

**STUDY OF ETHNO-MEDICINAL PLANTS OF GANANATH HILL (DISTRICT
ALMORA) WITH SPECIAL REFERENCE TO AYURVEDIC TEXTS****Dr. Shubham Rajput^{*1}, Dr. Suresh Chaubey², Dr. R. C. Tiwari³, Dr. Aseesh Pandey⁴**¹P.G. Scholar, Department of Dravyaguna, Rishikul Campus, Uttarakhand Ayurved University, Dehradun, 248001, Uttarakhand, India.²Professor, P.G. Department of Dravyaguna, Rishikul Campus, Uttarakhand Ayurved University, Dehradun, 248001, Uttarakhand, India.³Professor, P.G. Department of Agad tantra, Rishikul Campus, Uttarakhand Ayurved University, Dehradun, 248001, Uttarakhand, India.⁴Scientist C, G.B. Pant National Institute of Himalayan and Environment, Almora, Uttarakhand.***Corresponding Author: Dr. Shubham Rajput**

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ABSTRACT

Background: A large population of the rural area of the Uttarakhand is still dependent upon traditional plant-based knowledge to combat various disease conditions. This study aimed to explore the ethnopharmacological information and document traditional uses of plants in the Kumaun Himalayan region. Here we show the study of Gananath hill of district Almora of the Uttarakhand state in India, located in the western Himalayan region. **Objective:** The present study focuses on the critical study of *Nighantus* with special reference to the herbs found in the selected study area. The research also includes the collection of recent ethnomedicinal information from local inhabitants and traditional healers. Botanical verification of important medicinal plants has been carried out to ensure accurate identification and scientific authenticity. The study further documents traditional knowledge associated with ethnomedicinal uses of various plant species. In addition, an analysis of the pharmacological properties and therapeutic applications of these ethnomedicinal plants has been conducted on the basis of Ayurvedic *Nighantus*. The research also presents an analytical study of selected medicinal plants based on field survey and ethnomedicinal observations. **Methods:** A total of 25 traditional healers and experienced inhabitants between age 25- 80 years of age were interviewed by a semi-structured questionnaire. Analytical study of selected medicinal plants based on field survey and ethnomedicinal observations. **Results:** A total of 50 plant species were reported from families. The highest number of plant species were collected from family and families followed by. Primary uses of plants were categorised into 42 disease categories. The highest number of species was reported to be used for cuts and wounds disorders, followed by cough and cold, fever. **Conclusion:** Local traditional knowledge and practice of plant- based medicine is quite widespread in the rural areas of Uttarakhand and is an indispensable part of the healthcare system. It plays a vital role in the absence of basic medical facilities and tremendous paucity of trained medical personnel.

KEYWORDS: Ethnomedicine, Ayurved, Traditional knowledge.**INTRODUCTION**

Ethnomedicine refers to “the traditional medical practices concerned with the cultural interpretation of health, disease, and treatment.” (Martin, G.J. 1995). Medicinal plants have formed the cornerstone of traditional healthcare systems since the dawn of human civilization. Long before the development of modern

pharmaceuticals, human societies relied extensively on plants for treating diseases, maintaining health, and preventing illnesses. In India, this knowledge system is deeply rooted in Ayurveda, which is considered one of the oldest holistic systems of medicine in the world.

Hundreds of years of beliefs and observations are the basis of various traditional medicine systems, which predate the expansion and spread of modern medicine. Such systems were developed by our ancestors who learned very comprehensively from nature initially by tasting of what was available in their surrounding areas (Aburjai *et al.* 2007). The popularity of complementary medicine is, however, increasing rapidly since past few decades. Traditional systems of medicine, for instance Ayurveda, traditional Chinese medicine system and other indigenous systems of medicine are widely used worldwide, and the traditional preparations are marketed in many developed countries as dietary supplements. It was reported in a survey that approximately 48.5% respondents from Australia and 34% respondents from the USA had used at least one form of alternative therapy including herbal medicine (Eisenberg *et al.* 1998, Grover *et al.* 2001, MacLennan *et al.* 1996). Ethnopharmacological studies are gaining tremendous importance these days. There are several such studies that are being conducted in recent times (Barkaoui *et al.* 2017, Davids *et al.* 2016, Eddouks *et al.* 2016, Kose *et al.* 2015, Moteetee, Kose 2016, Rahman *et al.* 2016, Shawahna, Jaradat *et al.* 2017, Zhao *et al.* 2017). Several medicinal plants are used by the natives of the Kumaun Himalayan region for numerous disorders. Although studies have been conducted to explore the Uttarakhand region (Farooquee *et al.* 2004, Kala *et al.* 2005, Negi *et al.* 2011, Phondani *et al.* 2010, Sharma *et al.* 2011) still there is a vast potential in the Himalayan region concerning the ethnomedicinal wealth.

