

Ethno botanical Wisdom of Inhabitant of Devi Galli Azad Kashmir

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Abstract

Plants play vital role in our existence and are major substance of nutrition and medicament throughout the world. Plants are being used from early times to treat various human as well as animal's diseases. A series of survey were conducted to notice the highly remedial plants of Devi Galli Sudhnoti, Azad Jammu and Kashmir, Pakistan. Data was collected by direct comments during field studies, interviews and questionnaires from the local people. The locality, botanical, vernacular names, their family names and uses were elected. During study a total of 98 plants species related to 88 genera and 51 families were recorded. Most abundantly recorded families were Asteraceae, Poaceae, Moraceae, Convolvulaceae, Rosaceae, Fabaceae and Lamiaceae. Ethnobotanical uses classifications showed that major proportion was of medicinal plants species (85 spp, 90.4%) then fodder and forage species were (43 spp, 45.7%) It is followed by other uses such as vegetables (13 spp, 13.8%), fruit (19 spp, 20.2%), Fuel (16 spp, 17%) and timber species (5 spp, 5.3%). Present survey has disclosed the ethno botanical importance of the plants and also suggested that there is dire need of conservation of these medicinally important plants for sustainable utilization as they are threatened by the loss of habitat and over exploitation.

Keywords: Devi Galli; Inhabitants; Flora; Ethnobotany

Abbreviations: FC: Frequency Citation; RFC: Relative Frequency Citation; UV: Use Value; FIV: Family importance value.

Introduction

Ethnobotany deals with study of the relationship between people of a specific culture and native plants and plays a significant role in understanding the active relations between social, traditional systems and biological diversity Husain et al. [1]; Mahmood et al.[2]. From many centuries and even today medicinal plants are used for dealing and prevention of various disorders and for the advancement of good health for people Alpuerto et al.[3]; Khatun et al. [4]. In Pakistan medicinal plants have been used as remedies for human diseases as well as for animal diseases for many centuries Haq [5]. Freshly collected ingredients from plants in small and massive quantities are used for ailments and also provided to the herbal industries through traded in the market place Uniyal et al. [6]. Hilly regions offer properties and services such as forests, agriculture foodstuffs, and water and biodiversity resources not only useable for local hilly area's people but also to a large part of the population living in plain areas Awan and Ahmad [7].

Azad Jammu and Kashmir (AJ&K) is full of medicinal plants diversity. Many studies have been conducted on the uses of therapeutic plants by the indigenous populations of Azad Jammu and Kashmir Ishtiaq et al. [8]. District Sudhnoti is adjacent to Poonch division and situated at the height of 5400 ft. Most of areas

of district Sudhnoti are out of the snow zone but some are in snow zone Khan et al. [9]. The flora of this district is also different from other districts. Vegetation of this district is patchy and dense with high alpine trees, whereas shrubs and small bushes are in large number. The World Health Organization (WHO) estimated that 80% of the population of developing countries relies on traditional medicines, mostly plant drugs, for their primary healthcare needs (WHO, 2017). Demand for medicinal plant is increasing in both developing and developed countries due to growing recognition of natural products, being non-narcotic, having no side-effects, easily available at affordable prices and sometime the only source of health care available to the poor Basha. The area is selected due to pronounced variety of medicinal plants but the region is still unexplored. The main objective was to document the knowledge of the local people of Devi Galli about the medicinal uses of local plants.

Materials and Methods

a) Study Area: The study area, District Sudhnoti is part of Division Poonch. Ethnobotanical study was limited to Devi Galli district (Sudhnoti) and some allied areas of district Sudhnoti

Azad Kashmir. District Sudhnoti is spread over 569 sq. km and Devi Galli is a part of Sudhnoti Rafi et al. [10].

b) Field Trips: Field survey was consisting of plant collection, photography and data records. Semi-structured and open-ended interviews (questionnaire) were planned to gather ethnobotanical data. Interviews were taken general from native people of different age groups, shepherds and herbalists (Hakims) in their local language.

c) Plants Collection and Preservation: During various field surveys medicinally important plants were collected by keeping in view their utilization, flowering period and their products. These fully dehydrated samples were mounted on herbarium sheets and then noted their local name, botanical name, family, flower colour and locality. The plant species were recognized by plant taxonomists of UAAR and also used the Flora of Pakistan.

d) Quantitative Ethnobotanical Data Analysis: Indigenous knowledge was quantitatively calculated using various methods like Relative Frequency Citation (RFC), Use Value (UV) and Family Importance Value (FIV).

e) Relative Frequency Citation (RFC): Quantitative analysis of the collected ethno medicinal information was done

by using a catalog of relative frequency citation (RFC) as; $RFC = FC/N$ ($0 < RFC < 1$) This formula is given by the frequency of citation; FC that is the number of informants who mention the use of the species) while N is the total number of informants participating in the survey Vitalini et al.[11].

f) Use Value (UV): The Use Value (UV) is a good measure to all the possible uses of a plant species. UV gives us the virtual significance of a species that are cited by an informant for a specific species of medicinal plant. It will be intended by using the following given formula Savikin et al. [12].

$$UV = \sum U_i / N$$

Where U_i is the number of uses revealed by each informer for a given species and N is the total number of informants.

g) Family importance value (FIV): Family importance value (FIV) was calculated by captivating the percentage of informants who mention the family Savikin.

$$FIV = FC (\text{family}) / N \times 100$$

Where (FC) is the number of informants who mention the family while (N) is the total number of informants contributing in the study.

