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SHORT COMMUNICATION

Ethnobotanical study of medicinal plants used to treat human ailments in hilly areas of District Kupwara, Jammu and Kashmir

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ABSTRACT

Many rural groups in impoverished nations still use plant-based medicines today, and contemporary healthcare systems depend on components from plants. In our nation, the Kashmir Himalayas are home to a great trove of medicinal plants. The present study focused on the use of medicinal plants for the treatment of human diseases. Data was collected by performing surveys in the study area. Semi structured interviews and group discussions were conducted with local communities preferably in their local language in order to collect appropriate and reliable information. Throughout the course of the study, interviews with 60 families made up of villagers, medical professionals, tribal members, and traditional healers were conducted. Local experts and area herbal healers were mostly consulted for the collecting of data. The traditional primary healthcare system in the investigated area includes herbal medicine as a crucial component. It was observed that people use different plant parts for treatment of their ailments i.e., leaves, whole plant, fruit, seed, root, flower, rhizome, bark etc. In the study area, residents use a total of 33 species from 21 families to treat various illnesses. Asteraceae was found to be the dominant family in which maximum 7 species were found.

Keywords: Family interview, medicinal plants, treatment of human diseases, traditional plant knowledge

INTRODUCTION

Subtropical, intermediate, temperate, and cold desert zones are among the diverse agroclimatic zones found in the Union Tertiary of Jammu and Kashmir, which is located at the westernmost tip of the Himalayan mountain range. Due to the state's varied climate and altitude, which has created an excellent habitat for the growth of a diverse range of forests, it is endowed with a rich floral diversity. Within just 2.15 percent (15,948 km^2) of the total land area, the Kashmir Himalaya alone is responsible for almost 2,000 (20%) plant species. In most nations, medical plants—also known as herbs, herbal remedies, pharmacologically active plants, or phytomedicinals—remain the principal source of medication. For their everyday healthcare needs, more than three-fourths of the world's population rely mostly on unprocessed plant products (Barrett and Kieffer, 2001). The usage of plant-based health products has significantly increased in both developed and developing nations as a result of recent advances in plant sciences. Around 70–80% of individuals rely on medicinal herbs for their daily health care. In Kashmir Valley, medicinal plants are also a major source of revenue for thousands of families. (Mushtaq *et al*, 2020).

From the very ancient times, People living here in this chunk of world are admiring the plant resources for various purposes including healthcare and food, which is also mentioned in Kalhans's Rajtarangini (1149-50 AD). Till date a number of ethnobotanical studies have been carried out by researchers throughout the Kashmir Himalaya (Dar *et al*., 1984), but most of the studies are related to general assessment and documentation of medicinal plants. A very few studies have been carried out merely on the medicinal uses of plants to cure human diseases. But no such systematic study has been carried out in District Kupwara Jammu and Kashmir (J&K). India is blessed with a variety of ecological conditions, abundant natural resources, and a long history of traditional farming practices that are in keeping with its ethnic diversity and old culture. It traditionally provides vast amounts of plant-based raw materials that are used all over the

world in the pharmaceutical, cosmetics, fragrance, and allied industries. More than 2,000 species of therapeutic plants have been documented in its extensive medicinal plant flora. 1,100 species are used in various medical systems, and of them, 600–700 species are extensively used throughout the nation, primarily by local enterprises. Commercial use includes about 150 species. Many of these are exported to different nations throughout the world. The western Himalayas are said to have 50% of the plant medicines listed in the British pharmacopoeia. It serves the following medical systems: 30% Ayurvedic, 46% Unani, and 33% Allopathic (Meena *et al*. 2009).

Kashmir In our nation, the Himalayas are home to a great trove of therapeutic plants. According to Phondani *et al.* (2010), forests are crucial to the viability and survival of indigenous households in India. The goals and purposes of ethnobotany and ethnomedicine are the interactions between human behavior and the plant communities with which they interact. Ethno botanical studies look on how these plants' resources are used for food, medicine, fuel wood, agriculture, housing, crafts, fodder, and religious rituals (Khan *et al*. 2003). Rural inhabitants in the Himalayan region, particularly those living close to forested areas; rely more heavily on the use of forest resources. About 800 plant species are thought to be used as food and medicine in India, primarily by the country's tribal people (Tantray *et al*., 2009; Bhat *et al*., 2012; Hassan *et al*., 2013).

