

Ethnobotanical Survey of the Flora of Tehsil Balakot, District Mansehra, Khyber Pakhtunkhwa, Pakistan

Muhammad Irfan^{1,2}, Nabeela¹, Imran Khan¹, Mohammad Kamil¹, Saif Ullah¹, Siraj Khan¹,
Muzammil Shah³, Ashfaq Ali⁴, Saif Ur Rehman⁴, Rashid Khan⁴, Danish Ali⁵,
Rukhsana Kausar⁶, Gul Jan¹ & Waheed Murad¹

¹Department of Botany, Abdulwalikhan University, Mardan, Pakistan

²Department of Botany, University of Swabi – Swabi, Pakistan

³Department of Biological Sciences, King Abdulaziz University, Jeddah, Saudi Arabia

⁴Department of Botany, Hazara University, Mansehra, Pakistan

⁵Department of Botany, Government Post Graduate College, Mansehra, Pakistan

⁶Department of Environmental Sciences, International Islamic University, Islamabad, Pakistan

Received: February 22, 2018

Accepted: May 29, 2018

ABSTRACT

The inhabitants of tehsil Balakot, district Mansehra, Khyber Pakhtunkhwa, Pakistan were using eighty eight different taxa belonging to seventy one genera and forty six families. Amongst the part used results showed that mostly whole plant viz. thirty two, leaves of twenty seven, stem of twelve and fruits of nine taxa were used for different purposes. The governing families of the study area were Family Rosaceae consists of thirteen taxa, solanaceae having five taxa, Buxaceae, Verbenaceae, Lamiaceae, Acanthaceae having three taxa each, Papilionaceae, Berberidaceae, Buddlejaceae, Anacardiaceae, Thymelaceae, Sapindaceae, Araliaceae, Guttiferae, Oleaceae, Cupressaceae, Euphorbiaceae, Poaceae, Rhamnaceae, Rutaceae, Caprifoliaceae keeps two taxa and rest of all the families contains one taxa each were recorded in the study area.

KEY WORDS: Ethnobotanical, Medicinal, Balakot, Mansehra, Khyber Pakhtunkhwa, Pakistan

INTRODUCTION

Balakot is located between 34°33'N 73°21'E latitude and 34°33'N 73°21'E longitude near to Kaghan valley located in the Northern part of Pakistan. It is a historical place and famous tourism site of the region and the gateway to Kaghan valley of Khyber Pakhtunkhwa, Pakistan. The famous river of Balakot is Kunhar, originating from Lulusar lake and merge with River Jehlum just outside Muzaffarabad in Azad Kashmir. Balakot has a humid subtropical climate with hot summers and cool winters. Rainfall in Balakot is much higher than in most other parts of Pakistan. The heaviest rainfall occurs in late winter in the months of February and March and in the monsoon season in the months of July and August however all the time there we meet with pleasant rainfall [1]. Tehsil Balakot comprises eleven union councils viz. Garhi Habibullah, Garlat, Ghanool, Hangrai, Kaghan, Kund, Mahandari, Sathbani, Shohal Mazullah and Talhata. Till now there is no documentation of traditional knowledge of their flora. The most common taxa of gymnosperms found there are *Picea smithiana*, *Cedrus deodara*, *Taxus baccata*, *Pinus wallichiana* and *Pinus roxburghii*. While the most common angiosperm taxa are *Fragaria duchesnia*, *Ranunculus muricatus*, *Zanthoxylum aramatum* and *Datura alba*. The important wild and cultivated fruits are *Ziziphus nummularia*, *Ziziphus oxyphylla*, *Phoenix dactylifera*, *Viburnum grandiflorum*, *Rubus ulmifolius*, *Berberis lyceum* and *Diospyros lotus*. The key crops grown are *Allium cepa*, *Oryza sativa*, *Zea mays*, and *Triticum aestivum*, *Hordeum vulgare*, *Solanum tuberosum*, *Brassica campestris*, *Avena sativa*, *Lycopersicon esculentum*, *solanum melongena*, *cucurbita pepo*, *Cucumis sativa* and *Pisum sativum*. New plants have been adding to the flora of Pakistan which has great medicinal importance [2]. Residents of the study area are using different kinds of plants hormones for increasing the yield of crops [3], [4], [5].

Ethnobotany deals with the traditional knowledge and relationship that exists between plants, animals and humans. The delivery of the traditional knowledge traced back to China about five thousand years ago. Approximately eighty percent of the total human population still depends upon traditional uses of plants [6]. According to the report of World Health Organization three-fourth of human world population is not able to afford modern medicines. These folks still use traditional plants and poultices of traditional weeds for treatment of different remedies. About 422000 flowering plants have been reported from the world and amongst them 50000 have been used for medicinal

*Corresponding Author: Muhammad Irfan, Department of Botany, Abdulwalikhan University, Mardan, Pakistan.
Email: Mirfan310@yahoo.com

Citation: Muhammad Irfan, Nabeela, Imran Khan, Mohammad Kamil, Saif Ullah, Siraj Khan, Muzammil Shah, Ashfaq Ali, Saif Ur Rehman, Rashid Ali, Danish Ali, Rukhsana Kausar, Gul Jan & Waheed Murad, 2018, Ethnobotanical Survey of the Flora of Tehsil Balakot, District Mansehra, Khyber Pakhtunkhwa, Pakistan; Journal of Applied Environmental and Biological Sciences, 8(9)1-8.

purposes. About 6000 flowering plant taxa have been documented in Pakistan and so far amongst them there are 600 medicinal plants [7].

