysentery. It is stimulant and Rheumatic. It is applied in various gastric problems. Used for cholera, vomiting and indigestion.

***Fumaria indica* (Hsskn) H.N.**
Local name: Krachay
Family: Fumariaceae
Part used: Leaves and fruits
Ethnobotanical uses: Vermifuge for cattle. Medicinally the plants were dried and powdered and used in coffee tea for fever and throat infection and flue. It is antipyretic.

***Dodonea viscosa* (L.) Jacq**
Local name: Ghuaraskay
Family: Sapindaceae
Part used: Root, stems and leaves
Ethnobotanical uses: Shoots were use to make brooms for sweeping, planted as ornamental and hedge plants. Dry and burn leaves ash is used in snuff. Use in construction of homes. Use in making roofs. It is used as astringent, rheumatism, swelling, burns, used in thatching and fencing and fragrant. Young leaves are used as bandage in the past. Seeds are use as fish poison.

***Brassica campestris* Linn.**
Local name: Sharshum

Family: Brassicaeae
Part used: Leaves and seeds
Ethnobotanical uses: Young leaves and flowering tops were used as vegetable. Oil is extracted from seeds which are used in cooking, massage of body and hair, used ointment. Seed cakes locally known as "Khal" is obtained after extracting oil and are used as fodder for cattle. Use as fodder for animals. It provides high amount of vitamin and other nutrient which is anticancer. It helps to induce hypothyroidism and goiter. It has antiviral, antibacterial properties.

***Zanthoxylam armatam* DC**
Local name: Dambara
Family: Rutaceae
Part used: Seeds
Ethnobotanical uses: Use as fuel wood, fodder for animals and condiments. Seeds were use in various foods. Plant is stimulant, carminative, anthlimentic and stomachic.

***Bergenia ciliata* (Haw.) Sternb.**
Local name: Kamar panra
Family: Saxifragaceae
Part used: Rhizome
Ethnobotanical uses: Fodder for animals, fuel, Local people grants the rhizome and mix with honey for children teething. Rhizome is use in fever, cough and diarrhea. Plants are diuretic, demulcent and astringent. It gives in a dose of 10-30gm for cough diarrhea and pulmonary affections.

***Berberis lyceum* Royle**
Local name: Korai
Family: Berberideaceae
Part used: Root, bark and fruits
Ethnobotanical uses: Fruits were edible and eat by the people. Wood is use as fuel wood. Dry barks and roots are used in throat infection, mouth infection, Blood purification, stomachic, Sore throat, pile and tonic, Diuretic diarrhea, Purgative, tonic and antiseptic. Also use in jaundice. The rhizome is used locally for body and bones pain. Rhizome bark is used for strengthening sex organs and broken bones.

***Chenopodium album* L.**
Local name: Sarmay
Family: Chenopodiaceae
Part used: Whole plant
Ethnobotanical uses: Uses as vegetable and Fodder. Dry leaves are used to reduce pain. Plants are purgative. Oils are obtained from the seeds which is anthelmintic. Roots were heated with water and use for urinary diseases, jaundice and rheumatism.

***Indegofera heterantha* Wall. ex. Brand.**

Local name: Ghorega
Family: Fabaceae.
Part used: Whole plant.
Ethnobotanical uses: Fodder for animals. Stem used for making different substances. Making fire in home, Thatching and fencing. Used in hepatitis. Use for blackening of hair. Used for whooping cough.

***Papaver somniferum* L.**
Local name: Apium or Opium
Family: Papaveraceae
Part used: Leaves and capsule
Ethnobotanical uses: The capsule is cut with blade and remove "charse" farm them. From the leaves and resin cold drinks are prepared called (Tandai) which produce pleasant excitement. Relive pain, Hypnotic, Sedative, Headache, Diarrhea and Dysentery. Seed are nutritive.

***Melia azadarach* Linn**
Local name: Tora Shandai
Family: Meliaceae
Part used: Whole plants
Ethnobotanical uses: Use as fodder, construction purposes, furniture, fuel wood, Bark is use for various medical purposes like dysentery, body pain, cooling agent, carminative for cattle, The extraction of leaves is used by women for the removal of hair lice's. The leaves help in repelling of insects and other pests farm crops.