Uttarakhand (formerly known as Uttaranchal) is the newest state among the Himalayan provinces of India and came in existence as the 27th state of the Republic of India. Uttarakhand has 13 districts and is divided into 2 divisions - Garhwal and Kumaun. A large portion of the population in Uttarakhand is agro-based and economically dependent on agriculture. However, due to the region's steep mountainous terrain, making agriculture hard. Fortunately, the state is endowed with abundant forests and water resources and the source for many rivers, as well. Although, studies have been conducted in the Kumaun Himalayan region to explore medicinal plant diversity and in some places the use of medicinal plants in the different ailments by the inhabitants (Bhatt *et al.* 2012, Gangwar, Gangwar 2010, Kapkoti *et al.* 2011). However, most of the area covered in this study is still unexplored and to the best of our knowledge no study is available with reference to Ayurvedic texts. Therefore the study was conducted to collect and evaluate data from traditional healers and experienced inhabitants on medicinal plant-based remedies from the region of western Himalayas.

MATERIAL AND METHODS

Study area

Uttarakhand state is a part of the North-Western Himalayas and is located between 28° 43' - 31° 27'N latitudes and 77°34' - 81°02' E longitudes. The state is affluent in culture, religious attributes and the beautiful natural sights. The state is full of biodiversity and natural resources in context to flora, fauna or people. It is different from other states due to its mountainous geography. The state is mainly a mountainous state and most of the people of Uttarakhand are known as "Paharis" which means 'people of the hills', and similar "Pahari" people with different cultural and linguistic characters are found in the neighboring state in west Himachal Pradesh and east Nepal (Mawdsley, 1997, Joshi, Negi 1994).

An explorative study was conducted in the Gananath hill of Kumaun Himalayan region (Figure different villages namely Paner Gaon, Bina, Thapala, Satarali, Kandey, Dotiyal gaon etc. The study was conducted within Gananath hill of Almora district of Uttarakhand. Gananath hill is situated near the Takula block of district Almora. Particular site approximately 7-8 km around the Takula village. Gananath is a Shiva Temple in the Takula block of Almora district, Takula situated near the Almora-Bageshwar border, in Almora district of the Indian state of Uttarakhand. Situated at an elevation of 2116 meters above sea level (6942 ft). Gananath hill lies 47 km from Almora district Headquarters. The region is also famous for its rich biodiversity, culture, tradition and mythology. Geographically, it has rich vegetation and mostly covered by forest areas. This region has a mixed forest and is very rich in medicinal flora. To spread and documentation of the knowledge about the traditional medicinal plants, were done by survey and research work in Gananath hill. In conclusion, Gananath Temple in Takula, Almora, represents a unique combination of natural beauty, ecological diversity, historical relevance, and spiritual significance. Its remote location, favorable climatic conditions, and rich biodiversity make it an ideal study area for research in the fields of Ayurveda, medicinal plants, ecology, and ethnobotany. The integration of traditional knowledge with scientific investigation at this site provides a strong foundation for meaningful and comprehensive research. The details of the study area are provided in Figure 2.



Figure 1: Map of study site located in district Almora of Uttarakhand.



Figure 2: Images of study area.

Data Collection

The study was based on field surveys conducted from the year October 2024 to May 2026. The surveys were done throughout the day in different seasons including the last part of the summer season and the onset of monsoon. Verbal prior informed consent was taken from all the participants after telling them the purpose of the study. Data about the therapeutically important medicinal plants were gathered with the help of open ended semi-structured interviews. Interviews were conducted in Hindi and local language Kumauni depending upon the social and educational status of the respondent. Most of the people were interviewed at their homes but some of them were also interviewed in the forest areas and in groups as per the suitability for drawing maximum information. Field surveys were conducted with traditional healers and experienced natives of the

villages, and plants were collected accordingly. Stays were also made in different villages with the help of the villagers. An extensive literature review of *Ayurvedic* texts was also done to verify the pharmacological relevance in *Ayurveda*.