MATERIALS AND METHOD

First of all available literature was studied and plants were collected in the respective localities having field notebook, questionnaire, pencil, plant presser, blotting papers, polythene bags, newspapers, knife, towel, gloves, twig cutter and stick. Frequently field visits were carried out during January to December 2017 in different seasons of the year. A questionnaire was used to collect all information regarding plants traditional uses. Each specimen was tagged, pressed, poisoned with mercuric chloride and absolute alcohol then mounted on standard herbarium sheets. All the data viz. scientific name, vernacular name, family, habit, habitat, locality, parts used, medicinal use, folk recipe uses were documented in the field note book and then transferred to herbarium slip which is posted on the right foot corner of herbarium sheet. Plant taxa were identified with the help of available literature viz. flora of Pakistan [8]. Finally the collected plant taxa were deposited in the herbarium of Government Post Graduate College, Mansehra, Khyber Pakhtunkhwa, Pakistan.

RESULTS AND DISCUSSION

A total of three hundred and forty five persons were investigated regarding the distribution on the basis of age and gender of informants. Out of three hundred and forty five informants there we find two hundred males and one hundred forty five females. The consequences open that males were mostly aged informants about the traditional knowledge than young generation in target survey area. In the study area a total of 88 taxa belonging to 71 genera and 46 families [fig.1] were recorded during the first exploration of tehsil Balakot, district Mansehra, Khyber Pakhtunkhwa, Pakistan. The dominant families of the study area were Rosaceae consists of thirteen taxa, solanaceae having five taxa, Buxaceae, Verbenaceae, Lamiaceae, Acanthaceae having three taxa each while family Papilionaceae, Berberidaceae, Buddlejaceae, Anacardiaceae, Thymelaceae, Sapindaceae, Araliaceae, Guttiferae, Oleaceae, Cupressaceae, Euphorbiaceae, Poaceae, Rhamnaceae, Rutaceae, Caprifoliaceae keeps two taxa each while the rest of all families contains one taxa each recorded in the study area. Amongst these plant taxa seventy one taxa were wild while eighteen taxa were cultivated in the study area. Most of the taxa were reported to be quite successful remedies for different disorders viz. diarrhea, Vomiting, stomach problem, diabetes, headache, blood pressure, backache, bronchitis, kidney problems, edema, pulmonary diseases, blood clotting, wounds healing, influenza, jaundice and cancer. These taxa were mostly used by hakims, local wound healers and old women as well. The plant taxa were mostly used as a source of fuel, fodder, vegetable, medicinal and ornamental purposes. The highest percentage of the plants part used were whole plant viz. thirty six percent, leaves were used viz. thirty percent, stem were used viz. thirteen percent, fruits were used viz. ten percent and Roots were used viz. eight percent while remaining parts were used viz. three percent only. The study area was having maximum diversity of wild flora viz. eighty percent and rarely cultivated viz. twenty percent. The taxa wise investigation showed that twenty six taxa were used as a source of fuel, eleven taxa were used as a fodder, eleven taxa were used as an ornamental purpose, eleven taxa were edible fruits, seven taxa were used against jaundice, five taxa were used against Stomach problems, four taxa were used against Fever, three taxa were used against vomiting, three taxa were used for ear and nose pain, three taxa were used against Backache, three taxa were used against Asthama, three taxa were used against Earache, two taxa were used against influenza, two taxa were used against Diarrhea, two taxa were used for cleaning teeth, two taxa were used for the relief of menstrual cycle, two taxa were used for Blood purification, two taxa were used against Arthritis, two taxa were used against Pulmonary disorders, two taxa were used against Skin infections, two taxa were used for Stick walk by aged peoples, two taxa were used against Headache, one taxa was used as a vegetable, one taxa was used against Dyspepsia, one taxa was used against Diabetes, one taxa was used against Typhoid, one taxa was used for rope making, one taxa having spiritual value, one taxa was used against Constipation, one taxa was used against Piles, one taxa was used against Kidney stones, one taxa was used against ring worm and foot athletes, one taxa was used as an Analgesic, one taxa was used against Bronchitis, one taxa is Attractive for honey making, one taxa was Anticancer, one taxa was used for Healing of wounds, one taxa was used as Antilice, one taxa was used for making baskets, one taxa was used for house fencing. Our result was in close union with a variety of other researchers who has previously conducted their study in different parts of Pakistan viz from Chapursan valley, Gojal, Gilgit Baltistan, Pakistan [9], from Shower Valley, District; Swat, Khyber Pakhtunkhwa, Pakistan [10], from Dir valley, Khyber Pakhtunkhwa, Pakistan [11], from Dir Kohistan valley, Khyber Pakhtunkhwa, Pakistan [12], from Kahuta, District Rawalpindi, Punjab, Pakistan [13], from Wari, district Upper Dir, Khyber Pakhtunkhwa, Pakistan [14], from tehsil Kabal, Swat District, Khyber