Table 1: List of plants species with uses.

S.N.	plant Name	Common name	Family	Part used	Growth form	Ethnobotanical uses
1	<i>Achyranthus aspera</i> Wall.	Puthkanda	Amaranthaceae	Whole plant	Herb	The juiced of herb is given in diarrhoea and skin diseases. Decoction is specified for gastric problems. Foliage fixative is used against insect bite.
2	<i>Adiantum venustum</i> D. Don	Kakii	Adiantaceae	Leaves	Herb	Leaves decoction is used to relief cold and cough. Whole plant is also used as fodder.
3	<i>Acellia millefolium</i> Linn.	Kangi	Asteraceae	Whole plant	Herb	It is used to treat gum problem and mouth soured. Liquid extract is used to remove kidney stone.
4	<i>Ailanthus altissima</i> (P. Mill) Swingle	Drave	Simaroubaceae	S, L	Tree	Plants stem (logs) and branches are used for fuel and timber.
5	<i>Amaranthus spinosus</i> L.	Ganar	Amaranthaceae	W	Herb	Leaves are cooked as vegetable, effective against constipation and obesity. Fodder for cattle and goats.
6	<i>Anagallis arvensis</i> L.	motkopra/bili booti	Primulaceae	W	Herb	Leaves and stem is cooked as vegetable that have cooling effect on stomach. Entire plant is used as food for animals.
7	<i>Arundo donax</i> L.	Naal	Poaceae	Whole plant	semi-shrub	Decoction of leaves is given in cold and cough. Plant is also used as food for animals.
8	<i>Artemisia vulgaris</i> L.	Chaoou	Asteraceae	L	Herb	Fleshy leaves are cooked as vegetable. Decoction is used for snake bite.
9	<i>Berrberis lycium</i> Royle	Sumbal	Berrberidaceae	W	Shrub	Root bark residue is used for wound healing and its paste is used for join of fractured bones. Roots extract has cooling effect and is used to cure diabetes, boils and pimples etc. Fruit is edible. Leaves are used as fodder. Dry stem and branches are used as fuel and also used to make fence.
10	<i>Bergenia ciliata</i> Haw.	Bhatpahay	Saxifragraceae	W	Herb	Plant leaves are used as fodder. Roots powder is used for wound healing, diabetes and skin diseases.
11	<i>Broussonatia papyrifera</i> L.	Jangli toot	Moraceae	L, S	Tree	Plant stem is used as fuel and leaves as fodder.

12	<i>Canabis sativa</i> Linn.	Bhang/ Phang	Cannabinaceae	L, I	Shrub	A leaf of cannabis and onion paste in the form of poultice is applied on boils and wounds. Crushed leaves and inflorescence are used as drink to relieve pain and having sedative properties.
13	<i>Capsella-bursa pastoris</i> (L.) Medik.		Brassicaceae	W	Herb	Most of the plant parts are used as fodder for animals.
14	<i>Commelina benghalensis</i> L.	Churra	Commelinaceae	W	Herb	Plant is used as fodder, laxative and anti-inflammatory use to treat animal diseases.
15	<i>Conyza canadensis</i> L.	Paleet	Asteraceae	W	Herb	Whole plant is used as fodder and forage.
16	<i>Convolvulus arvensis</i> L.	Saanthe	Convolvulaceae	W	Herb	Leaves are cooked as vegetable that are effective against constipation. Whole plant is used as fodder and forage.
17	<i>Chenopodium album</i> L.	Karhan saag	Chenopodiaceae	W	Herb	Plant leaves and stem is consumed as fodder.
17	<i>Chichorium intybus</i> L.	Kasni/ Chichory/Hand	Asteraceae	W	Herb	Cocked as vegetable effective against constipation also used as fodder
19	<i>Cuscuta reflexa</i> Roxb	Neela tari	Cuscutaceae	W	Climber	Anti-lice, anti-anemia, antidandruff and antipyretic.
20	<i>Cyperus sempervirens</i> L.	Sarroo	Cyperaceae	W	Shrub	It is an ornamental plant.
21	<i>Cynodon dactylon</i> L. Pers	Khabal	Poaceae	L	Grass	Paste of leaves is used to heal fractured bones. Whole grass is used as Fodder.
22	<i>Cyperus rotundus</i> L.	Mutheer	Cyperaceae	W	Perennial herb	Roots are Antipyretic, anti-inflammatory and diuretic. Food for cattle.
23	<i>Dalbergia sissoo</i> Roxb.	Tali	Fabaceae	L, S, B		Plant is used for fuel and fodder purposes. Stem is used to make furniture.
23	<i>Debergeasia longifolia</i> D. Don.	Sandari	Urticaeaceae	F, L, S	Shrub	Leaves used as fodder; branches and stem for fuel, fruit is grind and used for bloody diarrhea.
25	<i>Digitaria senguinalis</i> L. Scop.	Gaha	Poaceae	L	Grass	Plant is used as fodder and forage.
26	<i>Dicliptera roxburgiana</i> Nees.		Acanthaceae	W	Herb	Plant is used as Fodder to avoid sun stroke in buffaloes.
27	<i>Diospyros lotus</i> L.	Amlook	Ebenaceae	S, L, F	Tree	Fruit is edible that is effective for stomach troubles, leaves used as fodder for cattle and dry wood is used for burning purpose.
28	<i>Dryopteris ramosa</i> (C. Hope) C. Chr.	Langeri	Dryopteridaceae	L	Herb	Leaves are cooked as vegetable that is very delicious and also curative for constipation and ulcer.
29	<i>Ducesnia indica</i> (Andr.) Focke.	Sapa na amulbudha	Rosaceae	F, L	Herb	Fruit is edible that is helpful to remove kidney stone. Plant is also used as fodder.
30	<i>Elaeagnus umbellata</i> (Wall.ex Royle)	Gayaani	Elaeagnaceae	L, S, F	Shrub	Fruit is edible and used for cough and chest pain, leaves used for fodder and stem and twigs are used as fuel and to make fence.
31	<i>Euphorbia heliscopia</i> L.	Doodal	Euphorbiaceae	Sd, R, S	Herb	Small quantity is used to treat constipation and cholera.
32	<i>Ficus palmata</i> Forrsk	Phagwara	Moraceae	L, S, F, W	Tree	Fruit is edible, laxative and good for stomach. Leaves are cooked as vegetable and also used as fodder for cattle and goats. Wood of the plant is used as fuel. Ash of leaves is consumed in Naswar (snuff preparation).
33	<i>Fragaria vesca</i> L.	Ammal- budha	Rosaceae	W	Herb	Fruit is edible used to treat stomach ulcer with leaves of <i>Berberis lycium</i> . Leaves are used to treat diarrhea in children. Whole plant is used as fodder for goats.
34	<i>Gerenium wallichanum</i> L.	Rati-boti/ Ratan-jot	Gereniaceae	W	Herb	Roots have cooling effects and used against problems of urination. Leaves paste is used for joints pain.

