

Pharmacological Study of Shogran Valley Flora, Pakistan.

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ABSTRACT

The present work was planned to explore the pharmacological aspects of Shogran Valley Flora. From study area only fifty plants were selected to observe their pharmacological values. From the results it is cleared that the plants from study area have more medicinal applications in skin, diuretic, expectorant, digestive, anti-inflammatory and respiratory disorders. *Abies pindrow*, *Achillea millefolium*, *Cedrus deodara*, *Stellaria media*, *Trigonella foenum-graecum* and *Urtica dioica* plants have more therapeutic application for treatment of variety of ailments.

KEY WORDS

Pharmacological study, Shogran Valley, Pakistan

INTRODUCTION:

In Mansehra District there is a valley of Kaghan which represents the natural scenario and wears the garments of beauty, located in the north western Pakistan and a distinctive geographical location on the edge of the western himalaya range, near to the Hindu Kush range to the west and the Karakorum Mountains to the North of Hazara Division, Khyber Pakhtun Khwa. The total area of the Kaghan valley is 945.47 square Km. Shogran is a hill station on the green plateau in the Kaghan Valley, northern Pakistan at a height of 7749 feet or 2362 meters above sea level. Shogran is 10 km away from Kiwai and 34 km away from Balakot. The distance from Islamabad to Kiwai is 212 km. It is situated between 34° 40` SN latitude and between 73° 30` WE longitudinally on the map of Pakistan. Shogran texture consists of dolomite, limestone and quartzite. The area of Shogran possesses different topographic conditions of plane and hilly tracks. The climate is moist temperate with an average rainfall 2500 mm per year and it occurs in monsoon and winter seasons. At the end of November snowfall starts and continues till the end of February. The highest maximum temperature recorded is 30.3°C in the month of June and lowest minimum temperature recorded is -3.0°C in the months of January and December. Ethnobotany is a worldwide discipline and it comprises all types of human-plant relationship and association [1]. The endemic plants are used by native community for different aspects generation over generation. Ethnobotany is the study how endemic plants are used by native community of a specific convention and region and the association between man and natural resources is compulsory to understand [2]. The entire world's interest is increasing in

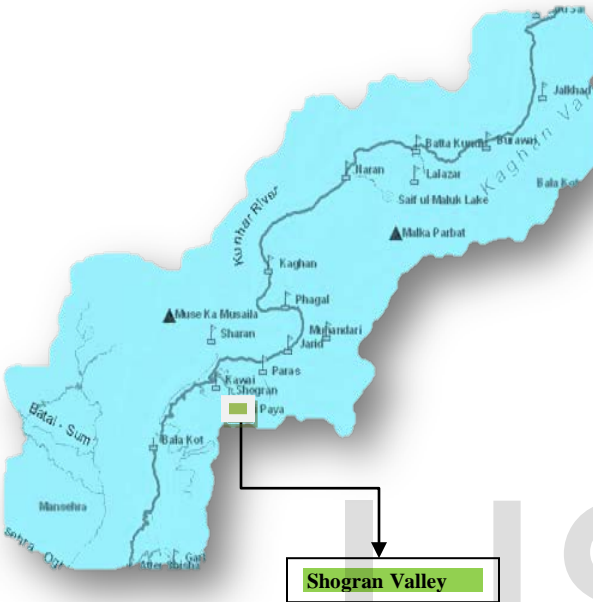
the field of ethnobotany [3]. The use of plants in various aspects such as shelter, food, clothing, hunting, religious occasions and medicine are exploit by ethnobotanists. The ethnobotany not only promotes the cultural uses of endemic plants but also provides a way for improving the resources of an area for taxonomists, ecologists, pharmacologists and wild life managers. The plants are considered to be obligated for development of socioeconomic status of an area and people because of their applications as bioresources [2]. Nowadays, the utilization of ethnobotany is most helpful for identification of new medicinal plants and re-exploring the previous reported biological active components [4]. The flora of Shogran has abundant biodiversity and is of great medicinal importance [5].

In Pakistan, many researchers utilize their expertise on the herbal usage of plants and in the field of ethnobotany [6-12]. The medicinal uses of 48 species have been enlisted from Kaghan valley, Mansehra. The challenging work of collecting information about medicinal plants and also utilize their research results to the biodiversity preservation and for the advancement and betterment of community is done by native people and researchers [13]. The considerable work done on the medicinal flora of Siran valley, provide their ethnobotanical value and usage in the cure of different diseases [14]. The work was also done on the gymnosperm of Kaghan valley according to their ethnobotanical uses and importance [15].

