

## **Ethnobotanical Study of the Medicinal Plants of Tehsil Charbagh, District Swat, Khyber Pakhtunkhwa, Pakistan**

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**Abstract:** The current study was carried out in of the most important areas of swat valley, Khyber Pakhtunkhwa, Pakistan due to its rich and diverse plant varieties. The main aim of the study was to explore the local plants which are used by the local inhabitants in different aspects and playing very important roles in certain ways and to bring awareness among the people about the threatened species which are going to extinct. Several kinds of plants were found to be used in several purposes as they have multiple functions. A total of 122 species were studied in which 107 species were used for medicinal purposes, 25 species for vegetable and food, 26 species for fuel and wood, 18 species for furniture, 14 species for thatching and hedges, 17 species as a source of fruit, 10 species as ornamental, 3 species as religious, 1 species as an evil eye and in the same way 1 species for honey bees.

**Key words:** Charbagh Valley Swat • Medicinal Plant Resources • Conservation

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### **INTRODUCTION**

Ethno botany give us an account of uses of plant species by the people relating to particular area that how they take in to use plants as a foodstuff, for medicinal purposes, for clothes, as a hunting material and in local traditions [1]. In fact, it is the sound study of the associations between people and plants. The term "Ethnobotany" was for the first time used in 1896 by an American botanist John Harshberger, while the history of ethnobotany was started long previous to that [2]. In modern terms ethnobotany was defined by Aumeeruddy in 1996, according to her "Ethnobotany is the study of interaction between environment, society in particular with the plants world [3]. People use plant species for the cure of different diseases from the ancient times [4]. Therefore the poor communities all over the world use and get benefits from medicinal plants. Most of these medicinal plants are flowering plants [5]. However along with medicinal uses, the plant species play a vital

role in the improvement of the economic status of the local people [6]. It is said that approximately business of medicinal plant species will be about 5 trillion dollars (US) by 2050 [5, 7]. Six thousand species of higher plants are found in Pakistan, 12% of them are used medicinally [2, 7]. It was studied by Hocking in 1958 that about 84% of the total population of Pakistan uses plants for medicinal purposes [8]. Mostly Unani system of medicine is used in Pakistan but still the people of distant areas uses plants for medicinal Purposes [9]. The field of ethnobotany 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 [4, 10, 11].

The main aim of the current survey was to take into account the medicinal plants of this area, which are used by people of this area. It was also one of the objectives to provide awareness among the local community about the use of the plants for medicinal purposes as well as to provide information to the people about the economic values of certain plant species. It was also under the

consideration during this survey to list out those species which are endangered and are about to extinct due to natural hazards or due to overgrazing and deforestation. Also it aims to list those plant species which are endangered due to the crisis of last 5 years as much artillery and other weapons were used in a great amount in this area.

## MATERIALS AND METHODS

**Study Area:** The area of tehsil charbagh was selected for the study of the plants which have ethnobotanical importance. Tehsil charbagh is also known as Matorizi tehsil. The current study was conducted from the start of April till the end of June. The word charbagh come from a pushto word “chinar bagh” Chinar is the Local name of *Platanus orientalis* L. and Bagh means Garden. With the passage of time the word chinarbagh due to excessive use changed into charbagh. *Platanus orientalis* L. is now highly over exploited in this area, in past there were a lot of trees of this specie in this area. The name of tehsil is after the name of village Charbagh due to its tremendous importance and position.

Charbagh is 15 Km away from Saidu sharif which is the capital of swat district. Charbagh is located in North of Swat District at 34°50'0"N 72°26'30"E with an average altitude of 1032 meters (3370 feet). Tehsil charbagh is bordered by tehsil Babozai in south, by District Shangla in North east, in west by river swat and in north by Azikheil tehsil.

**Climate:** The climate of the area is broadly described as typically continental type. In summer the weather is little bit pleasant but in winter it is highly severe and is often characterized by snow fall. The climatic data of the charbagh rain gage station shows that July is the hottest month (15.67 °C to 32.52 °C), while January and February are the coldest months and the temperature generally falls below freezing point up to a temperature of mean maximum and mean minimum 8.8 °C to -7 °C. The average rain fall in the month of March is 269.9 mm. The irrigation system of tehsil charbagh depends on River swat and Moon soon rains totally. From the river swat channels are separated through which maximum land is irrigated. The soil of tehsil charbagh is mostly Loamy type that is why it is highly fertile having diverse vegetation.

**Ethnobotanical Survey:** An ethnobotanical study was carried out from the start of April 2012 till the end of June 2012 in different areas of tehsil charbagh which are

Table 1: Key and Summary of Part used of Plant for Medicinal Purposes

S.No	Part used	key
1	Branches	Bs
2	Bark	Bk
3	Bulb	Bb
4	Flower	Fr
5	Fruit	Ft
6	Gums	Gm
7	Latex	Lx
8	Leaves	Ls
9	Resin	Rn
10	Rhizome	Re
11	Root	Rt
12	Seed	Sd
13	Shoot	St
14	Stem	Sm
15	Spikes	Ss
16	Whole plant	Wp