35	<i>Geranium napalense</i> Sweet.	Jaree	Gereniaceae	W	Herb	
36	<i>Gentiana olivieri</i> (Griseb.) Omer.	Nil-kanth	Gereniaceae	W	Herb	Leaves boil in water and used for cough and throat problems.
37	<i>Grewia optiva</i> Drum. Ex. Burret	Thaman	Tiliaceae	L, S	Shrub	Leaves are used as food for animals and are operative for delivery in cattle. Fruit is edible. Baskets are made from branches and twinges after soaking in water and separated bark is also used to make ropes.
38	<i>Hedera helix</i> L.	Batkal	Araliaceae	L, S	Climber	Leaves are used as fodder and forage and powder of dry branches is used against diabetes.
39	<i>Ipomea purpurea</i> L.	Aerh	Convolvaceae	W	climber herb	Plant is used as vegetable and leaves used as fresh food for animals.
40	<i>Indegofera heterantha</i> Wall	Manja/ Jand	Fabaceae	S, L	Herb	Twigs and bark is used to make ropes and baskets. Leaves are used as fodder.
41	<i>Jasminum humile</i> L.	Chamba zard	Oleaceae	S, R	Shrub	Leaves decoction is used for curing ringworms. It is cultivated as ornamental plant.
42	<i>Juglans regia</i> L.	Akhor/ Akhrot	Juglandaceae	S, B, F	Tree	Fruit is edible that is effective for heart and brain. Stem bark is used as Miswak (Toothbrush). Stem is used to make furniture and also used as fuel.
43	<i>Lathyrus ophaca</i> L.	Jngli phalli	Fabaceae	W	Herb	Whole plant is used as fodder. Fruit is edible.
44	<i>Melia azedrach</i> L.	Dhark	Meliaceae	L, S	Shrub	Leaves extract is used to cure r skin diseases. Stem and branches are used as fuel.
45	<i>Mentha longifolia</i> L.	Chata podina	Lamiaceae	L	Herb	This plant has cooling effects. Dried leaves are orally taken that are carminative. Mentha leaves, seeds of punica and green chilies are used to make chatni
46	<i>Mentha arvensis</i> L.	Kala podina	Lamiaceae	L	Herb	. Leaves are used to make chatni that is Carminative and cooling effects for digestive system
47	<i>Melilotus indica</i> L. All.	Sereey	Fabaceae	L	Herb	Leaves are cooked as vegetable (sag). Plant is used as fodder.
48	<i>Medicago polymorpha</i> L.	Maina	Fabaceae	W	Herb	Plant is used as fodder.
49	<i>Morus nigra</i> L.	Kala toot	Moraceae	F, L, S	Herb	Fresh leaves are used as fodder. Fruit is edible, effective for constipation. Wood is used for fuel and also used to make furniture.
50	<i>Nasturtium officinale</i> R. Br.	Chao	Brassicaceae	W	Herb	Leaves are cooked as vegetable that is carminative.
51	<i>Oenothera rosea</i> (L.)	Jangli nashtar	Onagraceae	W	Herb	Plant is used as fodder.
52	<i>Oxalis corniculata</i> (L.)	Khatola/ Khatimethi	Oxalidaceae	W	Herb	Leaves extract is used for juindance also cooked as vegetable that is antipyretic. Whole plant is used as fodder.
53	<i>Pennisetum orientale</i> Rich.	Siliak gaha	Poaceae	W	Grass	Plant is used as fodder.
54	<i>Pinus roxburghii</i> (Sergent)	Chir	Pinaceae	L, S, Sd	Tree	Tuberculosis patient are advised to sit under the shade of the chir (tree) for recovery. Wood is used as timber and also for fuel. Seed are edible and nutritional. Stem logs and dried leaves are used for roof thatching. Heart wood used for ignition purposes.
55	<i>Pinus wallichiana</i> (Jackson)	Rarar	Pinaceae	S, L,	Tree	Stem is used for constriction purposes. Branches are used for fuel and roof thatching. Leaves are used for ignition purpose.

