Research Article

Ethnoveterinary and Studies of Khadang Valley Chakesar District Shangla, Khyber Pakhtunkhwa, Pakistan

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Abstract | Ethno veterinary medicine is a program focused on traditional values, expertise and skills; the methodologies and methods used to treat diseases, maintaining animal health and its importance to ethnobotany and Pharmacogonosy.The objective of the present study is to identify the leading medicinal plants used by local communities for the treatment of animals and document the threatened herbal knowledge from the elder formers (R1, R2 and R4) this study labels the ethno veterinary practices in different villages of District Shangla, where the documentation process is carried out through semi-structured questionnaires in 2017 (R1) where about seventy plant species belonging to different families of spermatophytes have been collected, among which forty-eight belonged to angiosperm families and 2 families were gymnosperms. This comprises 39 herb, 14 shrubs, and 16 trees, respectively. The study postulated on the certification of herbal knowledge on realistic bases though former interviews for the documentation of accurate indigenous knowledge. (R1andR2) All the plant species have high medicinal values and used as an ethno veterinary by the local inhabitants. Like However, family Lamiaceae showed remarkable medicinal benefits. The administrative route is virtually oral, while some fifty species are used externally for skin infections. This study concluded that Shangla District is a rich source of herbal awareness and medicinal plants. In local interviews, important medicinal knowledge and medicinal plants, most of whom use herbal medicines in livestock and pet animals, were recorded. Like *Aloe vera L* use for the healing of wounds, *Arisaema jacquemontii blume* used as antidote, *Artimizia annua* used as anathematize also in gastric problems, *Avena sativa* L. used as a laxative and antiseptic (R1).

Novelty Statement | This is the first study which contributes an ethno veterinary inventory of medicinal plants of Khadand Valley Shangla.

Introduction

Different plants species are used to treat the various diseases in animals, these treatments are ethno-veterinary medicine (EVM) method, which is based on the traditional beliefs, knowledge, folks and practices used for the treatment of various animals' disease and for the healthy life of animals. The study postulated on the certification of herbal knowledge on realistic bases though former interviews for the documentation of accurate indigenous knowledge. (R1) EVM is widely recognized by the farmers and veterinarian and no of years used in red Deer *(Cervuselaphus) for* the treatment of gastrointestinal

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parasite and reduced the *Ostertagia*-type parasite (Hughes, 2018). Medicinal plants were used traditionally in maxico, Indiana, nahua and maya for the treatment of gastric problems and skin problems in the cattle's Michel *et al.* (1998) (R1, R2) This kind of traditional knowledge, which is passed by mouth, drawings, poems, stories, legends, paintings, visions, dreams, traditional songs and through ceremonies, is unfortunately disappearing gradually from traditional knowledge systems today due to fast socioeconomic, environmental, technological changes and the loss of culture Patricia (2011). Some people used medicinal plants against viral infection of animals *Euphorbia unispina*, *Euphorbia poissonii*, *Lannea acida*, and *Mangifera indica* in Kpodékon *et al.* (2015). *Brassica campestris* Linn is used in the treatment of stool problems in goats. Salvia species used to treat the mammary glands and milk production on buffalo's Khalid *et al.* (2015). *Canna indica* Linn is used as dysentery antinarcotic and also used for the sexual stimulation in animals Patel and Deshmukh (2015). A number of plant extracts Neem oils azidaric decoction are used as antifungal and antimicrobial cure in cattle's Somvanshi *et al.* (2016). (R1) Ethno-veterinary medicine and posology are gaining attractiveness because it is affordable by developing countries. Besides questionable quality of allopathic drugs, development of chemo resistance in companion and livestock animals due to unsystematic use of antibiotics and anthelmintic e.g. tetracycline, ivermectin, ampicillin and their use unpromising. Such as after usage of antibiotic and hormone their residues came out in the milk and also they produced negative affect on the reproductive potential of animals these are sufficient weaknesses which divert the attention from modern veterinary medicine to ethno-veterinary medicine Iqbal *et al.* (2005). The widely treated various type of animals through herbal methods of experienced farmers and Hakeem's through traditional ailments describe about 24 ailments used in 7 categories of animals and found the people of Uttara khand India to relay on traditional herbal medicines for about 80% Phondani *et al.* (2010) (R1, R4).

This information is supposed to be communally and collectively owned by two ancestors and kept under the custody of living older women and men who are aware of the animals and their behaviors, diseases, ethnicity, sex, age, caste, and healing procedures depending on the community, etc. There is a threat; yet, this process of vesting knowledge in human custodians can be undermined by mortality, thereby losing valuable information to future generations Patricia (2011).

Indigenous plants are mainly used in the traditional treatment of various human and animal diseases. Pakistan has an area of around 80943 square kilometers, and lies between 60 55' to 75 30' E and 23 45' to 36 50' N. In Pakistan, altitudes range from 0 to 8611 m and thus have a remarkable biodiversity and various types of climate zones. In Pakistan there were approximately 6000 plant species, 600-700 species with therapeutic interest.

Medicinal plants which are used in the indigenous system known as Shinwari (2010). Furthermore, previous finding elucidated that the oral administration of *Phyllanthu amarus* extracts were excitingly effective against induced pancreatic cancer in rats, and it also produced a significant change in the activity of alkaline phosphatase, lipase, pancreatic amylase, alanine aminotransferase and aspartate aminotransferase Ankit *et al.* (2015). Nevertheless, very little information existing regarding ethno-veterinary medicine, hence the aim of the study is to evaluate ethno veterinary information of district Shangla and to estimate the medicinal plants which are mostly used as a ethno veterinary medicine by the local people of the present area. Therefor this study is carried out to explore, identify and document the herbal, aesthetic values of medicinal plants and document the threatened indigenous knowledge from the old people of the study area the study also highlight the sustainable utilization and conservation of high valued medicinal plants in future. (R1, R2, R4).