ecologically and economically important. Mostly the upper areas of tehsil charbagh toward the north-east were selected which includes the villages of Mangwultan, Kandaw, Toha and Makad; in south on mallam jabba road Talegram and Seir were selected; and in north toward Azikheil tehsil villages namely Allahabad, Dakorak, Gulibagh and Alamganj were selected. The upper areas of tehsil toward north-east were selected because the people of these areas have no proper facility of hospital. They use to go to saidu sharif hospital only in case of severe problems; in case of simple diseases they use plants directly to overcome the problem. The Information about the medicinally important plant species was collected through a Questionnaire; the questionnaire was classified into four categories. In category “A” there were informations about the informants, in category “B” there were general information about the plant species, Category “C” includes information about the medicinal uses of the plant species and category ”D” including information about the customary values of the plant species. 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 ailments. A standard procedure was carried out for the information. Mostly those people were selected for the interviews that were of more than 40 years of age due to their much knowledge and experience. The informants who were selected for the interviews were mostly the inhabitants of rural areas. For the confirmation of the uses of the each plant species interviews were made from several informants. For further confirmation plants were taken to the local hakims (herbal practitioners) and pansaris (traditional shopkeepers). The shop keepers were

asked about the source of plants, that how they receive and export it to other markets within the country. A particular key is used for the parts of plant which are taken into use for medicinal purposes or either any other. The key is shown in Table 1.

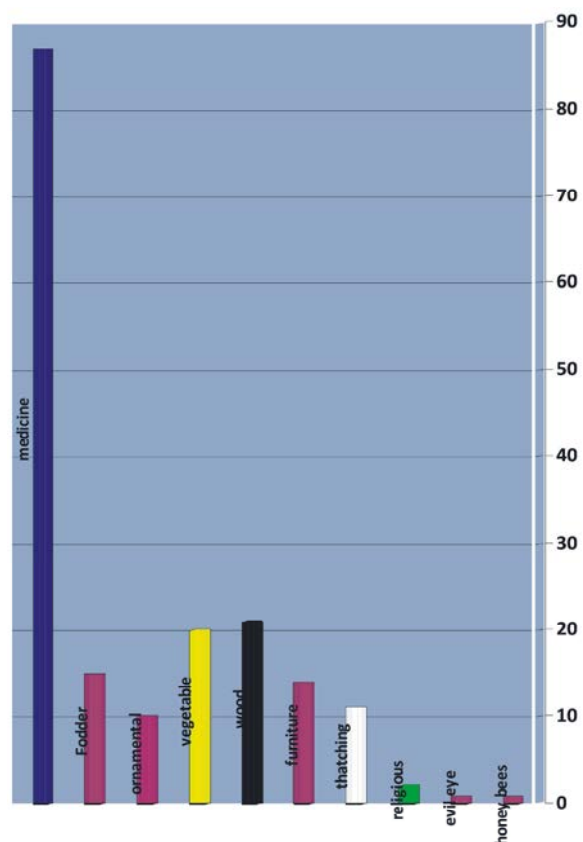
## RESULTS

**Ethnobotanical Survey:** The study of important plant species were carried out in tehsil charbagh which is one among the most important areas in swat valley. In current survey the area is founded to be rich in vegetation of much value able and important plant species. Total of 122 plant species were studied in this survey which include 117 species were of angiosperms, 3 species of gymnosperms, 1 species of pteridophyte and 1 species of ferns. Within this survey the plant species were assigned into different groups on the bases of their uses by the local community in this way; Medicines (107 spp), fodder (19 spp), ornamental (10 spp), food and vegetable (25 spp), fuel wood (26 spp), furniture (18 spp), thatching and hedges (14 spp), religious (3 spp), evil eye (1 spp) and honey bees (1 spp) (Table 2).

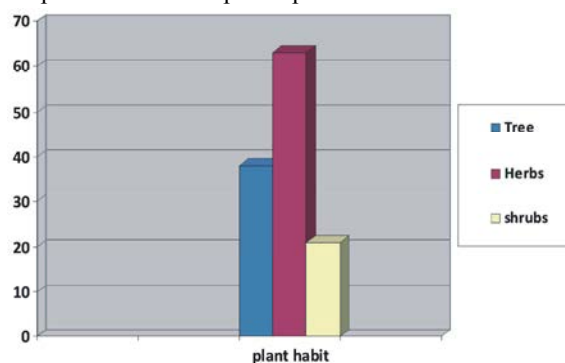
Table: 2 show us that among these 122 plants which are studied in the current survey, 87% of the spp are used for medicinal purposes by the local community for 30 different ailments while 15% of the spp are used as a source of fodder, 8% for ornamental purposes, 20% for food and vegetables, 21% for fuel wood, 14% for furniture, 11% for thatching and hedges, 2% for religious purposes and the use of plants in the current survey for evil eye and honey bees is found 0.87%. Graph: 2 reveal an account of the ratio of plant habits studied in the current survey (38 trees, 63 herbs and 21 shrubs).

Mostly elder people of the area have much information about the medicinal uses of the plant species as compared to the young generation. These plants are being used from ancient time till now by the people for the treatment of certain ailments.

**Families of Ethnobotanical Importance:** In the study of the current area 122 species of plants were studied, all of these species have tremendous and non-negligible importance in the improvement of life style of the local inhabitants in different aspects of life either directly or indirectly. These species belongs to different families which reveal the importance of these families as well as the diversification and similarities in some cases with the plants of other regions of swat District. The plants which are studied in the current study belongs to the following different families:



Graph 1: Uses of the plant species



Graph 2: Habits of plants studied in the survey

Eights species of family *rosaceae*, 6 spp of *solonaceae*, 6 spp of *asteraceae*, 6 spp of *lamiaceae*, 5 spp of *rotaceae*, 4 spp of *liliaceae*, 4 spp of *Brassicaceae*, 3 of *poaceae*, 3 spp of *chenopodiaceae*, 3 spp of *cucurbitaceae*, 3 spp of *martaceae* and the rest of the spp are from different other families.