Pakhtunkhwa, Pakistan [15], from Neelum valley, Azad Jammu & Kashmir, Pakistan [16], from Hazar Nao Forest, Malakand District, Khyber Pakhtunkhwa, Pakistan [17], from Chitral Valley, Khyber Pakhtunkhwa, Pakistan [18], from Samar Bagh Valley, Lower Dir district, Khyber Pakhtunkhwa, Pakistan [19], from district Lower Dir, Khyber Pakhtunkhwa, Pakistan [20], from district Mansehra, Khyber Pukhtunkhwa, Pakistan [21], from southern Himalayan regions of Khyber Pakhtunkhwa, Pakistan [22], from Siran Valley, district Mansehra, Khyber Pakhtunkhwa, Pakistan [23], from Malam Jabba, district Swat, Khyber Pakhtunkhwa, Pakistan [24], from Dir Kohistan valley, district Dir upper, Khyber Pukhtunkhwa, Pakistan [25], from Charkotli Hills, Batkhela District, Malakand, Khyber Pakhtunkhwa, Pakistan [26], from Mastuj, District Chitral, Khyber Pakhtunkhwa, Pakistan [27], from Maidan Valley, Lower Dir District, Khyber Pakhtunkhwa, Pakistan [28], from Dilbori, District Mansehra, Khyber Pakhtunkhwa, Pakistan [29], from Upper Tanawal, District Mansehra, Khyber Pakhtunkhwa, Pakistan [30], from District Tor Ghar, Khyber Pakhtunkhwa, Pakistan [31], from tehsil Laalqilla District Lower Dir, Khyber Pakhtunkhwa, Pakistan [32] and also from Kaghan Valley, district Mansehra, Khyber Pakhtunkhwa, Pakistan [33].

Table 1: Ethnobotanical uses of the plants of tehsil Balakot, district Mansehra, Khyber Pakhtunkhwa, Pakistan

Sr. No.	Botanical name	Local name	Family	Part/s used	Ethnobotanical uses
1	<i>Andrachne cardifolia</i> L.	Karukani	Phyllanthaceae	Leaves & stem	Leaves and stem used as a fuel.
2	<i>Astragalus psilocentros</i> Fish	Pei botil	Papilionaceae	Leaves	Leaves used as a fodder & fuel. Decoction of leaves used against cough & influenza.
3	<i>Berberis lyceum</i> Royle	Sunmbal	Berberidaceae	Whole plant	Extract of young stem & leaves used in Jaundice, diarrhea and Dyspepsia. Bark of root used with water against diabetes, vomiting, wound healing and cancer. Fruits are edible & used for blood purification.
4	<i>Berberis vulgaris</i>	Jangalli Sunmbal	Berberidaceae	Whole plant	Fruits are edible. Stems used as a fuel. Root & Bark used in blood clotting.
5	<i>Buxus wallichiana</i> Bill	Kutay lal	Buxaceae	Leaves & stem	Extract of leaves used against edema & Stem is used as a fuel.
6	<i>Buddleja asiatica</i> Lour	Chiti boti	Buddlejaceae	Leaves & stem	Stem and leaves are used as a fuel & in Blood clotting.
7	<i>Buddleja Crispa</i> Bth	Chiita kao	Buddlejaceae	Whole plant	Whole plant is used as a fuel and in making sticks.
8	<i>Bougainvillea glabra</i> Choisy	Bengi boti	Nyctaginaceae	Whole plant	Ornamental purpose
9	<i>Calotropis procera</i> Ail	Rubber bush	Apocynaceae	Whole plant	Whole plant used against Diarrhea, vomiting and skin problems.
10	<i>Caesalpinia decapitala</i> Alston	Jarra	Caesalpinaceae	Stem & leaves	Leaves having ornamental value and stem used as a fuel.
11	<i>Cotinus coggyria</i> Scop	Sagrati jhari	Anacardiaceae	Leaves	Leaves used as a fodder and decoction of leaves used in Bronchitis
12	<i>Carissa opaca</i> L	Jugnu	Apocynaceae	Stem	Stem used in making furniture
13	<i>Caryopteris odorata</i> D. Don	Safedii	Verbenaceae	Whole plant	Whole plant used as a fuel and fodder
14	<i>Cassia occidentalis</i> L.	Path jarri	Caesalpinaceae	Root	Roots used in stomach ulcer
15	<i>Cotoneaster bacillaris</i> Wall ex. Lindle	Loon	Rosaceae	Stem	Stem used in making sticks
16	<i>Cotoneaster microphylla</i> Wall ex. Lindle	Lani	Rosaceae	Leaves	Blood clotting
17	<i>Cotoneaster nummularia</i> Fish	Karwa	Rosaceae	Whole plant	Whole plant used as a fuel
18	<i>Cycus revoluta</i>	Sago palm	Cycadaceae	Whole plant	Ornamental value
19	<i>Cestrum nocturnum</i> L.	Rat ki Rani	Solanaceae	Whole plant	Pleasant smell used as ornamental
20	<i>Campsis radicans</i> (L.) Seem	Cow vine	Bignoniaceae	Leaves	Leaves used in headache and ear pain
21	<i>Colebrookea oppositifolia</i> Smith	Balli	Labiatae	Stem	Stem used in asthma
22	<i>Cotonus coggyria</i> Scope	Paan	Anacardiaceae	Whole plant	Whole plant used as a fuel and making baskets
23	<i>Datura alba</i> MILL	Tatura	Solanaceae	Seeds	Grinded seeds are used in asthma
24	<i>Duranta erecta</i>	Zard bootey	Verbenaceae	Whole plant	Ornamental value