In order to record the traditional uses of medicinal plants for treating human ailments, the current study was done in the mountainous areas of district Kupwara in the Kashmir Himalayas. The following objectives were studied

1. Taxonomic evaluation of the medicinal plants found in the concerned district

2. Effect of medicinal plants on human Ailments

MATERIALS AND METHODS

The current study was carried out in district Kupwara, during the year 2022 and 2023. The details of the technique followed and materials used during the course of investigations are described below.

Study area

The Himalaya is known for its loftiest and longest mountain ranges. Kashmir is one of the provinces of Jammu and Kashmir Union Territory in the laps of Himalayas. The study area is located in Kupwara district of North Kashmir. The northern frontier district of Kupwara, which was established in 1979, has a total size of 2379 square kilometers and more than 240 kilometers of LOC (Line of Control). With its vibrant culture, varied past, distinctive folklore, and expansive meadows, the district of Kupwara is breathtakingly lovely. Between the Pir Panchal and Shams Bari mountain ranges is where you'll find Kupwara district. These mountain ranges are surrounded by lovely pastures and meadows that serve as grazing land for sheep and cattle. In addition, they serve as vacation locations for healthy travelers and daring spirits.

Taxonomic evaluation of the medicinal plants found in the concerned District:

Data was collected with respect to medicinal plants scientific name, local name, Family and Life-form.

Sampling :

Number of districts surveyed: 1; **Total Number of Blocks surveyed:** 3 (Kralgund, Langate, Qalamabad); **Number of informants surveyed in each Block:** 20;

Total number of informants surveyed in the district: No. of district × No. of blocks × No. of informants from each block = 1×3×20 = 60 informants

Effect of medicinal plants on human diseases

The present study focused on the use of medicinal plants for the treatment of human diseases. Data was collected by performing surveys in the study area. Semi structured interviews and group discussions were conducted with local communities preferably in their local language in order to collect appropriate and reliable information. Information was collected with respect to plants used in treating diseases, local name, mode of administration, preparation and application of the remedy. Throughout the course of the study, interviews with 60 individuals, including members of several tribes, physicians, traditional healers, and locals, were conducted. Local experts and area

Table 1: Taxonomic evaluation of medicinal plants in district Kupwara

S.No	Scientific name	Local name	Family	Life form
1	*Arnebia euchroma* Royle	Ratanjot	Boraginaceae	Herb
2	*Achillea millefolium* Linn.	Pahel-ghass	Asteraceae	Herb
3	*Skimmia anquetilia* Taylor	Inga	Rutaceae	Herb
4	*Jurinea dolomiaea* Royle	Guggal dhoop	Asteraceae	Herb
5	*Juglans regia* Linn.	Doon	Juglandaceae	Tree
6	*Saussurea costus* Falc.	Kouth	Asteraceae	Herb
7	*Hypericum perforatum* Linn.	Shin-chae	Clusiaceae	Herb
8	*Aconitum heterophyllum* Royle	Patrees	Renanculaceae	Herb
9	*Artemisia absintum* Linn.	Tethwan	Asteraceae	Herb
10	*Ajuga parviflora* Benth.	Jan-i-adam	Lamiaceae	Herb
11	*Rheum webbianum* Royle	Pambchalan	Polygonaceae	Herb
12	*Prunella vulgaris* Linn.	Kal-wyoth	Lamiaceae	Herb
13	*Arnebia benthami* Wall.	Kahzaban	Boraginaceae	Herb
14	*Cichorium intybus* Linn.	Waare hand	Asteraceae	Herb
15	*Datura stramonium* Linn.	Datur	Solanaceae	Herb
16	*Iris nepalensis* D.Don	Mazarmunji	Iridaceae	Herb
17	*Euphorbia royleana* Boiss.	Sochal	Euphorbiaceae	Herb
18	*Polygonum plebium* R.Br.	Drabb	Polygonaceae	Herb
19	*Rumex nepalensis* Spreng.	Abij	Polygonaceae	Herb
20	*Taraxicum officinale* Linn.	Hand	Asteraceae	Herb
21	*Thymus linearis* Benth	Jayind	Lamiaceae	Herb
22	*Urtica diocia* Linn.	Soi	Urticaceae	Herb
23	*Polygonatum verticillatum* Linn	Salam mishri	Liliaceae	Herb
24	*Ficus carica* Linn.	Anjeer	Moraceae	Tree
25	*Salix alba* Linn.	Veer	Salicaceae	Tree
26	*Abies pindrow* Royle	Budul	Pinaceae	Tree
27	*Berberis lyceum* Royle	Kawdach	Berberidaceae	Shrub
28	*Centauria iberica* Spreng.	Kreach	Asteraceae	Shrub
29	*Cannabis sativa* Linn.	Bhang	Cannabinaceae	Herb
30	*Indigofera heterantha* Wall.	Zand	Fabaceae	Shrub
31	*Mentha arvensis* Linn.	Pudneh	Lamiaceae	Herb
32	*Punica granatum* Linn.	Daen	Punicaceae	Shrub
33	*Viola odorata* Linn.	Bunfsha	Violaceae	Herb