**Economic Aspects of the Species:** Most of the plants which are carried into consideration are naturally growing, only few spp particularly of trees are cultivated for traditional as well as other purposes. The life system of

Table 2: Ethnobotanical information of plants from tehsil Charbagh district Swat, KPK, Pakistan

S.no	Scientific name	Local name	Habit	Family	Part used	Uses
01	<i>Acacia nilotica</i>	kikar	Tree	Mimosaceae	Bk	Anti-helminthic, for tooth ache, for relief in cough. wood
02	<i>Acacia modesta</i> Wall.	Palosa	Tree	Mimosaceae	Bk, Gm, Ls.	Expectorant, gum is used with desi ghee as a tonic for mothers after giving birth to child.
03	<i>Acorus calamus</i> L.	Skhawaja	Herb	Araceae	Re	Grinded rhizome is used for gastro problems.
04	<i>Adiantum capillusveneris</i> L.	Sumbal	Herb	Adiantaceae	Wp	For hepatitis, fever, cough and cold. Also used for the cure of tooth ache and eye diseases.
05	<i>Ajuga bracteosa</i> Wall. Ex Benth.	Boti	Herb	Lamiaceae	Wp, mostly Ls.	For healing of external wounds, also used in nasal infection particularly for removal of extra meat.
06	<i>Allium griffithianum</i>	Da ghra pyaz	Herb	Liliaceae	Ls.	Leaves are used as an expectorant and give relief in cough.
07	<i>Amaranthus viridus</i> L.	Chalwai	Herb	Amaranthaceae	Wp.	As a source of food, help in wounds healing, used as a diuretic agent.
08	<i>Alianthus altissima</i> L.	Bekarha	Tree	Simaroubaceae	Ls, Sm.	Leaves are used as fodder for cattle. Used as a source of wood and timber. Leaves are used as anti-diabetic.
09	<i>Alismaplantago aquatic</i>	Jabai	Herb	Alismataceae	Ls	Leaves are used as a tonic, leaves also used for digestive disorders.
10	<i>Allium cepa</i>	Pyaz	Herb	Liliaceae	Wp, Bb.	As a source of food,
11	<i>Allium sativum</i>	Oga	Herb	Liliaceae	Bb	The bulb is used for controlling Blood pressure. Also used as a source of food.
12	<i>Aloe vera</i> auct. Non Mill.	Kamal Panhra	Herb	Liliaceae	Ls.	Used for Colic pain, also used for healing of wounds.
13	<i>Artemisia absinthium</i> L.	Dhada terkha	Herb	Asteraceae	Ls.	Used for abdominal pain, fever particularly for typhoid. It is also used to conceive pregnancy.
14	<i>Artemisia scoparia</i>	Jawkay	Herb	Asteraceae	St.	Used for healing of wounds of cattles, antihelminthic and for treatment of diorhea,
15	<i>Artemisia vulgaris</i> L.	Tarkha	Herb	Asteraceae	Lf.	Give relief in pain, used for the treatment of fever and is also used as a diuretic agent.
16	<i>Avena sativa</i>	Jamdarai	Herb	Poaceae	Ss	Spike is used for relief in pain and for gastro problems in powder form.
17	<i>Berberis lyceum</i> Royle.	Toor Kwarey	Shrub	Berberidaceae	Rt, Bk.	Root is used for colic pain, wounds healing, as a blood purifier. It is believed in the area that wounded birds use berberis for healing of their wounds. Bark is used for mouth inflammations. Fruit is edible
18	<i>Berberis jaeschkeana</i> schneid.	Sor kwarey	Shrub	Berberidaceae	Ls, Rt.	Root powder is used for arthritis, stop bleeding. Ash of leaves is used for healing of wounds.
19	<i>Brassica oleraceae</i>	Gobhi	Herb	Brassicaceae	Fr, Ls.	Flower is edible and leaves are used as a fodder and as a salad by people.
20	<i>Brassica rapa</i>	Teiper	Herb	Brassicaceae	Ls, Rt.	Eaten as a vegetable. Leaves are use for cattles as a source of food.
21	<i>Buxus wallichiana</i> Baillon.	Shamshad	Tree	Buxaceae	Ls.	It leaves are boiled which are effective as an antidandruff agent and also stop hair fall. It is a source of wood.
22	<i>Carum carvi</i>	Torey Zankai	Herb	Umbelliferae	Sd.	Seed is used for fever. Seed is also edible.
23	<i>Calotropis procera</i> (Wild.) R.Brown	Spalmai	Herb	Campanulaceae	Wp	Its powder is used for tooth and ear pain, by mixing its powder form with grinded puppy plant is founded to be best for cough.
24	<i>Cannabis sativa</i> L.	Bhang	Herb	Cannabinaceae	Ls.	Leaves give relief in pain particularly in colic pain, leaves are also used for fever, excessive use cause madness and Female plant is used for making hashish (chars).
25	<i>Capsicum annum</i> L.	Marchakai	Herb	Solonaceae	Ft.	Fruit is used as a hunger causing agent and also causes digestion. It is also used in certain foods as it is spicy.
26	<i>Caralluma tuberculata</i> N.E. Brown.	Pamankai	Herb	Asclepiadaceae	Wp	Whole plant is used for diabetes, also used in jaundice and typhoid treatment.
27	<i>Cassia fistula</i>	Landes	Shrub	Fabaceae	Ft	Give relief in diarrhea and pain.
28	<i>Cedrela serrata</i> Royle.	Shnai	Tree	Meliaceae	Ls.	Leaves are used for fever. The leaves are also used as a Nerve tonic.
29	<i>Cedrus deodara</i>	Ranzhra	Tree	Pinaceae	Sm, Bs.	Stem is boiled in water which is used for asthma and for blood purification. Its resin is used for certain skin infections by taking orally with milk. Its wood is also used as a source of fuel and for making furniture, it is very much economical as its wood is much durable..