MATERIALS AND METHODS:

50 species of medicinal plants were collected from the study area during the flowering season of March 2012. The plants collected from the study area were dried, identification of plants was done with the help of Flora of Pakistan and also compared with herbarium specimens and the reason is that it permits taxonomists to classify according to their

systematic position [9 & 11]. The organization of herbaria was done [11]. The dried plants were provided to the herbarium of Bahauddin Zakariya University Multan. A questionnaire was developed for the sack of collecting information about medicinal plants from local hakims and



traditional medical practitioners.

RESULTS:

The present study reported that area of Shogran valley has rich diversity of medicinal plants. The plants has great ethnobotanical importance and extensively used by indigenous people in the cure of different diseases (Table

Plate 1: Some most important medicinal plants of Shogran Valley, Pakistan.



Taraxacum officinale



Fragaria indica



Androsace rotundifolia

and Figure 1). Percentage wise medicinal analysis of 26 out of 50 plants (Figure 2) revealed that *Abies pindrow*, *Achillea millefolium* and *Cedrus deodara* (8%), *Lepidium sativum* (7%), *Plantago lanceolata* (6%), *Anemone rivularis* (5%), *Calamin thanepata* (5%), *Mentha longifolia* (5%), *Pinus wallichiana* (5%) and *Ajuga parviflora* (4%) plants have more medicinal values than *Anagallis arvensis*, *Fragaria indica*, *Geranium wallichiana*, *Hedera nepalensis*, *Paeonia emodi* and *Picea smithiana* (3%), whereas, *Androsace rotundifolia*, *Berberis ceratophylla*, *Caltha palustris*, *Dicliptera roxburghiana*, *Gentiana argentea*, *Indigofera pulchella* and *Micromeria biflora*, *Myosotis alpestris* (2%) and *Acer oblongum* 1%plants have less medicinal values. Percentage analysis of rest 24 out of 50 medicinal plants (Figure 3) indicates that *Stellaria media*, *Taxus baccata* (10%), *Trigonella foenum*, *Urtica dioica* (9%), *Valeriana jatamansii* (8%), *Valeriana himalayana*, *Veronica serpyllifolia* (7%), *Robinia pseudacacia* (6%), *Taraxacum officinale*, *Ranunculus sceleratus* (5%) and *Podophyllum emodi* (4%) plants have more medicinal importance than *Rumex nepalensis*, *Trifolium repens*, *Viola biflora* (3%), *Poa supina*, *Ranunculus pulchellus*, *Viburnum mullaha* (2%), *Potentilla nepalensis*, *Primula denticulate*, *Rosa macrophylla*, *Rumex dentatus*, *Skimmia laureola*, *Thalictrum alpinum* and *Trifolium minus* (1%) plants have less value.

The above results shows that *Stellaria media* and *Taxus baccata* have maximum percentage and multipurpose in the field of pharmacology i.e. skin diseases, antidiarrheal, astringent, carminative, diuretic, expectorant, laxative, respiratory disorder, anti-inflammatory, antirheumatic, eye disease, anticancerous, antispasmodic, cardiac disorders diaphoretic, purgative, head ache, renal disorders and digestive disorders.



Ajuga parviflora



Ranunculus pulchellus



Rumex dentatus



Viburnum mullaha



Paeonia emodi



Galium aparine



Geranium wallichiana



Hedera nepalensis



Stellaria media

Table 1: Shogran Valley plants with their common, scientific names and medicinal values

Sr. No.	Scientific Name	Family	Common Name	Part used	Medicinal Uses
1.	<i>Abies pindrow</i> Royle.	Pinaceae	Western Himalayan fir	Bark, Leaves	Expectorant, respiratory disorders, fever, antioxidant, carminative, digestive disorders, astringent, antispasmodic, diuretic, tonic, anti-inflammatory
2.	<i>Acer oblongum</i> Wall. ex. DC.	Sapindaceae	Himalayan maple	Leaves	Dysentery
3.	<i>Achillea millefolium</i> L.	Asteraceae	Yarrow	Whole Plant	Stimulant, diuretic, hypertension, anti-inflammatory, tooth ache, fever, head ache, haemorrhoids, skin diseases
4.	<i>Ajuga parviflora</i> Bth.	Labiatae/ Lamiaceae	Small-flowered bugleweed	Whole plant	Astringent, tonic, hepatitis, headache, hypertension