Materials and Methods

Study area

Present research was conducted in Shangla district, which is located in Khyber-Pakhtunkhwa (North) province, Pakistan. The Shangla valley situated between 34° 40_ to 35° N latitude and 72_ to 74° 6_ E longitude with an altitude of 3000 Kilometers from the sea level Adnan *et al.* (2010). Shangla district consist of 5 subdivisions with total area of 1.586 square kilometer. The subdivisions are Puran, Makhozay, Alpuri, Chakesar, and Besham tehsils. In the north and east Shangla district are bounded with Kohistan, Battagram and Torghar Districts respectively. While Shangla district bounded in West and South with Swat and Buner Districts respectively. In Census 2017, Population in Shangla district was noticed 757,810 having 480 persons/ square kilometer. However, in census 1998, the population in Shangla district was 435,563 recorded with 3.3% an average annual growth rate with a density of 274 persons /square kilometer. The total number of household is 64,391 with an average household size of 8.1. In Shangla district most of the peoples are Muslims (99.8%) and a minor number of Hindus, Christians, and Ahmadis. The native language in Shangla district is Pashto, about 95.4% populations use the Pashto language. A Reconnaissance survey of the study area has been carried out from May to September 2017 (R1) in 5 tehsils among which Tehsil Alpuri, Chakesar, Puran, makhozay and Besham with an Altitudinal ranges from 800 feet foot hills up to high altitudinal 11000 feet mountains. District Shangla is a rich source of medicinal plants and has no

previous information regarding ethno-veterinary there for the current study was needed to document the base line information and highlight the need of conservation of these high valued medicinal plants R1).

Interviews

Field work was carried out in all remote valleys and sub division of the District Shangla where interviews were conducted in such a manner that elder farmers and healers were searched out to get base line information about animal diseases and their local treatment the collected data was documented through semi Structure questioners (R1) The local Hakeem's elaborate the values of the indigenous flora and its ethno-veterinary uses. Among which about 98 different diseases were identified, where brief Information of plant uses like used parts, administration route, method of preparation, the form uses, rank and occurrence of manifestation of species. Local inhabitants were interviewed, which include people of different age from 25 to 95 and gender, both male and female (R4) but mostly the men was interviewed as compare to women due to traditional constraints. It was quite interesting that man has a great hold on ethno-veterinary knowledge; however, the question session was conducted in the local language Pashtu.

Plant collection and identification

During field study all those plants were collected which has medicinal values and ethno-veterinary uses. The reported plants were comprises on herbs, shrubs and trees. In case of herbs the whole plants were collected where in case of shrubs and trees different plant part like leaf, fruits, roots and bark were collected as per local instruction and parts uses which may further be analyze for phytochemical screening Phondani *et al*. (2010). Plants were identified with local flora and basic key of taxonomy in the herbarium of the Department of Botany University of Peshawar with voucher specimens and experts opinion. For ethical/university approval the plants was submitted to the herbarium of the Department of Botany Bacha khan University Charsadda (BKUC) where Voucher number was given to each species according to the catalog for preservation and future study as mentioned in the Table 1 (R1, R2, R4).

Results and Discussion

Diversity and use of ethno veterinary medicinal plants

The local communities of District Shangla are using the local wild plant species for the treatment of different diseases in pet animals this practice was transferring from generation to generation but now slowly and gradually this indigenous knowledge is getting passed away from us and these high valued medicinal plants species are also become threatened due to improper conservation strategies. The current research work was designed to document the scattered ethno-veterinary knowledge of District Shangla which consist about Sixty eight (68) plant species belong to fifty families which detail Scientific name, Family, habit, life form, habitat, altitudinal range, distribution in study area and used for the ailments in animals has been given in the table below. Lamiaceae showed the highest values fallowed by Asteraceae the highlighted diseases are dermatological problems, wounds and gastrointestinal diseases. The habitat and existence of recognized species shown in Figures 2 and 3 shows the habitat of the ethno veterinary plants, the area wise Distribution of ethno-veterinary plants in the study Area shown in Figure 5. The elevation from the sea level while there is a boundless difference in the study area elevation because of its dynamic location start from the planes fallowed by slopes grassland and high altitudinal mountains Figure 4. The family wise distribution of the ethno veterinary plant species as shown in Figure 1. Lamiaceae shows the high number of the plant species where Astreaceae is ranked second in position Figure 1. (R4) About 98 different types of diseases were identified and the numbers of plant species were also described in Table 1 some diseases are very chronic and highly dangerous and fatal causing.
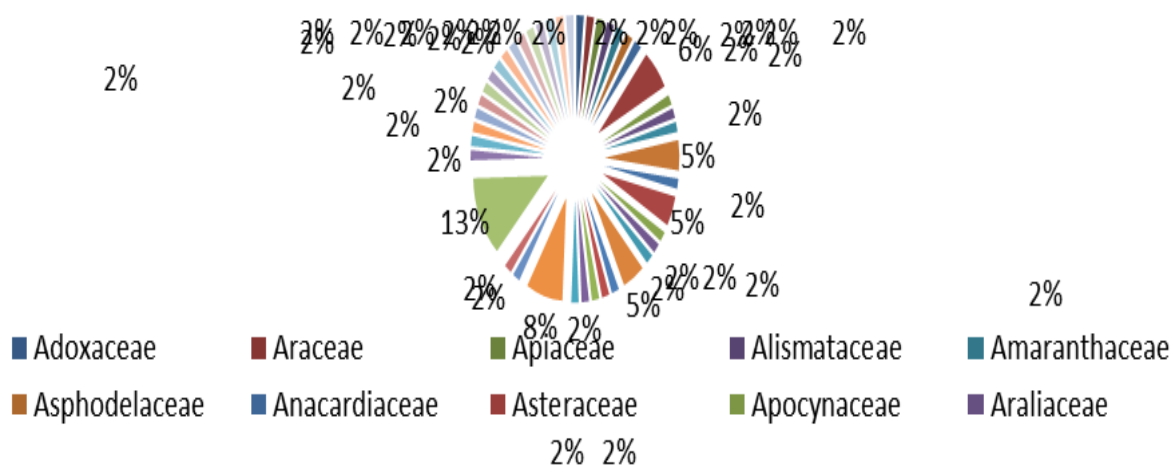