Table 2: Continued

S.no	Scientific name	Local name	Habit	Family	Part used	Uses
30	<i>Celtis australis</i>	Tagha	Tree	Ulmaceae	Bk, Ft.	Bark is used for curing urticaria. Fruit is edible.
31	<i>Chenopodium murale</i>	Kharawa	Herb	Chenopodiaceae	Wp	Whole plant is used for colic pain and treatment of cough.
32	<i>Chenopodium ambrosioides</i> L.	Skha bote	Herb	Chenopodiaceae	Ls.	Leaves are used as antihelminthic, gastro disorders, also used for Dysentery and for malaria.
33	<i>Chenopodium botrys</i> L.	Skha kharawa	Herb	Chenopodiaceae	Wp.	It is used for colic pain of newly born childrens.
34	<i>Chichorium intybus</i> L.	Han	Herb	Asteraceae	Wp.	Root is used for fever, as a cooling agent, as anti inflammatory and for hepatic disorders. Its leaves are used for renal inflammations and for heart problems. Its leaves are also edible.
35	<i>Citrus aurentium</i>	Naranj	Tree	Rutaceae	Ft, Ls.	Fruit is edible. Fruit is also used as an appetizer. Leaves are used as anti diabetic.
36	<i>Citrus medica</i> L.	Nembo	Shrub	Rutaceae	Ft, Ls.	Fruit is used for relief in fever, help in digestion, used in stomach problems. Leaves are also boiled in tea for dry cough.
37	<i>Conyza canadensis conquest</i>	Malloch	Herb	Asteraceae	Ls.	Leaves are used as a fodder. As astringent, diuretic, homeostatic and stimulant.
38	<i>Coriaundrum sativum</i>	Dhanyal	Herb	Umbelliferae	Ls. Sd	Fresh leaves are kept on closed eyes for certain eye disorders. Seeds are used as a source of food.
39	<i>Cucumis melo</i> L.	Kerkunda	Herb	Cucurbitaceae	Ft.	Fruit is used as antidiabetic.
40	<i>Cucurbita maxima</i>	khog kado	Herb	Cucurbitaceae	Ft. Ls.	Fruit is used as anti hepatitis, fruit is edible and leaves are used as a source of vegetable.
41	<i>Cuscuta reflexa</i> Roxb.	Paphra	Herb	Cuscutaceae	Sm	Stem is used as blood purifier, stop bleeding, for hepatitis. Used for skin infections. Exported with in the country.
42	<i>Cynodon dactylon</i> (L.) Pers.	Kabal	Herb	Poaceae	Wp	Fresh crushed shoots are used to controle nasal bleeding, also stop bleeding from wounds. It is also used for ornamental purposes. It is used as a source of fodder for cattles.
43	<i>Datura innoxia</i> Mill.	Batora	Herb	Solonaceae	Sd, Ls.	Dried leaves and seed are used for treatment of asthma; The plant is antiseptic, narcotic and sedative. It is also in used eye disorders.
44	<i>Datura stromonium</i> L.	Datura	Herb	Solonaceae	Sd, Ls.	Leaves are narcotic and sedative; seeds are used for cough and cold.
45	<i>Debregeasia salicifolia</i> (D. Don) Rendle.	Ajlay	Shrub	Datisceceae	Wp.	Whole plant is boiled and the extract is given 3 times daily for urticaria. The fruits are edible and is used as a flavouring agent. The powder is used for skin rashes.
46	<i>Dendrocalamus strictus</i>	Barhnas	Tree	Poaceae	Ls, Rt, Sm.	Increase face beauty; remove pimples from face, used as a thatching material. Stem is used for ladder formation.
47	<i>Dilbergia sisso</i>	Shawa	Tree	Leguminosae	Sd.	Seeds in powder form are used for the softening of clotted blood of wounds. It is also used as a source of fuel.
48	<i>Diospyrus kaki</i> L.	Sor amlok	Tree	Ebenaceae	Ft. Ls. Sm	Fruit is edible and is exported. Wood is used for fuel. Leaves are used as a source of fodder for cattle's.
49	<i>Diospyrus lotus</i> L.	Tor amlok	Tree	Ebenaceae	Ft, Ls, Sm/	Fruit is used for dysentery; fruit is used for sore throat infection. Fruit is edible. It is also used as a source of fuel.
50	<i>Dodonea viscosa</i> (L.) Jacq.	Ghwaraskay	Shrub	Sapindaceae	Ls	Leaves extract is used for wounds and antihelminthic. It is used as a thatching material. It is also used for ornamental purposes.
51	<i>Equisitum arvense</i> L.	Bandakai	Herb	Equisitaceae	Sm	Stem is used as a stamulent, as a sex tonic, also used for asthma and for kidney stones. It is also used for gastric acidity.
52	<i>Eriobrya japonica</i>	Alokat	Tree	Rosaceae	Ft, Sm.	Fruit is edible. Stem is used as a source of fuel and shoot is used as a thatching material.
53	<i>Eucalyptus lanceolata</i>	Lachi	Tree	Myrtaceae	Ls	Leaves are used for stomach pain. Its stem is used as a thatching material. Wood is used as a source of fuel. It is also vegetated on bare rocks for controlling erosion.
54	<i>Eugenia jamblana</i> Lam.	Jaman	Tree	Myrtaceae	Wp.	Fruit is used for liver problems, seeds are used for diabetes and leaves are also founded to be used for dysentery.
55	<i>Foeniculum vulgare</i>	Kaga velaney	Herb	Lamiaceae	Ls, Sd.	Leaves are used for external wounds. Leaves are also used for urinary problems. Seed is used as a flavouring agent and for cough.
56	<i>Ficus palmate</i>	Enzar	Tree	Moraceae	Ft, Lx	Fruit is eaten for constipation; latex is used for the removal of spines from the body. People avoid cutting this specie.