Citation: Muhammad Irfan, Nabeela, Imran Khan, Mohammad Kamil, Saif Ullah, Siraj Khan, Muzammil Shah, Ashfaq Ali, Saif Ur Rehman, Rashid Ali, Danish Ali, Rukhsana Kausar, Gul Jan & Waheed Murad, 2018, Ethnobotanical Survey of the Flora of Tehsil Balakot, District Mansehra, Khyber Pakhtunkhwa, Pakistan; Journal of Applied Environmental and Biological Sciences, 8(9)1-8.

25	<i>Daphne mucronata</i> Royle	Kutay lal	Thymelaceae	Whole plant	Extract of leaves used to kill lice on animals body hairs
26	<i>Daphne oleoides</i> Royle	Kutty lal	Thymelaceae	Whole plant	Whole plant used in Jaundice & rheumatism
27	<i>Datura strumarium</i> MILL	Tatura	Solanaceae	Leaves	Leaves are Anthelmenthic
28	<i>Datura innoxia</i> MILL	Tatura	Solanaceae	Leaves	Leaves used in blood purification
29	<i>Debregesia salcifolia</i> (D. Don) Rendle	Chenjal	Urticaceae	Leaves	Leaves used in jaundice .
30	<i>Isodon rugosus</i> (Wall. ex benth) Codd.	Chitt bota	Lamiaceae	Leaves.	Leaves used in Jaundice.
31	<i>Dodonea viscosa</i> (L) jacq	Sanatha	Sapindaceae	Leaves	Leaves used in diabetes and whole plant used as a fuel
32	<i>Eranthemum pulchellum</i> Andrews	Ude gule	Acanthaceae	Leaves	Skin diseases and healing of wounds
33	<i>Ficus hederacea</i> Roxb.	Dumur	Moraceae	Leaves	For blood clotting
34	<i>Ephedra gerardiana</i> Wall ex.	Samai boti	Ephedraceae	Roots	Roots used in stomach problem and cough
35	<i>Hedra helix</i> K. Koch	Parwara	Araliaceae	Leaves	Leaves used in blood clotting
36	<i>Foeniculum vulgare</i> Mill	Sounf	Apiaceae	Seeds	Seed used for jaundice
37	<i>Hedra neolensis</i> K. Koch	Berlli	Araliaceae	Roots	Roots have anticancer potentials
38	<i>Hypericum oblongifolium</i> Choisy	Shinoo	Guttiferae	Flowers	Flowers are attractive for honey bees
39	<i>Grewia tenax</i> (Forsk) Fiori	Tambar	Tilliaceae	Fruits	Fruits used in stomach ulcer.
40	<i>Gymnosporaea royleana</i> Wall. ex. Brand	Selti	Celastraceae	Whole plant	Whole plant is used as a fodder and fuel
41	<i>Indigofera heterantha</i> Wall. ex Brandis	Kainthi	Papilionaceae	Whole plant	Stem used in making baskets, as a fodder, blood clotting and in jaundice
42	<i>Isodon rugosus</i> (Wall. ex Benth) Codd	Chitt bota	Lamiaceae	Leaves	Leaves used in Jaundice and in pulmonary disorders
43	<i>Justicia adhatoda</i> Linn.	Baikar	Acanthaceae	Leaves	Decoction of leaves used in bronchitis and cough
44	<i>Jasminum nudiflorum</i> Lindl	Safedi	Oleaceae	Whole plant	Having ornamental value
45	<i>Jasminum humile</i> L.	Kangarru	Oleaceae	Flowers	Flowers extract used for the removal kidney stone
46	<i>Juniperus communis</i> L	Barari	Cupressaceae	Whole plant	Asthama, joints pain and rest of plaant body is used as fuel
47	<i>Justica adhatoda</i> L.	Baikar	Acanthaceae	Leaves & roots	Leaves and roots used in diabetes and vomiting
48	<i>Maytenus royleanus</i> (Wall ex. Lawson) Cuf	Patakha	Celastraceae	Leaves	Leaves used as a fodder & fuel
49	<i>Lespedeza hirta</i> (L.) Hornem.	Budii khantii	Fabaceae	Leaves.	Leaves extract is applied on wounds for blood clotting
50	<i>Lantana camara</i> L.	Nagh phool	Verbenaceae	Leaves & stem	Leaves are Analgesic and stem used as a fuel
51	<i>Mallotus philippensis</i> (Lam.) Muess	Kambeela	Euphorbiaceae	whole plant	Fruits used in fungal infections & whole plant used as a fuel
52	<i>Myrsine africana</i> L.	Gori boti	Myrsinaceae	Roots	Root extract used for the removal of kidney stones
53	<i>Nerium oleander</i> L.	Gandeei	Apocynaceae	whole plant	Flowers used for piles & whole plant used as a fuel
54	<i>Orostegia limbata</i> (Benth) Boiss	Koray	Lamiaceae	Whole plant	Whole plant used as a fodder & fuel.
55	<i>Periploca aphylla</i> Dene.	Kutti kid um wali boti	Asclepiadaceae	Whole plant	Whole plant used in stomach problems & fever.
56	<i>Prinsipia utilis</i>	Desi sunbal	Rosaceae	Fruits	Fruit used stomach, intestinal and urinary