Figure 1: Family wise distribution of ethno-veterinary plants percentage the whole plants are distributed in about 43 families among which Moraceae, Astreacea and Lamiaceae are dominant.
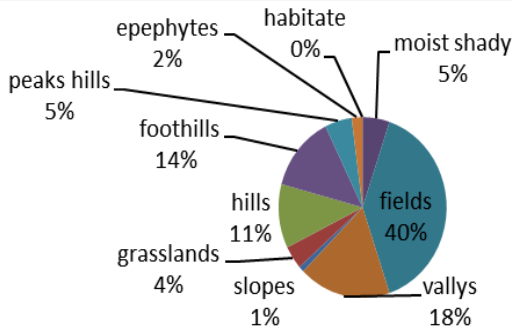
Figure 2: Habitat distribution of the of ethno-veterinary plants in the study area.
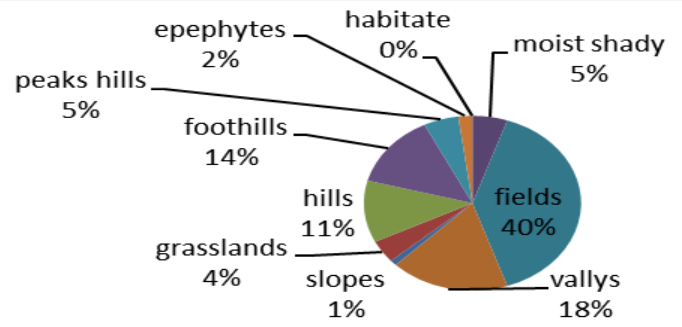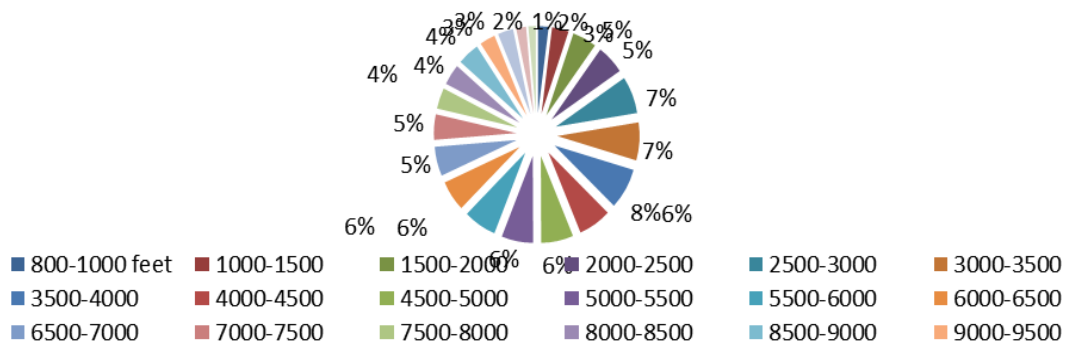

Figure 3: The geographical distribution of ethno-veterinary plants in the study area.

No. of species reported at particular altitude

Figure 4: Altitudinal distribution of ethno-veterinary plants in the study area.
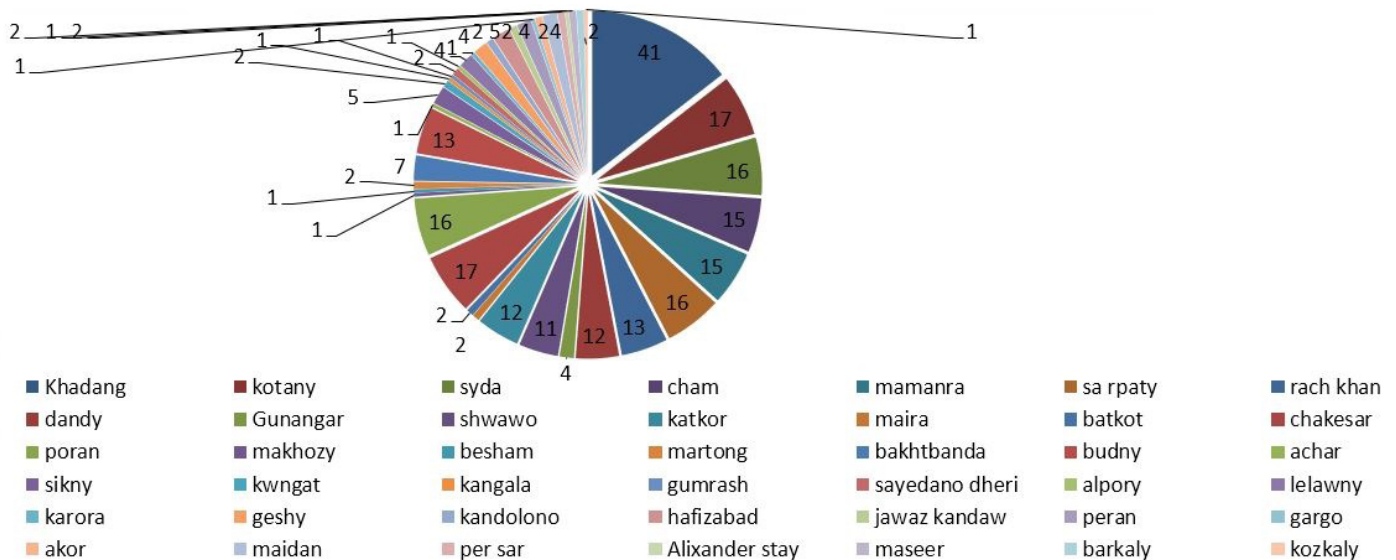

Figure 5: Area wise distribution of ethno-veterinary plants in the study area.