Collection, Identification and authentication of the plants

Medicinal plants were collected in different seasons throughout the year from the fields and forest areas. Most of the plants were collected from areas at the altitude of 2000 m above sea level. Collected medicinal plants were dried, mounted on herbarium sheets and identified in government centers, including the Botanical Survey Of India, Dehradun, G.B. Pant National Institute of Himalayan Environment, P.G. Department of Dravyaguna, Rishikul Campus, Uttarakhand Ayurved

University. The plant specimens were identified by expert taxonomist and deposited in the respective herbaria.

RESULTS AND DISCUSSION

Respondent biographic details

The data were collected by open informal and sometimes group interviews. The samples were selected on the basis of stratified sampling procedures. The information about the respondents were collected from the local villagers or sometimes from the respondents themselves. Twentyfive traditional medicine practitioners and experienced local inhabitants were interviewed. This is an important information which represents that the substantially higher male population is aware about folkware medicine practices. All the informants were native to the area and their families residing in the region from generations.

Social life and challenges

Different sections of the study area had almost similar socioeconomic conditions. One of the major problems observed in remote mountainous region was that of the migration of the local inhabitants from hilly areas to the nearby plain areas for better economic conditions and in search of job opportunities. Most inhabitants of these villages are either dependent on agriculture, or dependent on their livestock for their daily needs. Several geriatric

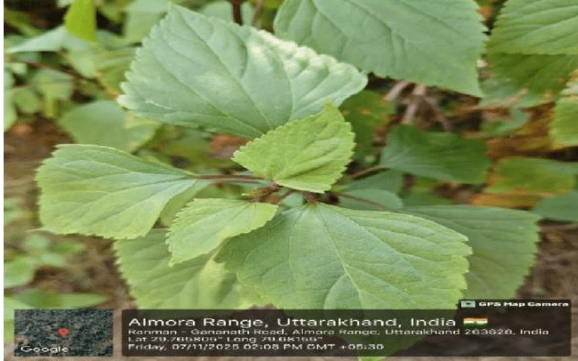
people were found living alone or as couple, while their children were living in the cities for earning livelihood. Sometimes elderly people didn't desire to leave their villages either. The life in these areas is very challenging. Some of the major challenges are poor connectivity of roads, lack of basic facilities such as schools, hospitals etc. The area is prone to the natural disasters such as earthquakes, landslides, and cloudburst. Although, in some areas schools and hospitals are present, but teachers and medical practitioners are unwilling to work in these remote areas, and the children of these villages remain deprived of the fundamental rights of education and healthcare. It was also found during the study that the basic facilities and economic conditions were better in the villages that are in close vicinity of the towns and or plain areas.

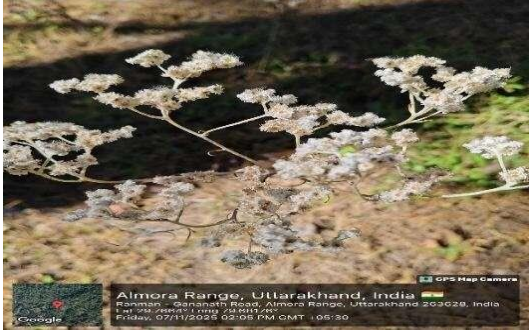
Species distribution

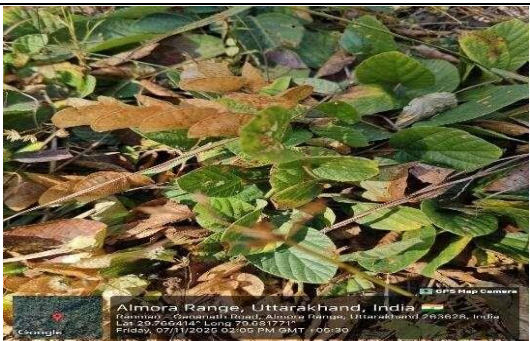
A total of 50 species were reported, belonging to 33 families. Plant species listed in Table 1. The highest numbers of plant species were collected from Asteraceae and Rosaceae families, followed by Pinaceae.