herbal healers were mostly consulted for the collecting of data. Local herbal healers confirmed and double-checked the information learned from locals.

Research Findings : The research findings of the present study obtained have been presented objective wise as under:

Taxonomic evaluation of the medicinal plants found in the concerned blocks

The results pertaining to taxonomic evaluation of medicinal plants in the study area are shown in Table 1 and 2. Studies conducted revealed that a total of 33 species belonging to 21 families were used by locals to treat different diseases in the study area. Asteraceae was found to be the dominat family in which maximum 7 species were found followed by Lamiaceae (4), Polygonaceae (3), Boraginaceae (2), Rutaceae (1), Juglandaceae (1), Clusiaceae (1), Renanculaceae (1), Solanaceae (1), Iridaceae (1), Euphorbiaceae (1), Urticaceae (1), Liliaceae (1), Moraceae (1), Salicaceae (1), Pinaceae (1), Berberidaceae (1), Cannabinaceae (1), Fabaceae (1), Punicaceae (1) and Violaceae (1) (Fig 1). It was also revealed that 25 species were herbs, shrub (4) and trees (4) (Fig 2).

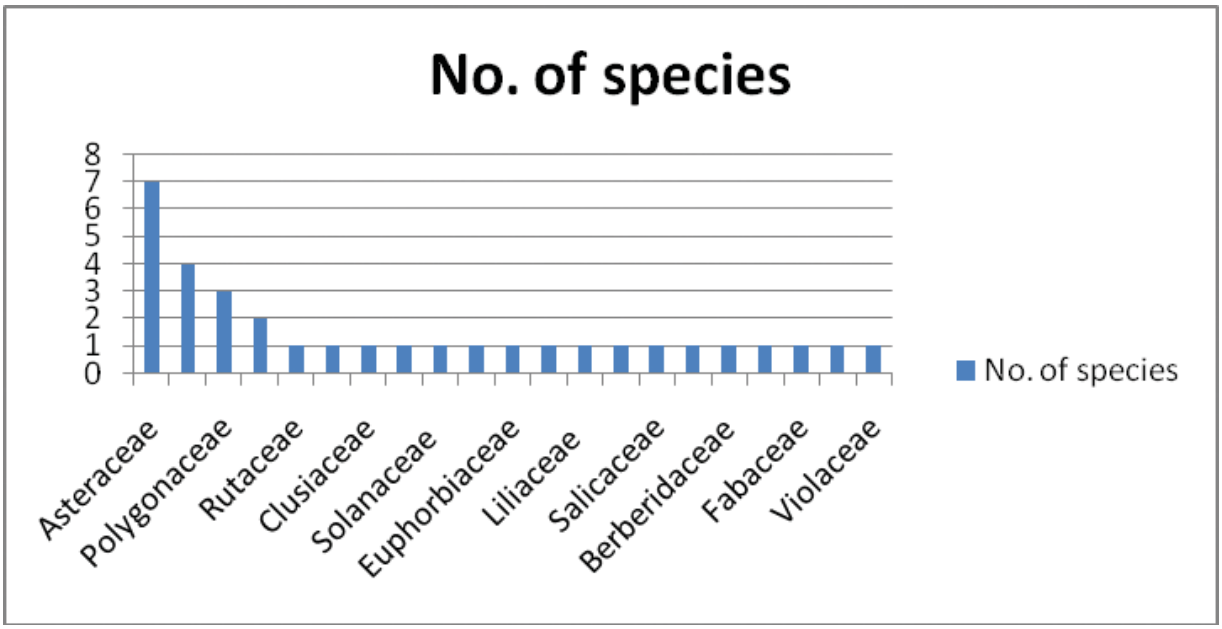

Fig 1: Distribution of species among Families

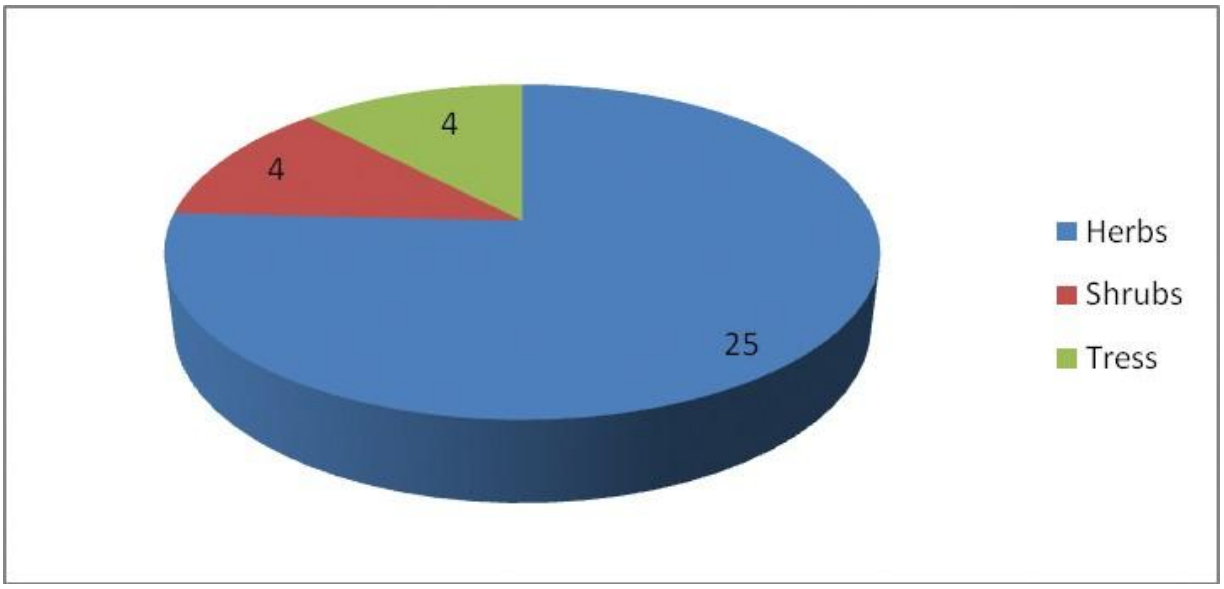

Fig 2: Distribution of species according to their Life-form