Ethno veterinary knowledge

In the study area, most of the men were familiar with ethno veterinary knowledge and herbal practices few aged women had a deep knowledge and uses of the plants but due to the less interest of the local people and flow of English medicine inducement the indigenous knowledge become threatened and restricted to some hot spots. the knowledge was divided among the communities like the people who domesticated buffalo's and cows as a pet animals they knows about the relevant diseases and their treatment with local herbal medicines through their own knowledge, and the people who had goats and sheep had diverse knowledge regarding their diseases and local treatment as such but however the elders people of the community is rich with endogenous knowledge. The plants are divided into different categories on the basses of curing diseases in cattle's, the study consist of about 68 medicinally important plant species comprises 39 herb, 14 shrubs and 16 tress respectively shown in Table 1. The plants of our study about used for 98 different diseases like anti-asthmatic, anticancer, purgatives, antidiuretic, antispasmodic, skin diseases more ever the detail shown in Table 1. (R3) This type of relevant studies has also carried out at swat valley Subtain *et al.* (2017) and different aspect.

Table 1: Details of some Ethnoveternary and posological plants of Khadang valley Chakesar District Shangla.

S. No	Botanical name	Family	Habit	Life form	Habitat	Altitudinal range	Distribution in Study area	Voucher number
01	Adiantum capillus-veneris L.	Pteridaceae	Herb	Geophyte	Moist shady areas	1500-7000 feet	Khadang, kotany, syda, barkaly , kozkaly, ashory, cham, mamanra	HBKU511
02	Ajuga bracteosa Wall.	Lamiaceae	Herb	Therophyte	Moist shady area	3900-7200 feet	Sayeda, sarpaty, jawaz, badony, rach khan, dandy,	HBKU512
03	Alisma plantago aquatica L.	Alismataceae	Herb	Hydrophyte	Moist shady area	300-600 feet	Gunangar, shwawo, katkor, maira, batkot,	HBKU513
04	Aloe vera L	Asphodelaceae	Herb	Field	1-3900 feet	Chakesar, poran, makhozy, besham, martong	HBKU514
05	Arisaema jacquemontii blume	Araceae	Herb	Chamaephye	Moist valley	6900-10200 feet	Bakhtbanda, khadang, badunay, rach khan, achar	HBKU515
06	Artimizia annua L OR Seriphhidium brevifolium (Wall. ex DC.) Ling & Y. R. Ling	Asteraceae	Shrub	Slopes & Valley	1000-4500 feet	Khadang, kotany, ashory, sikny , kwangat, kangala	HBKU516
07	Avena sativa L.	Poaceae	Herb	Therophyte	Grass land & hills	3000-6000 feet	Chakesar, khadang, shwawo, katkor, gumrash , sayedano dheri,	HBKU517
08	Brassica campestris Linn	Brassicaceae	Herb		Fields	3900-6000 feet	Chakesar, poran, alpory, lelawny, karora, khadang, geshy, kandolono, hafiz abad	HBKU518
09	Buddleja crispa Benth	Scrophulariaceae	Herb		Fields	4500-7500 feet	Jawaz, kandaw, peran, gargo, akor, maidan,	HBKU519
10	Canna indica Linn.	Cannaceae	Herb		Fields	1-300 feet	Senkary, martong, titwalan, beshaam , khan abad, karora	HBKU520
11	Cannabis sativa Linn.	Cannabaceae	Shrub	Clyptophyte	Valleys	1500-10000 feet	Sar, bagary,jinako madan ashory, sikny, gulibut, sundia	HBKU521
12	Capsicum frutescens L	Solanaceae	Sub–Shrub	Phanerophyte	Fields	1000- 5800 feet	Khadang chakesar, poran, shwawo, lelawny, shapor	HBKU522
13	Calotropis procera (Ait.)	Apocynaceae	Shrub	Phanerophyte	Foot hills	0-2100 feet	Sabir abad, kabalgram, maser,kox maser	HBKU523
14	Chenopodium ambrosioides L	Amaranthaceae	Herb	Chamaephyte	Fields	1800-11000 feet	Chakesar, poran, alpory, lelawny, karora, khadang, geshy, kandolono, hafiz abad	HBKU524
15	Conyza bonariensis	Asteraceae	Herb	Therophyte	Fields	10-3900 feet	Chakesar, kaly, danakol, Khadang, kotany, syda, barkaly , kozkaly ashory, cham, mamanra	HBKU525
16	Cotinus coggygria	Anacardiaceae	Herb	Phanerophyte	High altitude	990-4800 feet	Khadang, kotany, syda, barkaly , kozkaly, ashory, cham, mamanra	HBKU526
17	Coisinia bermonis	Asteraceae	Shrub		Valley	0-600 feet	Kabalgram, besham, manory dadam, sarkol, jatkol, maser, gunangar, sinkary	HBKU527
18	Cynoglossum lanceolatum Forssk	Boraginaceae	Herb	Chamaephyte	Fields	500-7500 feet	Chakesar, poran, alpory, lelawny, karora, khadang, geshy, kandolono, hafiz abad	HBKU528