5.	<i>Anagallis arvensis</i> L.	Primulaceae	Scarlet pimperal	Whole plant	Respiratory disorders, renal disorders, laxative, healing of wounds
6.	<i>Androsacero tundifolia</i> Hardw.	Primulaceae	Round leaf rock jasmine	Leaves, rhizome	Digestive disorders, skin diseases, eye diseases
7.	<i>Anemone rivularis</i> Buch.-Ham. ex DC.	Ranunculaceae	Himalayan wind flower	Leaves, seeds	Digestive disorders, antidiarrheal, expectorant, fever, analgesic, healing of wounds
8.	<i>Berberis ceratophylla</i> G. Don.	Berberidaceae	Berberry	Root	Antidiabetic, hepatitis
9.	<i>Calamin thanepata</i> (L.) Savi.	Labiatae/ Lamiaceae	Lesser calaminth	Whole plant	Anti-inflammatory, antioxidant
10.	<i>Caltha palustris</i> Linn.	Ranunculaceae	King cup, March marigold	Leaves, root	Anti-inflammatory, nervous disorders, Cardiac disorders, antispasmodic, diaphoretic, diuretic, expectorant
11.	<i>Cedrus deodara</i> (Roxb. ex Lamb) G. Don.	Pinaceae	Deodar	Bark, root	Carminative, diaphoretic, fever, respiratory disorders, antirheumatic, renal disorders, astringent, antidiarrheal, skin diseases, dysentery
12.	<i>Dicliptera roxburghiana</i> Nees.	Acanthaceae	Chinese Foldwing	Plant sap, leaves, flower top	Diuretic, skin diseases, tonic
13.	<i>Fragaria indica</i> Andr.	Rosaceae	Wild strawberry	Leaves, flower, fruit	Digestive disorders, cardiac disorders, skin diseases
14.	<i>Galium aparine</i> L.	Rubiaceae	Sticky willy	Leaves	Diuretic, tonsillitis, skin diseases, anti-inflammatory, anticancerous, renal disorders
15.	<i>Gentiana argenta</i> L.	Gentianaceae	Silvery Gentian	Whole plant	Digestive disorders, antidiarrheal, skin diseases
16.	<i>Geranium wallichiana</i> D. Don.	Geraniaceae	Geranium Buxton blue	Bark, root	Astringent, tooth ache, digestive disorders, eye diseases
17.	<i>Hedera nepalensis</i> K. Koch.	Araliaceae	Nepal Ivy	Leaves, berries	Diaphoretic, skin diseases, stimulant, expectorant
18.	<i>Indigofera pulchella</i> Roxb.	Leguminosae	Cassia Indigo	Leaves, root	Expectorant, Digestive disorders
19.	<i>Lepidium sativum</i> L.	Brassicaceae	Garden cress paperweed	Root, leaves, seeds	Diuretic, skin diseases, tonic, antidiarrheal, eye diseases, respiratory disorders, expectorant, stimulant, dysentery
20.	<i>Mentha longifolia</i> (L.) Huds.	Labiatae/ Lamiaceae	Horse mint	Leaves, flower	Digestive disorders, respiratory disorders, antispasmodic, carminative, stimulant, fever, headache
21.	<i>Micromeria biflora</i> Bth.	Labiatae/ Lamiaceae	Lemon scented thyme	Root	Tooth ache, respiratory disorders
22.	<i>Myosotisa pestrus</i> F.W. Schmidt.	Boraginaceae	Alpine for-get-not	Whole plant	Astringent, eye diseases