56	<i>Plantago lanceolata</i> L.	Salathee	Plantaganaceae	W	Herb	Plant is used as fodder. Leaves have wound healing characters and seed or inflorescence is used against constipation.
57	<i>Plantago major</i> L.	Salathee/ isphol	Plantaganaceae	W	Herb	Leaves decoction is used for cough, cholesterol level and constipation. Whole Plant is used as fodder.
58	<i>Populus deltoides</i> Bart. Ex. Marsh	Safada	Salicaceae	S, L,	Tree	Plant stem and branches are used for sheltering and as a fuel. Branches with leaves for shade.
59	<i>Poa annua</i> L.	Malla	Poaceae	L	Grass	Plant is used as fodder.
60	<i>Prunus persica</i> (L.) Bastch.	Arwari	Rosaceae	F, S, L	Tree	Leaves are used as fodder. Fruit is laxative and good for stomach, antipyretic and germs killing. Stem and branches are used as fuel.
61	<i>Prunus bokharensis</i> (Royle)	Alobakhary	Rosaceae	F, S, L	Tree	Plant leaves are used as fodder. Fruit is purgative and digestive. Leaves and bark paste is used for wound healing. Dry wood is used for burning purposes.
62	<i>Pteris cretica</i> L.	Koochan	Petridaceae	L	Tree	Paste of leaves in water is prepared that is placed in cloth and applied on wound for quick healing.
63	<i>Punica granatum</i> L.	Daroni/ Darona	Punicaceae	F, S, Sd	Shrub	Dried fruit (Anardana) used as condiment. Chatni is prepared by seeds of punica, mentha leaves and green chillies that is carminative and has cooling effects.
64	<i>Pyrus pashia</i> Buch.	Tangi/ Batangi	Rosaceae	F, S, L	Tree	Fruit is edible that is good for stomach. Leaves are used as food for animals. Dry stem and twigs wood is used as fuel.
65	<i>Quercus incana</i> Roxb.	Rein/ Erroo	Fagaceae	L, S, B	Semi-Tree	Leaves used as fodder for cattle. Stem and branches used as fuel. Decoction of bark is effective against joints pain.
66	<i>Ranunculus laetus</i> L.	Meleeth	Ranunculaceae	W	Herb	Plant is used as fodder for cattle.
67	<i>Ranunculus arvensis</i> Linn.	Chochomba	Ranunculaceae	L, S	Herb/Weed	Plant is used as fodder and cooked as vegetable.
68	<i>Rosa brunonii</i> (Lindl)	Tarnal	Rosaceae	L, F,	Shrub	Leaves used as fodder. Flower is used against scabies, heart and digestive problems.
69	<i>Robinia pseudoacacia</i> L.	Keekar	Fabaceae	S, L,	Shrub	Stem and twigs are available for fuel and fencing. Whole plant is used for shade.
70	<i>Rubia manjith</i> Roxb. Ex flaming		Rubiaceae	R	Herb	Extract of root is effective in discomfort.
71	<i>Rubus ellipticus</i> Smith.	Akharay	Rosaceae	F, S, L	Shrub	Only leaves of plants are used as fodder. Fruit remains edible and stem and branches are used for fencing.
72	<i>Rubus fruticosus</i> Wallich	Pamnaar	Rosaceae	F, S, L	Shrub	Twigs are used for paling. Leaves as fodder and fruit are comestible and having chilling effect.
73	<i>Rumex hastatus</i> D. Don	Chukhreey	Polygonaceae	L, R	Perennial herb	Plant is a source of food for animals. Foliage paste is used to stop bleeding from wounds. Cooked as vegetable that is effective against jaundice and reaction of different medicines.
74	<i>Rumex nepelensis</i> D. Don	Halfree/ Jangli palak	Polygonaceae	L	Herb	Effective against the irritation caused by urtica dioica. Leaves extract is used against wounds.
75	<i>Saccharum spontaneum</i> L.	Kai	Poaceae	W	Grass	Whole plant is used as fodder and forage.
76	<i>Sarcococca saligna</i> (D. Don) Muel	Ndroon	Buxaceae	S, L	Shrub	Stem and branches are used for roof thatching. Leaves are antipyretic.
77	<i>Setaria viridis</i> (L.) P. Beauv.	Soonkh gaha/ Jeshay	Poaceae	L	Grass	Plant provide source of food for animals.