S. No	Botanical name	Family	Habit	Life form	Habitat	Altitudinal range	Distribution in study area	Voucher number
19	*Daphne mucronata royal*	*Thymelaeaceae*	Shrub	Phanerophyte	Hills	2400-9000 feet	Sar, bagary, jinako madan ashory, sikny, gulibut, sundia	HBKU529
20	*Dodonaea viscosa* (Linn.)	Sapindaceae	Shrub	Phanerophyte	Foot hills	0-3000 feet	Khadang, kotany, syda, barkaly , kozkaly, ashory, cham, mamanra	HBKU530
21	*Ferula jaeschkeana* Vatke	Apiaceae	Herb	Geophyte	Valleys	3900-9000 feet	Chakesar, poran, alpory, lelawny, karora, khadang, geshy kandolono, hafiz abad	HBKU531
22	*Ficus sarmentosa* Bush: Ham. ex J.E. Moraceae Smith	Moraceae	Shrub	Phanerophyte	Epephyt	1500-6900 feet	Sayeda, sarpaty, jawaz, badony ,rach khan, dandy	HBKU532
23	Ficus *palmata* Forssk	Moraceae	Tree	Phanerophyte	Field Deciduous	1500-7500 feet	Sayeda, sarpaty, jawaz, badony ,rach khan, dandy	HBKU533
25	*Geranium wallichianum* D.	Geraniaceae	Herb	Chamaephyte	Upper hills	4800-9900 feet	Chakesar, poran, alpory, lelawny, karora, khadang, lelawny, batkot,	HBKU534
26	*Grewia optiva* J.R.Drumm.	Tiliaceae or Sparrmanniaceae	Tree	Therophyte	Foot hills	2500-7500 feet	Chakesar, poran, alpory, lelawny, karora, khadang, geshy, kandolono, hafiz abad	HBKU535
27	*Heteropogon contortus* Linn	Poaceae	Herb	Climber	Grass lands	1500-11000 feet	Chakesar, poran, alpory, lelawny, karora, khadang, geshy, kandol ono, 539hafiz abad	HBKU536
28	*Hedera nepalensis* K	Araliaceae.	Shrub	Therophyte	Epephyt	3000-9000 feet	Chakesar,poran, alpory, lelawny,karora, khadang,geshy,kandolono, hafiz abad	HBKU537
29	*Indigofera heterantha* wall.	Fabaceae.	Shrub	Therophyte	Hills	3000-11000 feet	Bakhtbanda, redaaar sar, ledo, kandaw, akhoro oba, binjaaat, matta, peer sar, gadono, alixandar, stay,	HBKU538
30	*Isodon rugosus* (Wall. ex Benth.)	Lamiaceae	Shrub	Therophyte	Valley	300-6000 feet	Sar, bagary,jinako madan ashory, sikny, gulibut, sundia	HBKU539
31	*Justicia adhatoda* L.	Acanthaceae	Shrub/Tree	Therophyte	Foot hills	900-3900 feet	Gunangar, batkot, sarkot, lower dheri, sharghashi	HBKU540
32	*Lepidium sativum* Linn	Brassicaceae	Herb	Cresophyte	Field	4000-6000 feet	Sayeda, sarpaty,jawaz, badony ,rach khan, dandy	HBKU541
33	*Mallotus philippensis* (Lam.)	Euphorbiaceae	Tree	phenerophyte	Foot hills	2000-5000 feet	Khadang, kotany, syda, barkaly , kozkaly, ashory, cham, mamanra	HBKU542
34	*Malva parviflora* Linn	Malvaceae	Herb	Chamaephyte	Fields	50-1850 feet	Gunangar, sarkol, jatkol, maser, katkor, paty khwar kangala dandy mera,	HBKU543
35	*Mentha arvensis* L.	Lamiaceae	Herb	Cryptophyte	Fields	600-2400 feet	Karindara, poran, aloch, billkyany. Danakol. Shwawo, katkor, langbar	HBKU544
36	*Morus alba* L. speen toot	Morceae	Tree	Phanerophyte	Fields &valley	1500-10000feet	Chakesar, poran, alpory, lelawny, karora, khadang, bakhtbanda, binjiaat, rach khan, hafiz abad	HBKU545
37	*Morus nigra* L.	Morceae	Tree	Phanerophyte	Fields & valleys	1500-10000feet	Chakesar, poran, alpory, lelawny, karora, khadang, geshy, kandolono, hafiz abad	HBKU546
38	*Olea ferruginea* Royle.	Oleaceae.	Tree	Phanerophyte	Hilly area	1500-6000 feet	Khadang, kotany, syda, barkaly , kozkaly, ashory, cham, mamanra	HBKU547