23.	<i>Paeonia emodi</i> Wall. exRoyle.	Paeoniaceae	Himalayan peony	Flower	Haemorrhoids, antidiarrheal, expectorant, antispasmodic
24.	<i>Picea smithiana</i> (Wall) Boiss.	Pinaceae	Himalayan spruce	Whole plant	Skin diseases, renal disorders, eye diseases
25.	<i>Pinus wallichiana.</i> A.B. Jacks.	Pinaceae	Himalayan blue pine	Bark	Diaphoretic, diuretic, stimulant, renal disorders, antirheumatic, respiratory disorders, skin diseases
26.	<i>Plantago lanceolata</i> L.	Plantaginaceae	Ribwort plantain	Leaves, Bark, seeds	Anti-inflammatory, skin diseases, astringent, expectorant, laxative, haemorrhoids, respiratory disorders, fever
27.	<i>Poa supine</i> Schrad.	Poaceae	Supine blue grass	Root, grass	Anti-inflammatory, renal disorders
28.	<i>Podophyllum emodi</i> Royle.	Berberidaceae	Himalayan May apple	Leaves, root, rhizome	Purgative, antirheumatic, anticancerous, stimulant
29.	<i>Potentilla nepalensis</i> Hook.	Rosaceae	Crimson cinquefoil	Root	Skin diseases
30.	<i>Primula denticulate</i> Sm.	Primulaceae	Drumstick primula	Leaves	Skin diseases
31.	<i>Ranunculus pulchellus</i> C. A. Mey.	Ranunculaceae	Long-stem buttercup	Whole plant	Purgative, diuretic
32.	<i>Ranunculus sceleratus</i> L.	Ranunculaceae	Celery-leaved buttercup	Whole plant	Antispasmodic, diaphoretic, skindiseases, antirheumatic, tonic
33.	<i>Robinia pseudoacacia</i> L.	Fabaceae	Black locust	Bark, flower	Antispasmodic, diuretic, laxative, purgative, tonic, tooth ache
34.	<i>Rosa macrophylla</i> Lindl.	Rosaceae	Himalayan rose	Fruit	Anticancerous
35.	<i>Rumex dentatus</i> L.	Polygonaceae	Toothed Dock	Root	Astringent
36.	<i>Rumex nepalensis</i> Spreng.	Polygonaceae	Nepal dock	Leaves, root	Purgative, head ache, digestive disorders
37.	<i>Skimmia laureola</i> Zucc. exWalp.	Rutaceae	Limonia laureola, Skimmiamelanocarpa	Leaves	Small pox
38.	<i>Stellaria media</i> (L.)Vill.	Caryophyllaceae	Common chickweed	Whole plant	Skin diseases, antidiarrheal, astringent, carminative, diuretic, expectorant, laxative, respiratory disorder, anti-inflammatory, antirheumatic, eyedisease
39.	<i>Taraxacum officinale</i> F.H. Wigg.	Asteraceae	Common dandelion	Whole plant	Diuretic, laxative, tonic anti-inflammatory, digestive disorders
40.	<i>Taxus baccata</i> L.	Taxaceae	Yew	Whole plant except fleshy fruits	Anticancerous, antispasmodic, cardiac disorders diaphoretic, expectorant, purgative, antirheumatic, head ache, renal disorders, digestive disorders
41.	<i>Thalictrum alpinum</i> L.	Ranunculaceae	Alpine meadow-rue	Leaves	Fever
42.	<i>Trifolium minus</i> (W.D.J. Koch) Kozuharov.	Fabaceae	Suckling clover	Whole plant	Blood clotting
43.	<i>Trifolium repens</i> L.	Fabaceae	White clover	Whole plant	Antirheumatic, tonic, eye diseases

44.	<i>Trigonell foenum-graecum</i> L.	Fabaceae	Fenugreek, Greek clover	Leaves, seeds	Anticancerous, hepatitis, antidiabetic, anti-inflammatory, carminative, expectorant, laxative, skin diseases, cardiac disorders, diuretic
45.	<i>Urtica dioica</i> L.	Urticaceae	Stinging nettle	Whole plant	Respiratory disorders, tonic, antirheumatic, astringent, diuretic, fever, anti-inflammatory, renal disorders, haemorrhoids, skin diseases
46.	<i>Valeriana himalayana</i> Grub.	Caprifoliaceae	Himalayan valerian	Root	Antidiarrheal, digestive disorders, respiratory disorders, nervous disorders, antirheumatic, hypertension, head ache
47.	<i>Valeriana jatamansii</i> Jones.	Valerianaceae	Indian valerian	Root	Diuretic, skin diseases, antispasmodic, carminative, stimulant, headache, antirheumatic, hypertension
48.	<i>Veronica serpyllifolia</i> L.	Scrophulariaceae	Thyme-leaf speedwell	Leaves	Tonic, haemorrhoids, skin diseases
49.	<i>Viburnum mullaha</i> Buch.	Adoxaceae		Fruit	Digestive disorders, stimulant
50.	<i>Viola biflora</i> L.	Violaceae	Two flower violet	Leaves, flower	Antispasmodic, diaphoretic, laxative

Figure 1: Pharmacological percentage of Shogran Valley plant species for various diseases