	Royle				problems.
57	<i>Reinwardtia trigyra</i> (Roxb.) Planch	Zard gule bootey	Linaceae	Leaves	Leaves used for blood clotting
58	<i>Ricinus communis</i> L.	Kashtrail	Euphorbiaceae	Root & Bark	Roots & bark used in Arthritis, swelling & backache.
59	<i>Rosa indica</i>	Rata gulab	Rosaceae	Flowers	Flowers extract used in eyes infections.
60	<i>Rosa alba</i>	Chitta gulab	Rosaceae	Whole plant	Having ornamental value
61	<i>Rosa moschata</i> J. Herm	Gulabi rose	Rosaceae	Whole plant	Having ornamental value
62	<i>Rosa damascene</i> Miller.	Gulab	Rosaceae	Flowers	Flowers used in constipation for cattle's
63	<i>Rubus ellipticus</i> Smith	Pogana	Rosaceae	Whole plant	Having ornamental value
64	<i>Rubus fruticosus</i> Hook	Karwara	Rosaceae	Fruits & leaves	Fruits used for blood purification & leaves for blood clotting.
65	<i>Rubus niveus</i> Thanb-non Wall.	Pogana	Rosaceae.	Roots	Roots used in excessive menstrual cycle.
66	<i>Rubus Ulmifolius</i> Schoot.	Phalwari	Rosaceae	Leaves & fruits	Leaves used as a fodder and fruits are edible.
67	<i>Senna tora</i> L	Ban khenthi	Caesalpiniaceae	Leaves	Leaves decoction used in jaundice
68	<i>Saccharum spontaneum</i> L	Jharoo	Poaceae	Whole plant	Whole plant used in making brooms
69	<i>Spirea japonica</i>	Speen gule	Rosaceae	Whole plant	Whole plant used as a fuel
70	<i>Thuja orientalis</i> L.	Cheelai	Cupressaceae.	Leaves	Leaves used in excessive menstrual cycle.
71	<i>Segetaria thea</i> (Osbeck) M.C.Jhonston	Kandula	Rhamnaceae	Leaves	Leaves used as a fodder
72	<i>Sarcococa saligna</i> (D. Don) Muell	Neka Sanatha	Buxaceae	Leaves	Leaves used in jaundice.
73	<i>Skimmia laureola</i> De	Nehra	Rutaceae	Leaves	Leaves used as evils repellent having spiritual value
74	<i>Saccharum grifithi</i> L	Jharro	Poaceae	Whole plant	Whole plant used for soil bonding
75	<i>Typha latifolia</i>	Sag wali rassi	Typhaceae	Leaves	Leaves used to make ropes and baskets
76	<i>Vitex negundo</i> L.	Marvandi	Lamiaceae	Leaves and stem	Leaves used for watering in mouth and stem used as fuel and tooth brush
77	<i>Vitis vinifera</i> L	Angoor	Vitaceae	Fruits and stem	Fruits are edible extract from stem used for jaundice
78	<i>Viburnum cotinifolium</i> D. Don.	Ghuch	Caprifoliaceae	Leaves & fruits	Leaves used as a Fodder and fruits are edible
79	<i>Viburnum grandiflorum</i> D. Don.	Uklun	Caprifoliaceae	Whole plant	Fruits are edible, leaves used as a fodder & rest of the parts are used as a fuel
80	<i>Segetaria thea</i> Var	Gutka	Rhamnaceae	Whole plant	Used as fuels leaves for fodder
81	<i>Woodforbia fruticosa</i> (L.) S, Kurz	Thahawa	Lythraceae	Leaves	Leaves are used as a fodder
82	<i>Phoenix dactylifera</i> L	Khajor	Arecaceae	Fruits	Fruits are edible having proteins and minerals
83	<i>Withania somnifera</i> (L.) Dunal	Patakha	Solanaceae	Fruits	Young fruits extract used one cup with milk in morning in typhoid
84	<i>Yucca aloifolia</i> L	Azge Botey	Agvaceae	Whole plant	Having ornamental value
85	<i>Ziziphus nummularia</i> Burn. F	Kanda	Rhamnaceae	Whole plant	Leady used spine in nose and ear. Fruits are edible. Stem used as a fuel.
86	<i>Ziziphus oxyphylla</i> Edgew	Elani	Rhamnaceae	Fruit leaves & stem	Fruits are edible. Leaves used as a fodder. Stem used as a fuel.
87	<i>Zanthoxylum aramatum</i> Dc	Timbar	Rutaceae	Leaves & stem	Leaves used for making chatni and stem used for cleaning teeth
88	<i>Hypericum perforatum</i>	Ban chahy	Hypericaceae	Leaves	Decoction of leaves used in influenza