Effect of medicinal plants on human ailments

The current study found that residents of the study region use medicinal plants to treat a variety of illnesses and ease pain. The traditional primary healthcare system in the investigated area includes herbal medicine as a crucial component. People have been observed using a variety of plant parts for therapy, including leaves, the entire plant, fruit, seeds, roots, flowers, rhizomes, and bark. Table 3 shows the use of various medicinal plants for curing different diseases in district Kupwara of J&K.

Discussion

The people in the study area use medicinal plants for treatment of various diseases in order to alleviate sufferings and ailments. Herbal medicine forms an essential part of the traditional primary medical system in the studied area. Different researchers have reported traditional uses of medicinal plants

Table 2: Distribution of species among Families

S.No.	Family	Number of species
1	Asteraceae	7
2	Lamiaceae	4
3	Polygonaceae	3
4	Boraginaceae	2
5	Rutaceae	1
6	Juglandaceae	1
7	Clusiaceae	1
8	Renanculaceae	1
9	Solanaceae	1
10	Iridaceae	1
11	Euphorbiaceae	1
12	Urticaceae	1
13	Liliaceae	1
14	Moraceae	1
15	Salicaceae	1
16	Pinaceae	1
17	Berberidaceae	1
18	Cannabinaceae	1
19	Fabaceae	1
20	Punicaceae	1
21	Violaceae	1