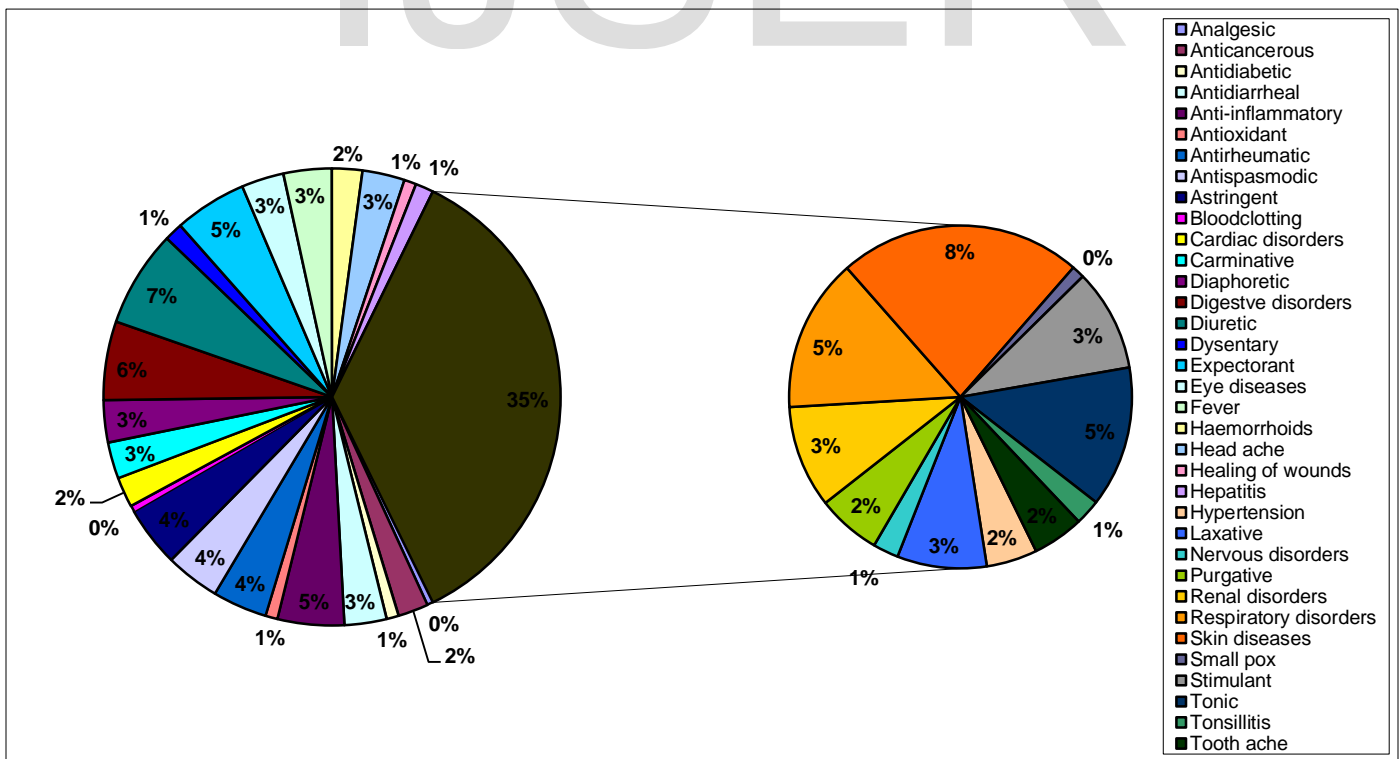


Figure 2: Relative medicinal importance of Shogran Valley plants (1-26/50 plants)