Table 2: Continued

S.no	Scientific name	Local name	Habit	Family	Part used	Uses
57	<i>Ficus Erica</i>	Enzar	Tree	Moraceae	Lx	Latix is used for the removal of spines. Its leaves are used for cattles to remove placenta whenever delay occur.
58	<i>Fumeria indica</i> (Hauskn) Dugsi	Krachay	Herb	Fumaricaceae	Ls	The Leaves are used for cough and whole plant is used for abdominal pain.
59	<i>Grewia asiatica</i>	Pastaoney	Tree	Tiliaceae	Ls, Bk, Ft	Fruit is edible. Leaves are used as antidiabetic. Wood is used as a source of fuel. Branches are used as a thatching material. Leaves are also used as a source of fodder.
60	<i>Hedra nepalensis</i> K. Koch, Hert.	Palulzelai	Herb	Araliaceae	Rt, Bs	It is used for curing of diabetes and also considered as a blood purifier.
61	<i>Indigofera gerardiana</i> Wall. ex Baker	Ghwareja	Shrub	Papilionaceae	Ls, St	Leaves are used for relief in abdominal pain; wood is used as a thatching material. Wood is also a source of fuel.
62	<i>Juniferus communis</i>	Gugarh	Herb	cupressaceae	Rt	Root is used for healing of wounds.
63	<i>Juglan regia L.</i>	Ghuz	Tree	Juglandaceae	Bk, Ft, Sm	Bark is used for cleaning of teeth and gums. Fruit is edible. Wood is used in furnitures and as a timber. Bark extract is also used as antihelminthic.
64	<i>Justicia adathoda L.</i>	Baikarh	Shrub	Acanthaceae	Ls, Rts	Leaves are used for cough, treatment of wounds. Leaves are used in severe case of dysentery. Powdered root is used in malaria.
65	<i>Lepidium sativum</i>	Halam	Shrub		Ft	The fruit is used for colic pain. It is laxative.
66	<i>Luffa actangula</i>	Torai	Shrub	Cucurbitaceae	Ft	It is antidiabetic. It is also used as a source of vegetable. It is also exported to the local market.
67	<i>Lycopersicum esculentum</i>	Tamater	Herb	Solonaceae	Ft	Its fruit is edible. It's cross cutted portion by wreathing around the snake bited part helps in demolishing the effects of poison.
68	<i>Malva neglecta Wallr.</i>	Panerak	Herb	Malvaceae	Rt, St	Leaves are used as a source of food. Its root extract is used for kidney stones.
69	<i>Mentha longifolia</i> (Linn) Huds.	Velanai	Herb	Lamiaceae	Ls	It leaves are used for colic pain, as a flavouring agent in the local famous food of charbagh which is known as gunghri. Give relief in certain digestive disorder. It is also antispasmodic and antiemetic.
70	<i>Mentha arvensis L.</i>	Podena	Herb	Lamiaceae	Ls.	Used in dysentery, flavouring agent, gastro intestinal disorders, give relief in colic pain.
71	<i>Melia azedarach L.</i>	Tora Bekanrha	Tree	Meliaceae	Ls, Ft	It is antihelminthic, leaves are used for urticaria, Bark is used for tooth ache and wood is used as a source of fuel.
72	<i>Mickelia champaca</i>	Champa	Shrub	Magnoliaceae	Fr.	Fresh flower juice is used for eye problems and is considered to help in increasment of eye sight. Dried flower is boiled in water and the water is used for fever.
73	<i>Micromeria biflora</i> Benth.	Narai shamakai	Herb	Lamiaceae	Ls, Sm	Used for children cure of cold and fever. Strengthening of gums and cleaning of mouth..
74	<i>Mirabilis jalapa L.</i>	Gul-e-bada	Shrub	Nyctaginaceae	Ls, Rt	It is used for softening of the abcess. Root is used for treatment of typhoid.
75	<i>Morus nigra L.</i>	Toor toot	Tree	Moraceae	Ls, Ft	Leaves are used for sore throat treatment and fruit is used for dyspepsia. Wood is used as a fuel. Also used in furnitures.
76	<i>Morus alba</i>	Spin toot	Tree	Moraceae	Ls, Ft	Used for throat sore, to treat constipation. Fruit is eaten dry as well as fresh. Wood is used as a fuel and for furniture.
77	<i>Myrtus communis L.</i>	Manrho	Shrub	Myrtaceae	Ls.	Used in fever to make the taste of mouth good. Leaves are also used for cold and for stomach disorders.
78	<i>Narcissus tazetta L.</i>	Gul-e-nergis	Herb	Amaryllidaceae	Wp	For healing of wounds, blood purification and also used for ornamental purposes.
79	<i>Nerium oleander L.</i>	Gandherai	Shrub	Apocynaceae	Wp	Water extract is used for relief in eye infection, for scabies. It is also ornamental.
80	<i>Ocimum basilicum L.</i>	Kashmalai	Herb	Lamiaceae	Ls, Sd	Used for external wounds, leaves are used as expectorant. Also cultivated as ornamental.
81	<i>Olea ferruginea Royle.</i>	Khona	Tree	Oleaceae	Ls, Sm.	Leaves are used for throat pain, antidiabetic, antihepatic, fruit is edible. Wood is used for fuel. It is confined to graveyards. Currently threatened due to much cutting down.
82	<i>Oxalis acetosella L.</i>	Kalthi	Herb	Oxalidaceae	Sd, Ls.	Used for kidney stones.
83	<i>Oxalis corniculata L.</i>	Manzakeen tarooki	Herb	Oxalidaceae	Ls	Used for tooth ache and also used against ring worms. It is also a source of vegetable.