S. No	Botanical name	Family	Habit	Life form	Habitat	Altitudinal range	Distribution in study area	Voucher number
39	Oxalis corniculata L.	Oxalidaceae	Herb	Hemicryptophyte	Fields	900-8100 feet	poran, alpory, lelawny, karora, khadang, geshy, kandolono, hafiz abad	HBKU548
40	Paeonia emodi Wall.	Paeoniaceae	Herb	Therophyte	High altitude	3600-7500 feet	Sayeda, sarpaty, jawaz, badony, rach khan, dandy	HBKU549
41	Pinus gerardiana Wall. Nakhtar	Pinaceae	Tree	Phanerophyte	Hills	6000-10000 feet	Chakesar, poran, alpory, lelawny, karora, khadang, geshy, kandolono, hafiz abad,	HBKU550
42	Pistacia integerrima J. L.	Anacardiaceae	Tree		Foot hills	2400-6000 feet	Karindara, poran, aloch, billkyany. Danakol. Shwawo, katkor, langbar	HBKU
43	Plantago lanceolata Linn	Plantaginaceae	Herb	Hydrophyte	Fields	300-4600 feet	Khadang, kotany, syda, barkaly, kozkaly, ashory, cham, mamanra	HBKU551
44	Polygonatum verticillatum (L.)	Asparagaceae	Herb	Therophyte	Upper hills at high altitude	2000-13000 feet	Bakhtbanda, redaaar sar, ledo, kandaw, akhoro oba, binjaar, matta, peer sar, gadono, alixandar, stay,	HBKU552
45	Podophyllum emodi Wall.	Berberidaceae	Herb	Therophyte	High altitude	9000-12000 feet	Bakhtbanda, redaaar sar, ledo, kandaw, akhoro oba, binjaar, matta, peer sar, gadono, alixandar, stay,	HBKU553
46	Punica granatum Linn	punicaceae	Tree		Valley	1500-4500 feet	Khadang, kotany, syda, barkaly, kozkaly, ashory, cham, mamanra	HBKU554
47	Quercus incana Roxb	Fagaceae	Tree	Phenerophyte	Hilly areas	4500-7200 feet	Sayeda, sarpaty, jawaz, badony, rach khan, dandy	HBKU555
48	Rabdosia rugosa wall .ex Benth	Lamiaceae	Herb	Phanerophyte	Valley	1550-3600 feet	Khadang, kotany, syda, barkaly, kozkaly, ashory,	HBKU556
49	Ranunculus muricatus L.	Ranunculaceae	Herb	Therophyte	Fields	0-3000 feet	Karindara, poran, aloch, billkyany. Danakol. Shwawo, katkor, langbar	HBKU557
50	Rumex hastatus D	polygonaceae	Herb	Therophyte	Fields	2700-12000 feet	Bakhtbanda, redaaar sar, ledo, kandaw, akhoro oba, binjaar, matta, peer sar, gadono, alixandar, stay,	HBKU558
51	Rumex obtusifolius Var	Polygonaceae	Herb	Therophyte	Fields	100-4500 feet	Khadang, kotany, syda, barkaly, kozkaly, ashory,	HBKU559
52	Salvia moorcroftiana L	Lamiaceae	Herb	Chamaephyte	Foot hills	5000-9000 feet	Sayeda, sarpaty, jawaz, badony, rach khan, dandy cham, mamanra	HBKU560
53	Salvia lanata L	Lamiaceae	Herb	Chamaephyte	Foot hills	500-9000 feet	Karindara, poran, aloch, billkyany. Danakol. Shwawo, katkor, langbar, sundia dandy	HBKU561
54	Sauromatum guttatum Ait. Schott,	Araceae	Herb	Chamaephyte	Moist shady area	3000-7000 feet	Sayeda, sarpaty, jawaz, badony, rach khan, dandy	HBKU562
55	Segeretia thia osbeck	Rhamnaceae	Tree		Foot hills & valleys	5700-7425 feet	Karindara, poran, aloch, billkyany. Danakol. Shwawo, katkor, langbar	HBKU563
56	Solanum melongena L.	Solanaceae	Herb	Chamaephyte	Fields	3000-9000 feet	Karindara, poran, aloch, billkyany. Danakol. Shwawo, katkor, langbar, bakht banda,	HBKU564
57	Solanum nigrum L.	Solanaceae	Herb	Chamaephyte	Fields	500-1600 feet	Gunangar, sarkol, jatkol, maser, katkor, paty khwar kangala dandy, mera,	HBKU565

S. No	Botanical name	Family	Habit	Life form	Habitat	Altitudinal range	Distribution in study area	Voucher number
58	*Sonchus Oleraceou* Ls	Leguminosae	Herb	Therophyte	Grasslands	2000–11000 feet	Karindara, poran, aloch, bilkyany. Danakol. Shwawo, katkor, langbar, bakht banda,	HBKU566
59	*Tephrosia candida*	Fabaceae	Tree	Therophyte	Valleys	600–4800 feet	Khadang, kotany, syda, barkaly, kozkaly, ashory, cham, mamanra	HBKU567
60	*Tribulus terrestris* L.	Zygophyllaceae	Herb	Therophyte	Fields	600–3000 feet	Sayeda, sarpaty, jawaz, badony , rach khan, dandy	HBKU568
61	*Thymus linearis* Benth.	Lamiaceae	Herb	Chamaephyte	Fields	800–3700 feet	Chakesar, martong. Gunangar, sarkol, jatkol,	HBKU569
62	*Tuja orientalis* L	Cupressaceae	Tree	Phanerophytre	Fields	6000–7500 feet	Sayeda, sarpaty, jawaz, badony, rach khan, dandy	HBKU570
63	*VValeriana jatamansi* Jones	Caprifoliaceae	Herb	Therophyte	Fields	9000–12000 feet	Balkhtbanda, redaaar sar, ledo, kandaw, akhoro oba, binjaar, matta, peer sar, gadono, alixandar, stay,	HBKU571
64	*K Verbascum thapsus* L	Scrophulariace	Shrub	Cryptophyte	Foot hills	4200–9600 feet	Balkhtbanda, redaaar sar, ledo, kandaw, akhoro oba, binjaar, matta, peer sar, gadono, alixandar, stay,	HBKU572
65	*Viburnum cotinifolium* D.	Adoxaceae	Shrub	Cryptophyte	Valleys	2700–10500 feet	Balkhtbanda, redaaar sar, ledo, kandaw, akhoro oba, binjaar, matta, peer sar, gadono, alixandar, stay,	HBKU
66	*Viola canescens* Wall. ex Roxb	Violaceae	Herb	Therophyte	Hills	1500–6000 feet	Sayeda, sarpaty, jawaz, badony ,rach khan, dandy	HBKU573
67	*Zanthoxylum armatum* DC, D	Rutaceae	Tree	Phanerophyte	Hilly areas	2000–5000 feet	Khadang, kotany, syda, barkaly, kozkaly, ashory, cham, mamanra	HBKU574
68	*Zizipus sativa* Geatner Var	Rhamnaceae	Tree		Foot hills	900–4000 feet	Sayeda, sarpaty, jawaz, badony , sar.	HBKU575