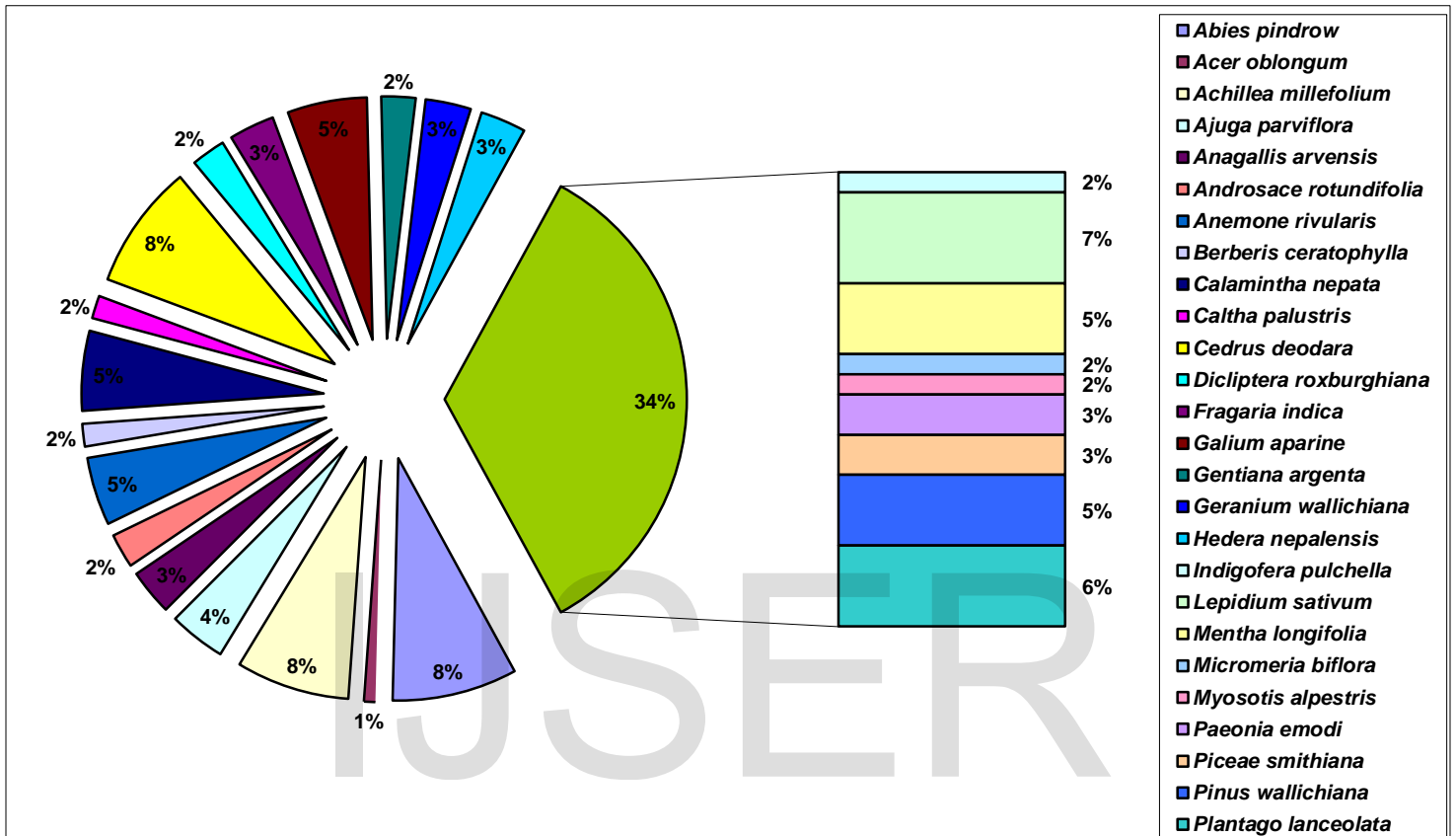
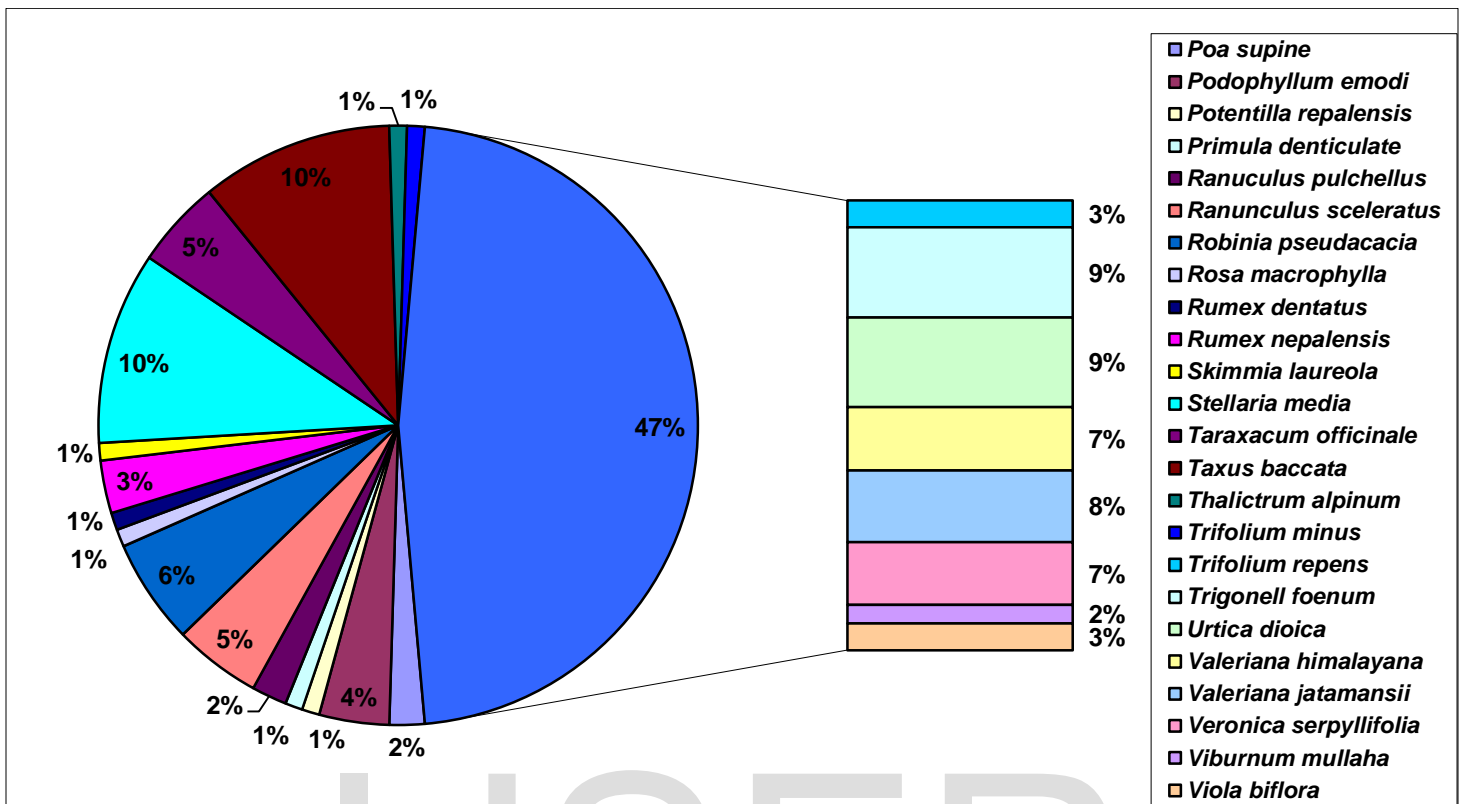