throughout Globe. According to Abdullah and Andrabi (2021), tribal tribes in the Ramhal Forest Division in Kupwara used ethnomedicinal herbs. In total, 65 medicinal plants from 40 different families were reportedly obtained from the research region. The majority of them are members of the families Asteraceae and Lamiaceae (9 species each), followed by the Apiaceae (3 species), with the other families each contributing just one or two species. Herbs made up the majority of the medicinal plants, followed by leaves, the entire plant, seeds, aerial parts, fruits, and stem latex. An ethnobotanical assessment of medicinal plants was carried out by Tangjang *et al.* (2010) in the Eastern Himalayan region of Arunachal Pradesh, India. The locals used a total of 74 medicinal plant species, spread across 41 families and 61 genera, in their traditional medical practices to treat at least 25 various diseases and ailments. Different modes of remedy preparation, routes administration and dosage for treating various ailments were observed during the study. Most species were prepared using a hot water decoction (32 species), a paste (23 species), a vegetable (9 species), or by eating them raw (7 species). Other preparations, including as essential oils, alkaloids, and ash powder, were typically made from freshly harvested plant material right before usage.

Table 3: Medicinal plants used by local people in District Kupwara

S. No	Scientific name	Local name	Family	Part used	Ailments treated	Mode of application
1	*Arnebia euchroma*	Ratanjot	Boraginaceae	Roots	Toothache, cuts and wounds, abdominal swelling and eye infections	Root used as pieces or in powdered form.
2	*Achillea millefolium*	Pahel-ghass	Asteraceae	Leaves	Leaves and floral heads are crushed and used to treat inflamated gums and toothache	Paste, External
3	*Skimmia anquetilia*	Inga	Rutaceae	Leaves, bark	Diabetes, Rheumatism, clearing of nose, flu, small pox, burns, snake and scorpion bites, body ache, headache	Leaf extract used to treat diabetes. Powder of plant bark for wounds and burns. Cold infusion of fresh leaves for smallpox, headache and fever. Whole plant also used as an anaesthetic.
4	*Jurinea dolomiaea*	Guggal dhoop	Asteraceae	Roots	Fractures, boils, fever	Decoction of roots is made
5	*Juglans regia*	Doon	Juglandaceae	Bark	Bark of the plant is obtained and rubbed on teeth to get relief from tooth ache	Raw, External

S. No	Scientific name	Local name	Family	Part used	Ailments treated	Mode of application
6	*Saussurea costus*	Kouth	Asteraceae	Roots	Arthritis, insecticide, cough, cold and asthma, fertility enhancer	The extract of root is used in preparation of rice and fed to arthritic patients.
7	*Hypericum perforatum*	Shin-chae	Clusiaceae	Leaves	Tea is made from crushed leaves and taken orally to treat joint pain and urinary disorders	Decoction, Internal
8	*Aconitum heterophyllum*	Patrees	Renanculaceae	Roots	Abdominal problems, fever, tooth ache, anti helminthic, gastric disorders	The root is used in powdered form or as pieces.
9	*Artemisia absintum*	Tethwan	Asteraceae	Whole plant	Anti helminthic, antiseptic, cardiac stimulant	Decoction of dried leaves used as wormicide.
10	*Ajuga parviflora*	Jan-i-adam	Lamiaceae	Leaves	Hepatitis C virus, cancer, jaundice, arthritis, fever, asthma and wounds	Powdered form of dried leaves taken with water. Fresh leaves can also be chewed or eaten as whole.
11	*Rheum webbianum*	Pambchalan	Polygonaceae	Leaves	Anti cancerous, memory booster, bowel abnormalities	Leaves are crushed into a paste.
12	*Prunella vulgaris*	Kal-wyoth	Lamiaceae	Flower, leaf	Frost bite, wound healing, joint pain, cough and cold, headache	Extract obtained from leaves and flowers. Dried leaves and flowers along with stem boiled and the water is used to soak feet and legs to relieve joint pain.
13	*Arnebia benthami*	Kahzaban/ gaw zaban	Boraginaceae	Flower	Fever, cough, throat diseases	Flowers boiled in water to make decoction.
14	*Cichorium intybus*	Waare hand	Asteraceae	Leaves	High fever, wound healing, ulcers, rheumatic pain	The entire plant is ground up and transformed into a paste. Moreover, it is a vegetable.
15	*Datura stramonium*	Datur	Solanaceae	Seeds, leaves	Boils, frost bites, skin infections	Boiled in water to cure frost. Leaves used in the form of paste on skin.
16	*Iris nepalensis*	Mazarmunji	Iridaceae	Roots	Rheumatic pain	Dried root is powdered and made into a paste
17	*Euphorbia royleana*	Sochal	Euphorbiaceae	Leaves	Wounds, boils	Leaves crushed to make a paste. Also used as a vegetable.
18	*Polygonum plebium*	Drabb	Polygonaceae	Leaves	Pmeumonia , bowel irregularities	Leaves used in the form of a decoction
19	*Rumex nepalensis*	Abij	Polygonaceae	Leaves	Cough, constipation, wounds, skin problems	Leaves cooked as a vegetable. Also used as a paste on skin.
20	*Taraxicum officinale*	Hand	Asteraceae	Leaves	Stomach cramps and ulcers, swelling, cough and asthma, urine irritation.	Leaves used as vegetable mostly in dried form.
21	*Thymus linearis*	Jayind	Lamiaceae	Whole herb	Cough, cold and fever	Dried plant is powdered and taken orally with milk.
22	*Urtica diocia*	Soi	Urticaceae	Whole herb	Dandruff , skin infections, wounds , fractures , fever	Extract is obtained by crushing the herb
23	*Polygonatum verticillatum*	Salam mishri	Liliaceae	Roots	Backache, leucorrhoea, menstrual troubles, appetizer	In leucorrhoea, root powder is mixed with water and taken daily.
24	*Ficus carica*	Anjeer	Moraceae	Fruits	Extract obtained from fruits is taken orally for indigestion, loss of appetite and diarrahoea	Juice, Internal