78	<i>Salix alba</i> Linn.	Beesa	Salicaceae	S, R	Tree	Dried branches and stem is used for fuel and for furniture making, cricket bats.
79	<i>Solanum villosum</i> L.	Kachmach	Solanaceae	L, F	Herb	Fruit is edible and effective for mouth sores. Leaves and fruit is cooked as vegetable and used to treat stomachache.
80	<i>Solanum pseudocasticum</i> L.	Merchooli	Solanaceae	F	Herb	Excess of fruit use cause vomiting and become poison. Leaves are used to treat boils.
81	<i>Sonchus arvensis</i> L.	Hand	Asteraceae	W	Herb	Cooked as vegetable that is anti-diabetic. Food for cattle and goats.
82	<i>Stelaria media</i> L.	Ladroo	Caryophyllaceae	W	Herb	Plant is used as vegetable which be there effective for period's discomfort.
83	<i>Stobilanthes attenuata</i> Nees	Melool	Acanthaceae	W	Herb	It is an ornamental plant.
84	<i>Sorghum halepense</i> Pers.	Baru gaha	Poaceae	W	Grass	Plant is used as fodder
85	<i>Swertia chirata</i> Wall.	Chariata	Gentianaceae	L	Herb	Plant foliage is grinded in water and that abstract is good against fever in malaria.
86	<i>Taraxicum officinale</i> (Weber)	Kali hand	Asteraceae	L, R, Sd	Herb	Cooked as vegetable which is diuretic, antidiabetic and used to cure jaundice.
87	<i>Tagetes minuta</i> L.	Sat barga	Asteraceae	F	Shrub	Ornamental plant.
88	<i>Tagetes patula</i> L.	Sat barga	Asteraceae	F	Shrub	Ornamental plant.
89	<i>Themeda anathera</i> (Hack)	Bari ghas	Poaceae	W	Grass	Plant is be there as fodder.
90	<i>Trifolium repense</i> L.	Shtall	Fabaceae	W	Herb	Gout problem is treated through leaves. Plant leaves are used as fodder for animals.
91	<i>Ulmus wallichiana</i> Planch. Subsp.	Mannu	Ulmaceae	L, S,	Tree	Leaves are used as fodder. Stem is used to make furniture also used for fuel.
92	<i>Verbena officinale</i> L.	Chrooonoon	Verbenaceae	W	Herb	Plant is used as fodder. Leaves paste is good for headache and joints pain
93	<i>Verbescum thapsus</i> Linn.	Kakar tambaco	Verbenaceae	L	Herb	Leaves juice is used to treat earache. Dried leaves are smoked to remove asthma and cough.
94	<i>Viola odorata</i> Linn.	Gul-naksha	Violaceae	W	Herb	Leaves extract or infusion is used to cure typhoid fever. Leaves or flower are used to cure respiratory problems.
95	<i>Viburnum grandiflorum</i> Wall. Ex DC.	Jammar	Caprifoliaceae	S, F	Shrub	Fruit is edible that is effective to cure cough. Stem is soaked in water and used to make baskets. Stem is also used to make toothbrush (Miswak).
96	<i>Vitis vinifera</i> Linn.	Dakh	Vitaceae	L, F	Climber/Herb	Fruit juice is used to cure fever. Leaves are used as fodder.
97	<i>Xanthium stromarium</i> L.	Kanda	Asteraceae	S	Shrub	Seed poultice is applied on wounds.
98	<i>Zanthoxylum armatum</i> DC.	Timber	Rutaceae	S, L, Sd	Shrub	Seed are used to make "Chatni" that is carminative. Leaves are used as fodder by animals. Dried twigs are used to make walking sticks and handle of different instruments. Young branches are used to make toothbrush.

Table 2: Use Value, Frequency Citation and Relative Frequency Citation of plants.

S.N	plant Name	Common name	Family	FC	RFC	UV
1	<i>Achyranthus aspera</i> Wall.	Puthkanda	Amaranthaceae	4	0.03	0.04
2	<i>Adiantum venustum</i> D. Don	Kakii	Adiantaceae	3	0.02	0.03
3	<i>Acellia millefolium</i> Linn.	Kangi	Asteraceae	5	0.04	0.02
4	<i>Ailanthus altissima</i> (P. Mill) Swingle	Drave	Simaroubaceae	7	0.05	0.03
5	<i>Amaranthus spinosus</i> L.	Ganar	Amaranthaceae	6	0.04	0.10
6	<i>Anagallis arvensis</i> L.	motkopra/bili booti	Primulaceae	73	0.54	0.93