Figure 3: Relative medicinal importance of Shogran Valley plants (27-50/50 plants)



DISCUSSION:

The herbal importance of 41 plant species belonging to 29 families was studied in Chapursan valley, Pakistan. Out of these 41 medicinal plant species only 20 species are known and remaining species which have high medicinal and economic evaluation were not in the notice of native people [5]. The tradable and conservational status of plant species having ethnobotanical value belonging to fungi, gymnosperm, pteridophytes, monocots and dicots were studied in Kurram valley, Parachinar, Pakistan [15]. The certification on ethnobiological knowledge of endemic people living in rich biodiversity areas was done in Soneripura village of Mehsana District of Gujarat in India and exploits the medicinal uses of 21 angiosperm plant species [16]. These findings are similar to the findings of Maurya and Dongarwar [17] that reported the medicinal properties of wild trees of Nagpur District and enlisted the medicinal usage for the cure of different diseases such as antihelminthic, antiseptic, antidiysenteric, skin disease, hypertension and stomachic.

In this present study, ethnobotanical importance of 50 indigenous species of Shogran valley are recorded (Table 1). Family wise analysis revealed that Ranunculaceae is dominant with 5 species, Fabaceae, Labiatea, Pinaceae with 4 species each, Primulaceae, Rosaceae with 3 species each, Asteraceae, Berberidaceae, Polygonaceae with 2 species

each and Acanthaceae, Adoxaceae, Araliaceae, Boraginaceae, Brassicaceae, Caprifoliaceae, Caryophyllaceae, Gentianaceae, Geraniaceae, Leguminosae, Paeoniaceae, Plantaginaceae, Poaceae, Rubiaceae, Rutaceae, Sapindaceae, Scrophulariaceae, Urticaceae, Valerianaceae, Violaceae, with single species each.

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