***Foeniculum vulgare* Mill.**
Local name: Kaga
Family: Apiaceae
Part used: Whole plant
Ethnobotanical uses: Use in condiments, different biscuits and confectionary, Carminative, Stimulants increase the activity of body, Source of volatile oil, vermicide, Improve eye site, Appetite and Chronic constipation.

***Ailanthus altissima* (Mill) Swingle**
Local name: Khara Shandai
Family: Simaroubaceae
Part used: Barks
Ethnobotanical uses: Fodder for animals, Constructions of homes, Furniture, Fuel wood Burnings, barks juices are mixed with milk used for dysentery, gums are also use for dysentery, use for skin disease and anthelmintic.

***Ficus carica* L.**
Local name: Inzar

Family: Moraceae
Part used: Fruits, saf, leaves
Ethnobotanical uses: Fruits are use for eating purposes, use as fuel, fodder for animals, Young stems are used for finding water inside the earth, and Milky juice is use for warts to destroy it. Figs are regarded as nutritive, emollient, emulcent and laxative, used for the cure of piles. Fresh leaves were crushed and boiled in milk. It is filtered and given to the patient thrice daily for the treatment of measles, dysentery and bladder problems. Milk juice of the petioles is used to clear warts when applied on them. Latex is applied for removal of spines and thorns easily.

***Artemisia sp.* L**
Local name: Tarkha
Family: Asteraceae
Part used: Flower and Leaves
Ethnobotanical uses: Shoots is use as fodder for animals, ornamental purposes. Shoots as use as broom for sweeping purposes. Leaves is use to care skin disease and leaves is also as anthelmintic. Plants is tonic, stomachic, deobstruent and antiperiodic. Internally foe body use as killing of worm. Externally use as antiseptic.

***Convolvlus arvensis* L.**
Local name: Perwatai
Family: Convolvulaceae
Part used: Leaves and flowers
Ethnobotanical uses: Fodder for animals. Hairs are washed to remove dandruff from hairs. Use as dysentery and root is purgatives.

***Cedrus dudara* (Roxb. ex Lamb.) G. Don**
Local name: Deyaar
Family: Pinaceae
Part used: Wood
Ethnobotanical uses: Use as Constructions purposes, fuel wood, Timber wood and resistant to water and worms.

***Viola canscens* Wall. ex Roxb**
Local name: Benafsha
Family: Violaceae
Part used: Flower and leaves
Ethnobotanical uses: Plants were used during cold, cough, asthma, headache and jaundice.

***Silene moorcroftiana* Wall.**
Local name: Khargug
Family: Labiatae
Part used: Stem and leaves
Ethnobotanical uses: The stem is taste and eats by the people. Roots were dry and griants and use for external infection. Leaves were use

for external body infections and diarrhea. The leaves were warmed in mustard oil and applied on the swollen skin to release puss, while the inner part of the stem is chewed as an aphrodisiac agent. Leaves were boiled and used as mouthwash and gargle for inflammation of mouth and throat.

***Duchesnca indica* Lindl. ex Lacaita**

Local name: Da Zamaky Toot
Family: Rosaceae
Part used: Leaves and fruits
Ethnobotanical uses: Fruits were eating, fodder for animals. Plant is laxative.

***Rumex hastatus* D. Don.**

Local name: Tarookay
Family: Polygonaceae
Part used: Whole plant
Ethnobotanical uses: Fodder for animals. Leaves were eaten by local peoples to increase appetite. It is also used as purgative, astringent and diuretic (Ali & Qaiser. 2009)

***Malva neglecta* Wall.**

Local name: Panirak
Family: Malvaceae
Part used: Leaves and stems
Ethnobotanical uses: Use as vegetables, Fodder for animals, Roots are boil and use as purgative for domestic animals. Plants were use for the care of cough and cold, also used in joshanda.

***Scandix pectin-veneris***

Local name: Kangahay
Family: Apiaceae
Part used: Whole plants
Ethnobotanical uses: Use as fodder for animals. Local eat the plant in young stage. Plants were tonic, carminative, and antispasmodic. Plants used for weak vision, complaints of stomach and liver. It also use in suppression of urine and menstruation.

***Silene conidia* L.**

Local name: Mangotai
Family: Caryophyelaceae
Part used: Whole plants
Ethnobotanical uses: Fodders for animals, use as vegetable, Diaphoretic, Diuretic and expectorants.
Young shoots were used as vegetable. It has some cosmetic value as seeds and leaves paste is used for whitening of skin.