7	<i>Arundo donax L.</i>	Naal	Poaceae	2	0.01	0.04
8	<i>Artemisia vulgaris L.</i>	Chaoou	Asteraceae	4	0.03	0.04
9	<i>Berberis lycium Royle</i>	Sumbal	Berberidaceae	5	0.04	0.13
10	<i>Bergenia ciliata Haw.</i>	Bhatpahay	Saxifragaceae	1	0.01	0.01
11	<i>Broussonatia papyrifera L.</i>	Jangli toot	Moraceae	6	0.04	0.07
12	<i>Canabis sativa Linn.</i>	Bhang/ Phang	Cannabaceae	4	0.02	0.04
13	<i>Capsella-bursa pastoris (L.) Medik.</i>	Jari	Brassicaceae	2	0.01	0.01
14	<i>Commelina benghalensis L.</i>	Churra	Commelinaceae	28	0.21	0.16
15	<i>Conyza canadensis L.</i>	Paleet	Asteraceae	5	0.04	0.04
16	<i>Convolvulus arvensis L.</i>	Saanthe	Convolvaceae	4	0.02	0.05
17	<i>Chinopodium album L.</i>	Karhan saag	Chenopodiaceae	2	0.01	0.01
17	<i>Chichorium intybus L.</i>	Kasni/Chichory/Hand	Asteraceae	9	0.67	0.09
19	<i>Cuscuta reflexa Roxb</i>	Neela tari	Cuscutaceae	11	0.08	0.06
20	<i>Cyperus sempervirens L.</i>	Saroor	Cyperaceae	25	0.19	0.11
21	<i>Cynodon dactylon L. Pers</i>	Khabal	Poaceae	45	0.33	0.13
22	<i>Cyperus rotundus L.</i>	Mutheer	Cyperaceae	4	0.03	0.04
23	<i>Dalbergia sissoo Roxb.</i>	Tali	Fabaceae	15	0.11	0.10
23	<i>Debergeasia longifolia D. Don.</i>	Sandari	Urticaceae	20	0.15	0.12
25	<i>Digitaria sanguinalis L. Scop.</i>	Gaha	Poaceae	60	0.44	0.38
26	<i>Dicliptera roxburgiana Nees.</i>		Acanthaceae	1	0.01	0.01
27	<i>Diospyros lotus L.</i>	Amlook	Ebenaceae	16	0.12	0.11
28	<i>Dryopteris ramosa (C. Hope) C. Chr.</i>	Langeri	Dryopteridaceae	2	0.01	0.04
29	<i>Ducesnia indica (Andr.) Focke.</i>	Sapa na amulbudha	Rosaceae	3	0.02	0.05
30	<i>Elaeagnus umbellata (Wall.) ex Royle</i>	Gayaani	Elaeagnaceae	35	0.26	0.18
31	<i>Euphorbia helioscopia L.</i>	Doodal	Euphorbiaceae	1	0.01	0.01
32	<i>Ficus palmata Forrsk</i>	Phagwara	Moraceae	30	0.22	0.19
33	<i>Fragaria vesca L.</i>	Ammal- budha	Rosaceae	13	0.10	0.13
34	<i>Geranium wallichianum L.</i>	Rati-boti/ Ratan-jot	Geraniaceae	4	0.03	0.04
35	<i>Geranium napalense Sweet.</i>		Geraniaceae	3	0.02	0.02
36	<i>Gentiana olivieri (Griseb.) Omer.</i>	Nil-kanth	Geraniaceae	10	0.07	0.05
37	<i>Grewia optiva Drum. Ex. Burret</i>	Thaman	Tiliaceae	6	0.04	0.13
38	<i>Hedera helix L.</i>	Batkal	Araliaceae	2	0.01	0.03
39	<i>Ipomea purpurea L.</i>	Aerh	Convolvaceae	50	0.37	0.51
40	<i>Indigofera heterantha Wall</i>	Manja/ Jand	Fabaceae	8	0.06	0.07
41	<i>Jasminum humile L.</i>	Chamba zard	Oleaceae	2	0.01	0.04
42	<i>Juglans regia L.</i>	Akhor/ Akhrot	Juglandaceae	18	0.13	0.22
43	<i>Lathyrus ophaca L.</i>	Jngli phalli	Fabaceae	4	0.03	0.06
44	<i>Melia azedarach L.</i>	Dhark	Meliaceae	73	0.54	0.60
45	<i>Mentha longifolia L.</i>	Chata podina	Lamiaceae	95	0.70	0.82
46	<i>Mentha arvensis L.</i>	Kala podina	Lamiaceae	100	0.74	0.82
47	<i>Melilotus indica L. All.</i>	Sereey	Fabaceae	63	0.46	0.38
48	<i>Medicago polymorpha L.</i>	Maina	Fabaceae	14	0.10	0.09
49	<i>Morus nigra L.</i>	Kala toot	Moraceae	36	0.26	0.67
50	<i>Nasturtium officinale R. Br.</i>	Chao	Brassicaceae	28	0.20	0.01
51	<i>Oenothera rosea (L.)</i>	Jangli nashtar	Onagraceae	4	0.03	0.01
52	<i>Oxalis corniculata (L.)</i>	Khatola/Khatimethi	Oxalidaceae	80	0.59	0.02
53	<i>Pennisetum orientale Rich.</i>	Siliak gaha	Poaceae	38	0.28	0.01
54	<i>Pinus roxburghii (Sargent)</i>	Chir	Pinaceae	45	0.33	0.04