Table 2: Continued

S.no	Scientific name	Local name	Habit	Family	Part used	Uses
84	<i>Papaver somniferum</i>	QashQash	Shrub	Papaveraceae	Ft, Sd.	Used for diarrhea, dysentery, used as analgesic, for relief in flu, it is sedative and gives relief. It is also cultivated for honey bees.
85	<i>Phaseolus radiatus</i>	Marghodana	Shrub	Papilionaceae	Sd.	Used as an expectorant.
86	<i>Pistacia integerrima</i> Stew. Ex. Brandis.	Shna	Tree	Anacardiaceae	Ls	Used for Hepatitis, wood is used for fuel. It is highly endangered.
87	<i>Pinus roxburghii</i> Sargent.	Nakhtar	Tree	Pinaceae	Gm.Sd, Rn. Sm	Resin is taken orally for pimples and also used as antidiabetic. Seed is sex tonic and is used for moral fiber pain. Wood is used for fuel and furniture. It is much valuebale.
88	<i>Platanus orientalis</i> L.	Chinar	Tree	Platanaceae	Bk, Ls,	Leaves are used for constipation, healing of wounds and give relief in pain. Wood is used as a source of fuel, timber and furniture. Bark powder is taken orally for diarrhea. The name of charbagh is on the behalf of this tree. It is also much endangered and only a few countable trees are present.
89	<i>Populus nigra</i> L.	Spirdar	Tree	Salicaceae	Sm, Ls	Exported to other parts of the country particularly to matches industries and sports industries. it is used for fencing. Wood is used for fuel. Leaves are used as a fodder for cattles.
90	<i>Pronus malus</i>	Manrha	Tree	Rosaceae	Fr, Sm	Fruit is edible. Wood is used for fuel purposes. It is cultivated and the fruit is exported to different parts of the country.
91	<i>Pronus armeniaca</i>	Khobany	Tree	Rosaceae	Fr; Sm	Fruit is edible. Fruit is also exported. Fruit is also used for constipation. Wood is used as a source of fuel.
92	<i>Pisum sativum</i> L.	Matar	Herb	Leguminosae	Ls; Sd	Seed are taken as a vegetable. Leaves are used as a fooder for the cattles. The dry plant is also a source of fuel.
93	<i>Pronus persica</i>	Shaltalo	Tree	Rosaceae	Fr; Sm	Fruit is edible and exported to different parts of the country. Wood is a source of fuel.
94	<i>Pronus domestica</i>	Alocha	Tree	Rosaceae	Fr; Sm	Fruit is edible; stem is used for fuel wood. It is cultivated in the local fields and are exported.
95	<i>Punica granatum</i>	Anangorhai	Tree	Punicaceae	Fr, Bk, Ls.	Dried fruit after grinding is used for mouth inflammation, scabies, as a diuretic agent, also given to newly born babies for immunity increasment. Extract act as antihelminthic, also used for cough. Bark is used for chest pain, also used as an expectorant. Fruit is used for colic pain.
96	<i>Pyrus communis</i>	Nashpati	Tree	Rosaceae	Ft, Sm.	Fruit is edible; stem is used for fuel wood. Branches are also used as thatching material in upper parts of tehsil charbagh.
97	<i>Quercus incana</i> Roxb.	Banj	Tree	Fabaceae	Ft,	Fruit is used for wounds healing, renal disorders and too much urination. The wood is also used as a fuel.
98	<i>Ranunculus muricatus</i> L.	Ziar guley	Herb	Ranunculaceae	Wp	It is used for male impotency and Schiatic pain.
99	<i>Raphanus sativus</i>	Molai	Herb	Cruciferae	Wp	Stem is used for hepatitis and it is also used for severe type of dysentery. Leaves are also cooked as vegetable. Leaves are also used as a fodder.
100	<i>Rosa webbiana</i> Wallich ex Royle	Zangali gulab	Shrub	Rosaceae	Fr.	Petals of flower are used for stomach disorder. It is also used for making hedges.
101	<i>Rubus fruticosus</i> Agg.	Karwarha	Shrub	Rosaceae	Ft, Ls.	Fruit is edible; leaves are used for cough and diarrhea.
102	<i>Salix babylonica</i> L.	Walla	Tree	Salicaceae	Ls, Fr.	Used for relief in pain. Leaves are used directly for external pain while in powder form it is used for internal pain. Wood is used as a source of fuel. Its branches are also used as a thatching material.
103	<i>Salvia moorcroftiana</i> Wall ex Benth.	Khardag	Herb	Rutaceae	Ls.	Leaves are used for cure of pain particularly in case of fracture.
104	<i>Solanum surattense</i> Bur m.f.	Marghonai	Herb	Solonaceae	Ft, Sd.	Fruit is used for abdominal pain. Seed mixed with mustard oil is used for migraine.
105	<i>Solanum nigrum</i> Auct.	Kachmacho	Herb	Solonaceae	Ft, Ls.	Fruit is used anti hepatitis and internal abdominal inflammations. Leaves are used for kidney stones. Fruit is edible.
106	<i>Silybum marianum</i> (L.) Gaertn.	Wrejakai	Herb	Asteraceae	Fr, Sd.	Flower is used for hepatitis, jaundice and cough particularly for tuberculosis.
107	<i>Sisymbrium irrio</i>	Awrey	Herb	Brassicaceae	Wp	It is used for abdominal pain of newly born children's.