**29. Name: *Ferula jaeshkeana***

Local name: Skhwara
Family: Apiaceae
Part used: Roots and leaves
Ethnobotanical uses: Use in throat infections and for cough. Roots are use for increases sexual purposes.

***Pyrus communis* L.**
Local name: Nashpati
Family: Rosaceae
Part used: Fruits
Ethnobotanical uses: Fruits were use for eating purposes. Wood is use as fuel and burning. Use as fodders for animals. Fruits were eaten which are astringent, febrifuge, sedative and laxative. It serves as root stock for grafting apple and pear. Honey bee species.

***Rumex crispus* L.**
Local name: Shalkhay
Family: Polygonaceae
Part used: Leaves and fruits
Ethnobotanical uses: Use as vegetable and fodder for animals. Small spore powdered are used for pain and infection of ears. Also use as cooling agent.

***Coriandrum sativm* L.**
Local name: Danyaa
Family: Apiaceae
Part used: Fruits and leaves
Ethnobotanical uses: Use as vegetable, salad and ornamental purposes. Fruits is use in condiments, help in digestion. Use for detoxification of stomach also uses in various bubbles gums.

***Medicago denticulata***
Local name: Shpastary
Family: Fabaceae
Part used: Leaves
Ethnobotanical uses: Use as vegetable, salad, fodder for animals, ornamentals purposes in lawn .The leaves to treat digestive and kidney disorders. But it is also recommended in treatment of diabetes, bladder diseases, anemia, and acts as an-appetite stimulant, an-estrogen replacement, premenstrual syndrome alleviator, anti-cholesterolemic and anti-hemorrhagic.

***Quercus incana***
Local name: Sarai
Family: Fagaceae
Part used: Leaves and seeds
Ethnobotanical uses: Use as fodders for animals, fuel, ornamental, making home. Seeds were taste eat by local peoples. Seed were tonic. Leaves were purgatives.

***Qucrcus baloot* Griffith**
Local name: Zagavan/ Sarai
Family: Fagaceae
Part used: Leaves, seeds and woods
Ethnobotanical uses: Use as wood for making homes, fuel wood, ornamental, fodder for animals. A little amount is taken off powdered with Desi ghee. It is used in urinary infections, especially when urine oozes drop by drop.

***Chenopodium batrys* L.**
Local name: Kharawa
Family: Chenopodiaceae
Part used: Whole plant
Ethnobotanical uses: Use for washings of utensils, fuel, cooling agent and for infection. Heat with water and use for various body diseases.

***Ajuga bracteosa* Wall. ex Benth.**
Local name: Gooti
Family: Labiatae
Part used: Whole plant
Ethnobotanical uses: Fodder for animals, purification of blood. The leaves were used locally for curing headache, pimples, measles and stomach acidity.

***Isodon rugosus***
Local name: Da ghara karachay
Family: Labiatae
Part used: Leaves
Ethnobotanical uses: Fodder for animals, fuel, urgent snuff and blood clotting. Fungal infection removes from mouth and use as stimulants.

***Mentha piprata* L**
Local name: Podina
Family: Labiatae
Part used: Whole plants
Ethnobotanical uses: Use as salad, vegetable, ornamental, used in tea for flavoring, ice cream and confectionery. Use in various babbles gums. Keep normal the acidity of stomach. It help in digestion. Plants help in treatment of these symptoms such as nausea, vomiting, abdominal pain, indigestion, irritable bowel, and bloating. It is also used in aroma therapy. It also helps in blood purification. Used for mouth taste.

***Olea feroginia* Royle**
Local name: Khona
Family: Oleaceae
Part used: Seeds and leaves

Ethnobotanical uses: Use as fodder, fuel wood, ornamentally, makings high quality furniture, agriculture tools, making homes. The leaves and bark were bitter, astringent, antiseptic; diuretic and tonic. The decoction of leaves is used for toothache. The olive oil is beneficial for constipation, rheumatic pain and also in dandruff. The leaves are chewing and used for cough and flow.

## CONCLUSION

The local area (Dir Lower) is rich in medicinal plants and can be used for curing different diseases instead of using imported medicines. The extraction of different chemicals from the local plants can also be done to support Pakistan's health issues and economy. Indigenous knowledge regarding medicinal plants collection and their proper mode of administration should be collected from the local people and preserved properly. It is suggested here that this could be done through different stockholders i.e. government, research organizations and NGOs etc.

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