55	<i>Pinus wallichiana</i> (Jackson)	Rarar	Pinaceae	80	0.60	0.03
56	<i>Plantago lanceolata</i> L.	Salathee	Plantaganaceae	6	0.04	0.01
57	<i>Plantago major</i> L.	Salathee/ ispghol	Plantaganaceae	3	0.02	0.00
58	<i>Populus delectoides</i> Bart. Ex. Marsh	Safada	Salicaceae	13	0.10	0.02
59	<i>Poa annua</i> L.	Malla	Poaceae	26	0.19	0.01
60	<i>Prunus persica</i> (L.) Bastch.	Arwari	Rosaceae	18	0.13	0.28
61	<i>Prunus bokharensis</i> (Royle)	Alobakhary	Rosaceae	48	0.36	0.71
62	<i>Pteris cretica</i> L.	Koochan	Petridaceae	2	0.01	0.02
63	<i>Punica granatum</i> L.	Daroni/ Daron	Punicaeae	56	0.41	0.50
64	<i>Pyrus pashia</i> Buch.	Tangi/ Batangi	Rosaceae	15	0.11	0.34
65	<i>Quercus incana</i> Roxb.	Rein/ Erroo	Fagaceae	12	0.09	0.16
66	<i>Rannunculus laetus</i> L.	Meleeth	Ranunculaceae	2	0.01	0.01
67	<i>Rannunculus arvensis</i> Linn.	Chochomba	Ranunculaceae	4	0.03	0.04
68	<i>Rosa brunonii</i> (Lindl)	Tarnal	Rosaceae	9	0.07	0.08
69	<i>Robinia pseudoacacia</i> L.	Keekar	Fabaceae	23	0.17	0.20
70	<i>Rubia manjith</i> Roxb. Ex flaming		Rubiaceae	4	0.03	0.02
71	<i>Rubus ellipticus</i> Smith.	Akharay	Rosaceae	16	0.11	0.22
72	<i>Rubus fruticosus</i> Wallich	Pamnaar	Rosaceae	17	0.13	0.07
73	<i>Rumex hastatus</i> D. Don	Chukhreey	Polygonaceae	5	0.04	0.05
74	<i>Rumex nepelensis</i> D. Don	Halfree/ Jangli palak	Polygonaceae	5	0.04	0.07
75	<i>Saccharum spontaneum</i> L.	Kai	Poaceae	46	0.34	0.30
76	<i>Sarcococca saligna</i> (D. Don) Muel	Ndroon	Buxaceae	2	0.01	0.02
77	<i>Setaria viridis</i> (L.) P. Beauv.	Soonkh gaha/ Jeshay	Poaceae	26	0.19	0.18
78	<i>Salix alba</i> Linn.	Beesa	Salicaceae	7	0.05	0.11
79	<i>Solanum villosum</i> L.	Kachmach	Solanaceae	67	0.50	0.48
80	<i>Solanum pseudocasticum</i> L.	Merchooli	Solanaceae	3	0.02	0.01
81	<i>Sonchus arvensis</i> L.	Hand	Asteraceae	33	0.24	0.56
82	<i>Stelaria media</i> L.	Ladroo	Caryophyllaceae	19	0.14	0.10
83	<i>Stobilanthes attenuata</i> Nees	Melool	Acanthaceae	1	0.01	0.01
84	<i>Sorghum halepense</i> Pers.	Baru gaha	Poaceae	91	0.07	0.65
85	<i>Swertia chirata</i> Wall.	Chariata	Gentianaceae	25	0.19	0.19
86	<i>Taraxicum officinale</i> (Weber)	Kali hand	Asteraceae	19	0.14	0.26
87	<i>Tagetes minuta</i> L.	Sat barga	Asteraceae	3	0.02	0.01
88	<i>Tagetes patula</i> L.	Sat barga	Asteraceae	5	0.04	0.01
89	<i>Themeda anathera</i> (Hack)	Bari ghas	Poaceae	14	0.10	0.08
90	<i>Trifolium repense</i> L.	Shtall	Fabaceae	4	0.03	0.04
91	<i>Ulmus wallichiana</i> Planch. Subsp.	Mannu	Ulmaceae	11	0.08	0.17
92	<i>Verbena officinale</i> L.	Chroonoon	Verbenaceae	2	0.01	0.04
93	<i>Verbescum thapsus</i> Linn.	Kakar tambaco	Verbenaceae	21	0.16	0.14
94	<i>Viola odorata</i> Linn.	Gul-naksha	Violaceae	87	0.64	0.59
95	<i>Viburnum grandiflorum</i> Wall. Ex DC.	Jammar	Caprifoliaceae	10	0.07	0.21
96	<i>Vitis vinifera</i> Linn.	Dakh	Vitaceae	5	0.04	0.10
97	<i>Xanthium stromarium</i> L.	Kanda	Asteraceae	2	0.01	0.01
98	<i>Zanthoxylum armatum</i> DC.	Timber	Rutaceae	56	0.41	0.51

Results and Discussion

Vegetation records and ethno-demography data

During Ethnobotanical study, a total of 98 plant species related to 88 genera and 51 different families are documented. Most of

these species are used by native individuals for a multiplicity of purposes. (Table 1) contains botanical, local names, family name and folkloric uses, (Table 2) represent FC, RFC and UV of different plants. A total of 135 participants were interviewed out of which 46 were male and 89 were females of different age group. Majority of

people were uneducated 97 were married and 31 unmarried only 6 were herbalist and 129 were local people.