The distribution of plant species in their respective families in which *Moraceae* have the highest number of species fallowed by *Lamiaceae, Canaeaceae* and *Brasicaceae* this is the indication of the species diversity and species richness in the study area, which described a rich floral diversity, and medicinal plant species with high herbal, social, economic and esthetic values shown in Figure 1 our results supported by Sabtain *et al*. (2017) who investigated that the plants communities in that the study area having 102 plant belonging to 30 families in which the *Asteraceae* was dominant having 7 species followed by *Rosaceae* contain 6 species also agree with the finding of Razaq *et al*. (2015) investigated the high valued medicinal plants of district Shangla he reported about 25 medicinal plants species belonging to 21 families.

The Sharing of the ethno-veterinary plant into different blotches in the study area 40% of the total plant species are oriented in the fields, 18% valleys, 14% Foot hills, 11% hills, 5% peak hills, 5% moist shady areas and 2 % are epiphytes respectively shown in Figure 3 our results supported by Mohib and Farukh (2012) sorted the region into different patches also supported by Akhatr *et al*. (2013) studied the geographical back round at swat similar to the said areas. The altitudinal variation in the study area which elaborate the elevation of the study Figure 4 the area exhibit various type of vegetation with rich floral diversity aline with the findings of Arshad *et al*. (2016) studied different ecosystem in the northern area of Khyber Pakhtunkhwa his study was conducted from 3100 to 4934 m from sea level Wenxin *et al*. (2016) studied the biodiversity of the north china familiar with the distribution of the North Pakistan Amir *et al*. (2015) studied the floral diversity of Charbagh valley and elaborate the ethno botanical and ethno-veterinary uses of the plant species he also elaborate the altitudinal variation and its impact on the distribution of the medicinal plant. The sharing of ethno veterinary plants in the study area which is alienated in to different villages, valleys and mountainous slops beginning from low altitude to high altitude and plowed by a piece of forest in different region of the study area Figure 5 a line with the investigation of Mohib *et al*. (2012) form the plans to the mountainous villages, the area blowout into different faces by each side some are North facing, some are South exposed where some plaster in East and West route of the study constituency therefor negotiable variation is seen in receiving of climatic element like light and precipitation that might influence an inordinate upshot in the life of the plant body. The habit of the medicinal plants in the study area, it comprises about 57% of the plant contribution belongs to herbaceous nature, 20% shrubs and 23% trees respectively Figure 6 agree with the findings of Razaq *et al*. (2015) the area receive huge annual rain fall about more than 1000 mm (NMCED, 2019) the area is rich in herbaceous plant species but most of the plants are valuable medicinally and having esthetic

values the studied area distributed in various angles.

According to the FAO about 30-40% of the livestock losses in breeding sector occur due to the scarcity of drugs (FAO, 2000) some viral infection of animals were treated through selected medicina plants in general were *Euphorbia unispina*, *Euphorbia poissonii*, *Lannea acida*, and *Mangifera indica* in benin Kpodékon *et al*. (2015) *Brassica campestris* Linn is used in the treatment of stool problems in goats. Salvia species used to treat the mammary glands and milk production on buffalo's Khalid *et al*. (2015). *Canna indica* Linn is used as dysentery antinarcotic and also used for the sexual stimulation in animals Patel and Deshmukh (2015). A number of plant extracts Neem oils azidaric decoction are used as antifungal and antimicrobial cure in cattle's Somvanshi *et al*. (2016) (R1, R2, R4).
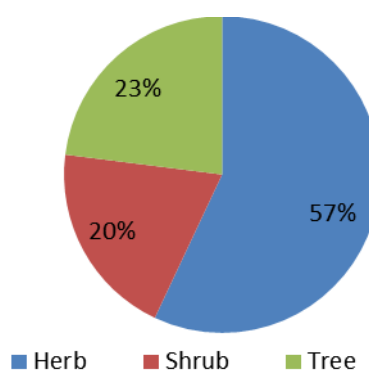

Figure 6: Types of the medicinal plants in the study area.

Conclusions and Recommendations

This study indicate the basic herbal knowledge, traditional uses of medicinal plants, expertise of the local former and healers, importance and aesthetic value of medicinal plants, flora and fauna of the study area, climate, elevation from the sea level, plants and pet animals diversity, animal disease, their local treatment and floral richness of the study area. In summary, the District Shangla ethnoveterinary survey includes a total of 70 plant species belonging to 50 spermatophyte families. In which 48 were Angiosperm families and 2 were gymnosperm families. Both plants have high medicinal qualities and are used by the local people as an ethnoveterinary for healing purposes. The highest medicinal values were found in Lamiaceae. This family also obtains much of the tonic. Administration route is essentially oral where certain plants are used externally in the event of a skin infection. As part uses are concern areal parts of fifty plant species are used. A highly meaningful medicinal knowledge, herbal use of medicinal plants, routine administration, and specific identification of medicinal plants were documented in interviews and data collection in the study area, most of them using herbal medicines for their livestock and animal animals. (R1, R2, R3 andR4) this research work is based on original studies and documentation of the medicinal herbal knowledge from District Shangla. (R3)

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References

Adnan, M., Javid, H., Tahir, M.S., Zabta, K., Shinwari., Farman, U., Ali, B., Naeem, K., Abdul, L.K. and Takashi, W., 2010. Proximate and nutrient composition of medicinal plantsof humid and sub-humid regions in North-west Pakistan. *J. Med. Plants* Res., **4**: 339-345.