Citation: Muhammad Irfan, Nabeela, Imran Khan, Mohammad Kamil, Saif Ullah, Siraj Khan, Muzammil Shah, Ashfaq Ali, Saif Ur Rehman, Rashid Ali, Danish Ali, Rukhsana Kausar, Gul Jan & Waheed Murad, 2018, Ethnobotanical Survey of the Flora of Tehsil Balakot, District Mansehra, Khyber Pakhtunkhwa, Pakistan; Journal of Applied Environmental and Biological Sciences, 8(9)1-8.

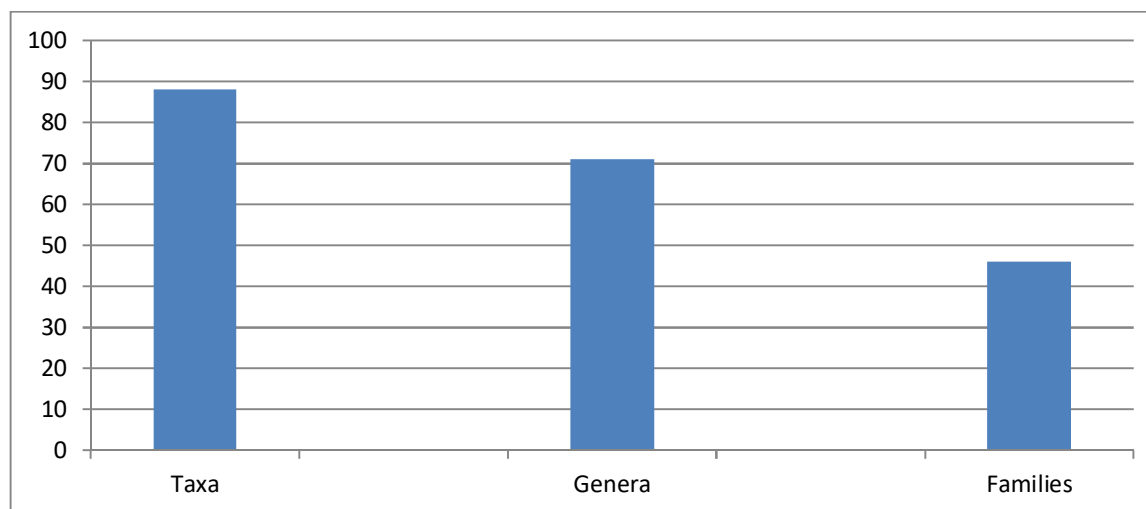


Fig 1: Representation of the number of taxa, genera and families used ethnobotanically in tehsil Balakot, District Mansehra, Khyber Pakhtunkhwa, Pakistan

CONCLUSION

Mostly the plant taxa were collected, cleaned, dried, grinded and then decoction was used twice a day orally against Diarrhea, vomiting, cough, asthma, urinary, intestinal, skin disorders. The consequences of using different plant taxa were different because inhabitants of tehsil Balakot, district Mansehra, Khyber Pakhtunkhwa, Pakistan were mostly unaware about modern facilities and mostly depend upon traditional knowledge and ancestor's instructions because due to the expensive prices of modern medicines and poverty of inhabitants their native home-made remedies and medicines were used commonly.

Acknowledgement

We are really thankful to the inhabitants of tehsil Balakot, District Mansehra, Khyber Pakhtunkhwa, Pakistan for sharing their valuable knowledge with us.

Conflict of Interest

The authors declare that there is no conflict of interest amongst them.