Most abundantly recorded families were Asteraceae, Poaceae, Moraceae, Convolvulaceae, Rosaceae, Fabaceae and Lamiaceae. Ethnobotanical uses classifications showed that major proportion of medicinal plants species was (85 spp, 90.4%) then fodder and forage species were (43 spp, 45.7%) It is followed by other uses such as vegetables (13 spp, 13.8%), fruit (19 spp, 20.2%), Fuel (16 spp, 17%) and timber species (5 spp, 5.3%).

Relative Frequency Citation (RFC)

Relative frequency citation was considered to record maximum therapeutic flora of the area which is utilized for treatment of various ailments. It gives the number of informers who mention

the uses of plants. Most cited plants were *Mentha arvensis* L. (0.74), *Chichorium intybus* L. (0.66), *Anagallis arvensis* L. (0.54), *Oxalis corniculata* (L.) (0.59), *Melia azedrach* L. (0.54), *Digitaria senguinalis* L. Scop (0.44), *Viola odorata* Linn. (0.64).

Use Value (UV)

The use value (UV) is technique for measurable analysis of data it gives the important uses of species. Some of plants were recorded with high UV that are *Anagallis arvensis* L. (0.92), *Mentha longifolia* L. (0.82), *Mentha arvensis* L. (0.82), *Prunus bokharensis* (Royle) (0.71), *Morus nigra* L. (0.67), *Sorghum halepense* Pers. (0.65), *Melia azedrach* L. (0.6), *Viola odorata* Linn. (0.59), *Zanthoxylum armatum* DC. (0.51), *Punica granatum* L. (0.50), *Pyrus pashia* Buch. (0.34), *Taraxicum officinale* (Weber) (0.26), *Rubus elipticus* Smith. (0.22) etc.

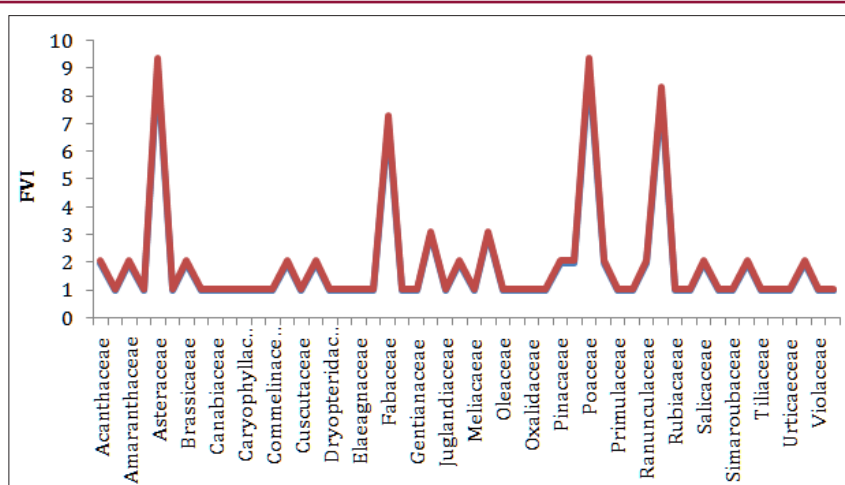


Figure 1: Families.

Family Importance Value (FIV)

Family importance value is calculated and described in the form of graph in Figures 1,2. Amaranthaceae, Asteraceae, Poaceae, Moraceae, Convolvulaceae, Rosaceae, Fabaceae and Lamiaceae were most abundantly reported families.



Figure 2:

Discussion

In present survey, the ethno botanical importance of the plants inhabiting Devi Galli is explored. Almost all the plant species were

found important in one way or the other. Ajaib et al. [13] mentioned the medicinal importance of *Berberis lycium* Royle, *Jasminum humile* L and *Rubus elipticus* Smith which were recorded in district Kotli, Azad Jammu and Kashmir. Ahmad et al. [13] also reported ethnobotanical uses of plants reported from district kotli including *Achyranthus aspera* and *Adiantum venustum* D. Don. Importance of these plants is also confirmed by Qureshi, Mehmood, Khan, Ishtiaq, Amjad. The need of the hour is to document and preserve the traditional knowledge about the medicinal uses of different plants as the new people are giving more importance to allopathic medicines and the traditional knowledge is only confined to old people.

Conclusion

The current investigation discloses that indigenous knowledge is limited to native values, so this valuable treasure will be surely lost by any change in traditional culture. Ethno botanically important plants which are valuable global resources are threatened by the loss of habitats and over exploitation. The principle reason of over exploitation is lack of knowledge about the importance of plants and suitable harvest time and practice. The Devi Galli (Sodhnuti) contains diverse vegetation due to variation in climatic conditions and altitude. The people of the area to a large extent fulfill their common requirements such as food, medicine, fodder or forage

and timber from plants. People of the area are not much aware about the medicinal treasure present in there this is because of illiteracy. Ethno botanically important area should be replenished by reforestation, establishment of home botanical gardens, conservation of natural resources, minimizing over grazing and harvesting for various purposes.

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