Table 2: Continued

S.no	Scientific name	Local name	Habit	Family	Part used	Uses
108	<i>Skimia laureola</i>	Nazar panrha	Herb	Rutaceae	Ls.	Leaves are used along with tea for fever, also used as a tonic by using one time daily upto 12 days. It is also used against evil eye.
109	<i>Sonchus oleraceus</i>	Shoadapai	Herb	Asteraceae	Wp	Used as a fodder, given to cattles for enhancement of milk production.
110	<i>Spinaceae oleraceae</i>	Palak	Herb	Brassicaceae	Wp	Increase blood level, optimize the heart beat, give strength to bones and is also used as a source of vegetable.
111	<i>Syzygium aromaticum L. clove</i>	Lawang	Herb	Myrtaceae	Ft	Fruit is used for eye disorder. It is also used in preparation of prickle.
112	<i>Tamarix gallica</i>	Jhao	Tree	Tamaricaceae	Ls, Sm.	Stem is used as a source of fuel wood. Leaves are used against all types of hepatitis.
113	<i>Teucrium stocksianum</i> Boiss.	Kwande botai	Herb	Texaceae	Wp	For throat pain and sore throat.
114	<i>Tribulus terrestris</i> L.	Markondai	Herb	Zygophyllaceae	Sd,	Seed is purgative, powder of leaves and roots are used for kidney stones and tuberculosis. Give relief in pain in case of Menstrual cycle.
115	<i>Thuja orientalis</i> L.	Sarwa	Shrub	Cupressaceae	Sd	Seed in powder form is used for tooth ache. It is also grown as ornamental.
116	<i>Verbascum Thapsus</i> L.	Kharghwag	Herb	Scrophulariaceae	Ls.	Leaves are wreathed for pain around the fractured body parts. It is also used as anticancer.
117	<i>Viola biflora</i> L.	Banafsha	Herb	Violaceae	Ls, Rt.	Used for colic pain. Root is used for stomach disorders and jaundice. Also used as an expectorant
118	<i>Vitis vinifera</i>	Kwar	Shrub	Vitaceae	Ft, Ls.	Its leaves are used for external body wounds and fruit is edible.
119	<i>Vitix negundo</i> L.	Marvandai	Shrub	Lamiaceae	Ls, Sm.	Leaves are used for digestion. It is also used as a thatching material. Also used for burning. Its stem extract is used against the external parasites of cattles.
120	<i>Withania somnifera</i> (L.) Dunal.	Kotilal	Herb	Solonaceae	Rt.	Used for colic pain, root bark is also used as a tonic along with sugar.
121	<i>Zanthoxylum armatum</i> Dc.	Dambara	Tree	Rutaceae	Ft, Ls.	Used for blood purification, as a tonic, Fruit is used for treating of stomach disorders. It is also used in sauce.
122	<i>Zizyphus sativa</i> Gaertn.	Markhanai	Tree	Rhamnaceae	Ft, Ls, Sm	Leaves are antidiabetic, Fruit is edible. Wood is used as a fuel; leaves are also used as a fodder for cattle. Shoots are used for fencing.

the people of the rural areas of tehsil charbagh are totally depending on agriculture that's why they use to cultivate certain crops like wheat, onion, sweet pea, peaches, apricot and other members of family rosaceae. The value able way of the income of the farmer of tehsil charbagh is properly the cultivation of *Allium cepa*, *pronus persica*, *pronus armeniaca*, *Pronus domestica*, *Pyrus communis*, *Pyrus mallus*, *Diospyrus locus*, *Diospyrus kaki*, The most important crop which is cultivated each year by the local farmers of the area is Onion, which is a great measure of income for the farmers and is exported to all over the country from the local vegetable market. Peach and apple is also exported to all over the country. *Pyrus communis* and both spp of *Diospyrus* are only found in the upper areas of the surveyed area. In crops different varieties of cereals like *Triticum indicum*, *Zea mays* and *Oryza sativa* particularly and sweet pea is also cultivated which are all proved to be a good source of income. The plants which are of medicinal importance like morchella, adiantum, *Berberis lyceum* etc are also exported in less quantity to

the local herbs centers namely pansari stores. From Pansari stores these are then distributed to all parts of the country.

**Over Exploited Species of the Area:** In the present study some of the spp are found to be at high risk, these spp are going to be extinct rapidly due to certain biotic as well as abiotic factors. It is important to say that the species which are listed here are according to the current study and are listed after collection of informations from the local aged people of the area who are well experienced in many ways with the uses of plants. The most common spp of the areas which were being used from centuries by the local inhabitants and are now at risk or are about extinct which the following are;

- *Berberis lyceum* royle(Family Berberidaceae) is a shrub which is locally known as kwarey, Is at high risk due to its vital role in certain diseases cure. Majority of the people have information about its use



that's why it is at high risk due to over use. It is locally used for throat infections, mouth infections and inflammation, as a blood purifier and in the cure of hepatitis.