Authors' contribution

MI, N, MS & SU conducted the experiment and SR, AA, RA & DA carried out the statistical analysis, IK, GJ, WM designed the experiment and RK & MK structured and wrote the manuscript

REFERENCES

1. Anonymous.,1998. District Census report of District Mansehra, Beureu of Statistics government of Pakistan, Islamabad, Pakistan.
2. Ali, A., M. Rashid, A. Sultan and M. Irfan. 2017. *Anisochilus carnosus* (L. f.) Wall. ex Benth. (Lamiaceae) – a new generic record for Pakistan. *Plant Science Today* 4(3): 102-105. <http://dx.doi.org/10.14719/pst.2017.4.3.316>.
3. Irfan, M., J. Alam, I. Ahmad, I. Ali and H. Gul. 2017. Effects of exogenous and foliar applications of Brassinosteroid (BRs) and salt stress on the growth, yield and physiological parameters of *Lycopersicon esculentum* (Mill.). *Plant Science Today* 4(3): 88-101. <http://dx.doi.org/10.14719/pst.2017.4.3.218>
4. Irfan, M., J. Alam, G. Jan & H. Gul. 2018. Influence of brassinosteroid (BRs) in roots and foliar spray against salinity on physiological parameters and micro nutrients upon tomato (*Lycopersicon esculentum* Mill.) *Science Arena Publications Specialty Journal of Biological Sciences* ISSN: 2412-7396, Vol, 4 (2): 18-27

5. Irfan, M. & Ali, I., 2018. The effect of heat stress on Morpho physiological traits of *Triticum aestivum* L. genotypes. *Science Arena Publications Specialty Journal of Agricultural Sciences*, ISSN: 2412-737X, Vol 4 (1): 13-23.
6. Khan, S. W., & S. Khatoon. 2007. Ethnobotanical studies on useful trees and shrubs of Haramosh and Bugrote valleys, in gilgit northern areas of Pakistan *Pak. J. Bot.*, 39(3): 699-710.
7. Tareen, R. B., T. Bibi, M.A. Khan, M. Ahmad and M. Zafar. 2010. Indigenous knowledge of folk medicine by the women of Kalat and Khuzdar regions of Baluchistan, Pakistan. *Pak. J. Bot.*, 42(3): 1465-1485.
8. Ali, S.I., Qaiser, M. and Nasir, E.1970-2004. *Flora of Pakistan*, Department of Botany, University of Karachi, Pakistan 1-210.
9. Wazir, S. M., Dasti, A. A., and Shah, J. 2004. Common medicinal plants of Chapursan valley, Gojal II, Gilgit-Pakistan. *J. Res (Science) Bahauddin Zakariya University, Multan, Pakistan*, 15, 41-43.
10. Hussain, F., M. Islam and A. Zaman. 2006. Ethnobotanical profile of plants of Shower Valley, District; Swat, Pakistan. *Int. J. Biotech.*, 3: 301-307.
11. Hazrat, A., J. Shah, M. Ali and I. Iqbal. 2007. Medicinal value of Ranunculaceae of Dir valley. *Pak. J. Bot.*, 39(4): 1037-1044.
12. Jan, G., M. A. Khan, F. Gul, M. Ahmad, M. Jan and M. Zafar. 2010. Ethnobotanical study of common weeds of Dir Kohistan valley, Khyber Pakhtunkhwa, Pakistan. *Pak. J. Weed Sci. Res.* 16(1): 81-88.
13. Qureshi, S.J. And M.A. Khan. 2001. Ethnobotanical study of Kahuta from Rawalpindi district, Pakistan. *Online J. Biol. Sci.*, 1(1): 27-30.
14. Manan, Z., Sirajuddin, A. Razzaq, M. Islam and Ikramullah.2007. Diversity of medicinal plants in Wari subdivision district Upper Dir, Pakistan. *Pak. J. Pl. Sci.*, 13 (1): 21-28.
15. Ahmad, I., Ibrar, M., Barkatullah & Ali, N., 2011. Ethnobotanical study of tehsil Kabal, Swat District, KPK, Pakistan. Hindawi Publishing Corporation. *J. Bot.*, 2011(2011): 1-9.
16. Mahmood, A., R.N. Malik, Z.K. Shinwari and A. Mahmood. 2011. Ethnobotanical survey of plants from Neelum, Azad Jammu & Kashmir, Pakistan. *Pak. J. Bot.*, 43: 105-110.
17. Murad, W., A. Ahmad, S. Abdullah Gilani and M. A. Khan. 2011. Indigenous knowledge and folk use of medicinal plants by the tribal communities of Hazar Nao Forest, Malakand District, North Pakistan. *Journal of Medicinal Plants Research*. 5(7): 1072-1086.
18. Ali, H., M. Qaisar, 2009. The Ethnobotany of Chitral Valley, Pakistan with Particular Reference to Medicinal Plants. *Pak. J. Bot.* 41(4): 2009-2041.
19. Irfan M, Ahmad I, Saeed S H. Traditional medicinal plant knowledge of some spermatophytes of Samar Bagh Valley, Lower Dir district, Pakistan. *Plant Science Today* 2017;4(4):151-153. doi: 10.14719/pst.2017.4.4.334
20. Ahmad, I, Irfan, M, Ali, I, Khan, J, Saeed, S.H & Gulfaraz, A: Checklist of some medicinal plants of district Lower Dir, Pakistan, *IASET: Journal of Agricultural & Bio-Chemical Science* (IASET: JABS) ISSN(P): Applied; ISSN(E): Applied Vol. 1, Issue 1, Jan - Jun 2016; 15-22.
21. Gul, A., J. Alam, H. Ahmad and M. Irfan. 2016. An updated checklist of Pteridophytes of district Mansehra, Khyber Pukhtunkhwa-Pakistan. *Plant Science Today* 3(2): 237-247. <http://dx.doi.org/10.14719/pst.2016.3.2.220>.
22. Qureshi, R.A., M.A. Ghufraan, S.A. Gilani, Z. Yousaf, G. Abbas, A. Batool. (2009). Indigenous medicinal plants used by local women in southern Himalayan regions of Pakistan. *Pakistan Journal of Botany.*, 41, 19–25.
23. Shah, G, M. & M.A.Khan (2006), Check List of Medicinal Plants of Siran Valley Mansehra-Pakistan. *Ethnobotanical Leaflets* 10: 63-71.
24. Sher, H., and M. Al_yemeni. (2011). Economically and ecologically important plant communities in high altitude coniferous forest of Malam Jabba, Swat, Pakistan. *Saudi Journal. of Biological. Science.*, 18, 53–61.
25. Hazrat, A. Nisar, M., Shah, J. and Ahmad, S. (2011). Ethnobotanical study of some elite plants belonging to Dir Kohistan valley, Khyber Pukhtunkhwa Pakistan. *Pak. J. Bot.* 43(2): 787-795.
26. Barkatullah,, M. Ibrar,, and F. Hussain. (2009). Ethnobotanical studies of plants of Charkotli Hills, Batkhela District, Malakand, Pakistan. *Frontiers of Biology in China*, 4, (4): 539-548.
27. Hussain, F., Shah, M. and Sher, H. (2007). Traditionnal resource evaluation of some plants of Mastuj, District Chitral, Pakistan, *Pak. J. Bot.* 39(2): 339-354.