Akhtar, N., Rashid, A. and Murad, W., 2013. Diversity and use of ethno-medicinal plants in the region of Swat, North Pakistan. J. Ethnobiol., **9**: 25. https://doi.org/10.1186/1746-4269-9-25

Amir, A.K., Ali, F., Ihsan, M., Hayat, K. and Nabi, G., 2015. Ethnobotanical Study of the Medicinal Plants of Tehsil Charbagh, District Swat, Khyber Pakhtunkhwa, Pakistan. *J. Agric. Environ. Sci.,* **15**: 1464-1474.

Ankit, S., Rawal. S.K., Sinah, S., Varia, T.N. and Mashiyava, P.H., 2015. Effect of *Phyllanthus amarus* on serum biochemical changes in azaserine induced pancreatic cancer in Wistar rats. *Vet. World*, **8**: 937–940. https://doi.org/10.14202/vetworld.2015.937-940

Arshad, A.S., Xu., M., Farukh, H., Sadia, S., Naseer, I. and Bano, S., 2016. Threatened plant resources: Distribution and ecosystem services in the world's high elevation park of the Karakoram ranges. *Pak. J. Bot*., **48**: 999-1012.

FAO (Food and Agriculture Organization), 2000. SEAGA Sector Guide: Irrigation: The state of food and agriculture, 2000. FAO, Rome.

Hughes, P.L., 2018. A novel application of an anthelmintic mixture for use against gastrointestinal parasites of red deer *(Cervus elaphus) J. Parasitol. Res.,* **3**: 1-6. https://doi.org/10.1155/2018/6024920

Iqbal, Z.A., Jabbar, M., Akhtar, S., Muhammad, G. and Lateef, M., 2005. Possible role of Ethnoveterinary medicine in poverty reduction in Pakistan.Use of botanical anthelmintics as an example. *J. Agric. Soc. Sci.*, **1**: 187-195.

Khalid, R., Zia, R., Mashwani, M., Ali, K. and Hassan, J.C., 2015. An ethno botanical perspective of traditional medicinal plants from the Khattak tribe of Chonthra Karak, *Pak. J. Ethnopharmacol*., **165**: 251–259. https://doi.org/10.1016/j.jep.2015.02.035

Kokwaro, O.J., 1993. *Medicinal plants of East Africa*. East African Literature Bureau (2nd edition). General Printers Limited, Nairobi, Kenya.

Kpodékon, T.M., Ogni., C.A., Dassou, H., Dougnon, T.J., Boko, C.G., Koutinhouin, B., Goussanou, J.S.E., Akoegninou, A. and Youssao, I., 2015. Dominant viral pathologies in the extensive and semi-intensive animal breeding and their treatment mode in ethno veterinary medicine in Benin. *Vet. World*, **8**: 1424-1434. https://doi.org/10.14202/vetworld.2015.1424-1434

Mohib, S. and Farukh, H., 2012. Conservation Assessment of Plant Resources of Chakesar Valley, District Shangla, KPK, Pakistan. *Pak. J. Bot*., **44**: 179-186.

Michael, Richa, H., Anklib, A., Freib, B., Weimanna, C. and Sticherb, O., 1998. Medicinal plants in Mexico: Healers' consensus and cultural importance. *Soc. Sci. Med*., **47**: 1859-1871. https://doi.org/10.1016/S0277-9536(98)00181-6

NMCSD, 2019. Lt. Cmdr. Keith Freeman, Naval Medical Center San Diego's (sterile processing department (SPD) divisional officer tours Capt. Bradford Smith.

Patricia, A.L.C., 2011. The executive director of the alaska native science commission (ANSC). http://www.nativescience.org/html/traditional_knowledge.html 200.

Patil, U.S. and Deshmukh, O.S., 2015. Plants used in ethno-veterinary medicines by tribal peoples in betul District, Madhya Pradesh, India. *Int. J. Sci. Res.,* **4**: 1536-1538.

Phondani, P.C.R.K., Maikhuri and Kala, C.P., 2010. Ethnoveterinary uses of medicinal plants traditional herbal healers in alaknanda catchment of uttarakhand, india., *Afr. J. Trad. CAM*., **7**: 195–206. https://doi.org/10.4314/ajtcam.v7i3.54775

Razzaq, A., Hadi, F., Rashid, A., Ibrar, M. and Ali, U., 2015. Exploration of medicinal plants and their conservation status at higher altitude of District Shangla, Khyber Pakhtunkhwa, Pakistan. *Am. Eur. J. Agric. Environ. Sci*., **15**: 328-331.

Sabtain, A., Iqbal, Z., Khan, M.A., Ahmad, S., Iqbal, N. and Adnan, A., 2017. Wali Floristic composition and vegetation sturucture of MalamJabba valley, District Swat. *J. Biol. Environ. Sci.,* **11**: 164-171.

Shinwari, Z.K., 2010. Medicinal plant research in Pakistan. *J. Med. Pl. Res.*, **4**: 161-176.

Somvanshi, S.P.S., Singh, H.P. and Singh, P.P., 2016. ethno-veterinary medicine plants for animal therapy in Madhya Pradesh, India. *Int. J. Agric. Sci.,* **11**: 5699-5702.

Wenxin, Z., Huang, D., Wang, Liu, R. and Du, JN., 2016. Altitudinal patterns of species diversity and phylogenetic diversity across temperate mountain forests of northern China. *J. Pone,* I: 10.1371/.0159995.