- *Cedrela serrata* Royle (Family Meliaceae) is a tree locally known as Shnai which is about extinct and this spp is no more reported in the studied area. It has been studied that in the past it was used by the local people as a fodder for the cattle, wood as a fuel and for digestion purposes. A very small number of this specie is found in the rest of the areas of District swat.
- *Celosia argentea* L. (Family celasteraceae) which is locally known as Chamiarey is about extinct and is no more found in all of the studied area. It's due to over use.
- *Celtis caucasica* Willd. (Family celastraceae) which is locally known as Taghwan is a tree and was confined mostly to the upper regions of the studied area. Due to over cutting of this spp it is highly endangered and only a few countable in numbers are present.
- *Cotoneaster mycophyllus* Wall. Ex Lindly (Family Rosaceae) which is locally known as Mamanrha and is a tree and is at high risk and about to extinct.
- *Cornus macrophylla* Wall. Ex. Roxb. (Family cornaceae) locally known as Khadang is a Shrub which is mostly cutted down and is at high risk now. This spp has been used for the removal of ectoparasites from the domestic animals. It is also used as a thatching material.
- *Indigofera gerardiana* Wall. Ex Baker (Family papilionaceae) is a common shrub which is used for colic pain, making baskets and as a fuel wood. It is also among the highly endangered spp of this area.
- *Olea ferruginea* Royle (Family oleaceae) locally known as Khona is commonly a religious tree the cultivation of which is mostly confined strictly to the graveyard is now at a very high risk due to certain reasons. About 90% of olive is cutted down from the graveyards due to the crisis and military operation.
- *Platanus orientalis* (Family platanaceae) is a tree locally known as Chinar. It is used as a source of fuel as well as a source of furniture and is also used for some other purposes. This spp is also at high risk and only a few countable trees are present in the studied area.

- *Punica granatum* L. (Family punicaeae) locally known as Anangorhi and is a tree. Its fruit is edible which is commonly used for urinary problems, gastro problems and hepatitis. This spp is also at high risk.
- *Quercus incanna* Roxb (Family fabaceae) is a tree which is locally known as Banj. Its fruit is used for controlling excessive urination and also used for renal problems, inflammations and fuel. It is also among the endangered spp of the area.
- *Salix wallichiana* L. (Family Salicaceae) is a tree which is locally known as walla and is commonly found on the banks of running water channels. Due to its excessive use in furniture industry it is going to be extinct.
- *Sorghum halepense* Pers. (Family poaceae) is a herb which is locally known as Dadam is at risk and is only found in a few parts of the studied area.

**Names after Plants:** Locally in the area certain places and villages are named after the names of plants spp.

(1) "Charbagh" is by self-named after plant spp locally known as "Chinar" the scientific name of which is *Platanus orientalis* due to its abundance presence in the past. (2) The mountain of "khadang" is named after the plant spp *Cornus macrophylla* wall Ex. Roxb which is locally known as khadang. (3) Taghwan is the local name of *Celtis caucasica* which is also the name of a local village near talegram village. (4) An area which is called "Dadamokas" is named after *Sorghum halepens*, which is locally known as dadam due to its abundant number and harsh vegetation. (5) Another area namely "Beshbanrh" is named after *Olea ferruginea* due to its dense vegetation in the grave yards particularly which are now very rapidly been cutted down.

## DISCUSSION

Life is totally dependent on plants either in one way or another. We use plants for medicines, as fodder for cattle's, in cosmetics and other industries, for sports tools, for furniture, as a source of food, as a source of fuel, for fencing purposes, as a thatching material even perfumes are obtained from some plants [12]. Plants play a vital role in the improvement of the economy of a country and bring prosperity. It has been estimated by WHO that round about 80% population of Asia are unable to afford basic health facilities that is why they depend on medicinal plant species owing to their cultural

familiarity, easy access, simple use and effectiveness [13]. Unfortunately due to overgrazing and tree fall, collection of plants in huge amount by the unskilled persons for different ailments disturbance is created in the amount of plants spp. Increase in the number of population is also one of the main causes of the disturbance in plants number particularly in the species which are used for food and fuel. This disturbance is resulting in the denaturation of the environment as well as in the diversification of plants [14]. In the current study Table 2 indicates that most of the plant species which are used for medicinal purposes are herbs and unfortunately people don't have much awareness for these herbs preservation as well as the conservation of nature that is why it is one of the main causes of the extinction of certain plant species. There is no proper arrangement for the collection and harvesting of these plants and the rate of regeneration is much slower than its growth and cultivation. Local hakims (practitioners) are also deteriorating the plants number by excessive use without any proper control measures. Secondly some other reasons like absence of basic life facilities which are petroleum gases, well establish hospital, joblessness, lack of education and poverty beside the mentioned one for the disturbance and degradation of the most important natural resource of the earth which are plants [15].

In the present study 122 species were studied which were found to be used by the majority of the inhabitants of this area for different purposes like medicine, vegetables, fodder, fuel wood, furniture, thatching and hedges, fruit, food, ornamental, religious, evil eye and honey bees same uses were also been described by [16]. Some species like *Allium cepa*, *Pisum sativum*, *lycopersicum esculentum*, *Pronus persica*, *Pronus domestica*, *Pronus armeniaca*, *Pyrus mallus*, *Pyrus communis*, *Diospyrus kaki* and *Populus nigra* are playing a vital role in the improvement of the economic status of local inhabitants [17].

Tehsil charbagh just like the rest of Swat is rich with plant communities and plenty of medicinal plants are found here. But as there is no proper gardening, collection and proper storage of these plants in a planned way which is cry of the day. That is why it is suggested that there must be a proper systematic attempt to preserve this wealth and to avoid this loss [5].

Therefore the current study is conducted to bring awareness among the people and to protect the natural resources in its original form. It was also one of the main

purposes of the current study to mention the highly endangered species due to very high amount of deforestation and cutting. It can lead to the control of this natural resource which can be improved, controlled and grown by the involvement of the local communities, governmental and nongovernmental organizations.

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