Citation: Muhammad Irfan, Nabeela, Imran Khan, Mohammad Kamil, Saif Ullah, Siraj Khan, Muzammil Shah, Ashfaq Ali, Saif Ur Rehman, Rashid Ali, Danish Ali, Rukhsana Kausar, Gul Jan & Waheed Murad, 2018, Ethnobotanical Survey of the Flora of Tehsil Balakot, District Mansehra, Khyber Pakhtunkhwa, Pakistan; Journal of Applied Environmental and Biological Sciences, 8(9)1-8.

28. Irfan M, Ali I, Afza R. Ethnobotanical survey of the flora of Maidan Valley, Lower Dir District, Khyber Pakhtunkhwa Province, Pakistan. *Plant Science Today* 2018;5(2):68- 71. <https://dx.doi.org/10.14719/pst.2018.5.2.379>
29. Ahmed, J., I. Rahman, A. H. Shah, F. Ijaz , Z. Khan, N. Ali, S. Muhammad, Z. Ahmed and M. Afzal. 2017. First Floristic Checklist of Dilbori (OGHI), District Mansehra, KP, Pakistan. *J. Appl. Environ. Biol. Sci.*, 7(3)41-48, 2017
30. Farooq, M, M. Hussain, Z. Saqib, A. H. Shah, K. R. Khan, M. Shah and and I. Rahman 2017. Preliminary Checklist of Upper Tanawal, District Mansehra, KP, Pakistan. *J. Appl. Environ. Biol. Sci.*, 7(6)158-168.
31. Mehmood, A, A. H. Shah, A. H. Shah, S. M. Khan, I. Ur Rahman and H. Ahmad 2017. Floristic List and Indigenous Uses of Poaceae Family in District Tor Ghar, Khyber Pakhtunkhwa, Pakistan. *J. Appl. Environ. Biol. Sci.*, 7(6)169-177.
32. Irfan. M, Khan. I, Ali. A, Khan. R, Ali. A & Jan. G 2018. Ethnomedicinal Uses of the Plants of Tehsil Laalqilla, District Lower Dir, Khyber Pakhtunkhwa, Pakistan. *J. Appl. Environ. Biol. Sci.*, 8(6)61-66, 2018
33. Jamal, Z, A. Pervez, M. Hussain, G. M. Shah, S. H. Shah, M. Ahmed 2017. Ethnomedicinal Plants used for Gastrointestinal Ailments by the Rural Communities of Kaghan Valley, Mansehra, Pakistan. *J. Appl. Environ. Biol. Sci.*, 7(12)41-48.