Contd.

Contd. Table 3

S. No	Scientific name	Local name	Family	Part used	Ailments treated	Mode of application
25	*Salix alba*	Veer	Salicaceae	Leaves	Boiling leaves in water and applying them to the legs and other body parts acts as an analgesic	Decoction, External
26	*Abies pindrow*	Budul	Pinaceae	Leaves	As a treatment for rashes on the skin, leaf paste is applied	Decoction, External
27	*Berberis lycium*	Kawdach	Berberidaceae	Fruits	For faster healing of wounds, fruit paste is administered externally	Decoction, External
28	*Centauria iberica*	Kreach	Asteraceae	Leaves	Skin Rashes, Wound healing	Decoction ,External
29	*Cannabis sativa*	Bhang	Cannabinaceae	Leaves	Dried leaf mixture smoked through a pipe called Hukkah is used to treat depression	Internal, External
30	Indigofera heterantha	Zand	Fabaceae	Rhizome, Bark	Abdominal pain, Toothache, Cough	Internal, External
31	*Mentha arvensis*	Pudneh	Lamiaceae	Leaves	To treat diarrhoea and low blood pressure, dried leaves are ground up and used with curd.	Internal
32	*Punica granatum*	Daen	Punicaceae	Fruit	Fruit juice can be used to cure diarrhoea and as a general body tonic	Internal
33	*Viola odorata*	Bunfsha	Violaceae	Flowers	Khambir, a type of jaggery made from crushed lowers and sugar, is used in the winter to treat throat infections	Internal

Studies conducted by Kaif *et al*. (2023) revealed that *Atropa acuminata* is an important medical plant used in traditional healthcare system in the area studied. A total of 15 ailments were found to be treated by *Atropa acuminata.* The ethno medicinal survey confirmed that different parts (roots, leaves, berries and whole plant) of investigating plant has medicinal values and is used for treatment of different diseases under traditional system of medicine. Studies conducted also revealed that 47% of the roots followed by 28% of whole plant, 20% of leaves, and 5% of berries were used for treatment of different diseases under ethno medicines. According to research done by Jan *et al.* (2021), the Gujjar and Bakerwal communities used a total of 60 plant species from 56 genera and 35 different families to treat a variety of illnesses. The area's leading plant family, Asteraceae, was identified; leaves were the most often used plant component, and decoction was the main method for preparing herbal recipes. Herbs made up the majority of the known medicinal plant species (72%), followed by shrubs (13%), and trees (15%).

CONCLUSION

The results of the present investigation, revealed that people in the study area use medicinal plants for treatment of various diseases in order to alleviate sufferings and ailments. It was found that the tribal tribes living at high altitudes rely heavily on herbal medicine to address their main healthcare needs. Traditional plant knowledge is only being passed down orally from one generation to the next, and it is quickly becoming extinct.

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