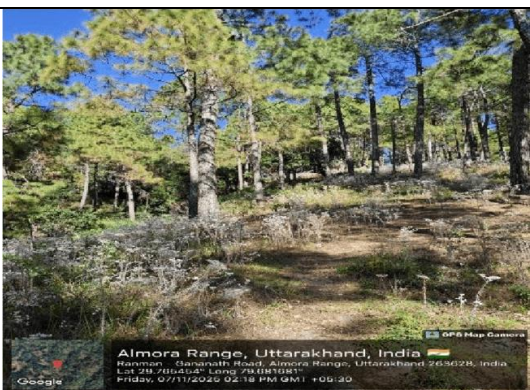
Total 50 plant species recorded during study which are being used as ethnomedicine. Out of them 28 following plants have no reference in these *Nighantus*(Ayurved Texts).

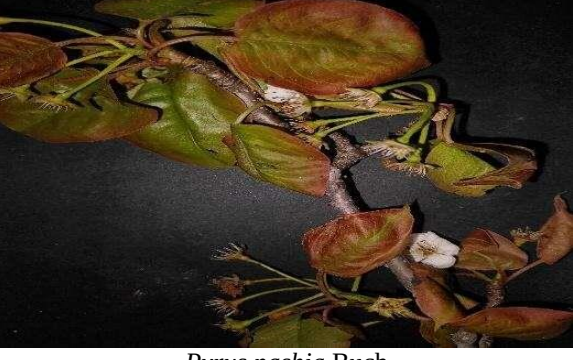
Table 1: List of plant species.

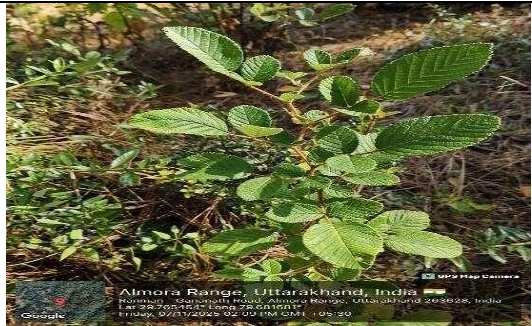
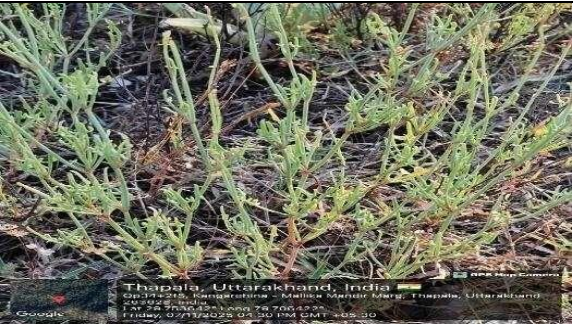
S. No	Plant species	S. No	Plant species
1.	 <i>Abies pindrow</i> (Royle ex. D.Don) Royle	2.	 <i>Acmeila oleracea</i> (L.) R.K. Jansen
3.	 <i>Acorus calamus</i> Linn.	4.	 <i>Ageratina adenophora</i> (spreng.) R.M.King & H.Rob.

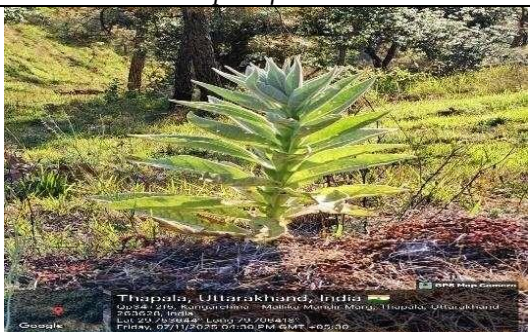
5.		6.	
	<i>Ainsliaea aptera</i> DC.		<i>Ajuga parviflora</i> Benth.
7.		8.	
	<i>Anaphalis triplinervis</i> (Sims.) C. B. Clarke		<i>Asparagus racemosus</i> Willd.
9.		10.	
	<i>Berberis lycium</i> Royle.		<i>Bergenia ciliata</i> (Haworth) Sternberg
11.		12.	
	<i>Boenninghausenia albiflora</i> (Hook.)		<i>Cedrus deodara</i> (Roxb. ex D. Don) G. Don.

13.		14.	
	<i>Cirsium verutum</i> (D.Don) Spreng.		<i>Daphne papyracea</i> Wall. Ex G.Don.
15.		16.	
	<i>Dicliptera chinensis</i> (L.) Juss.		<i>Duhaldea cuspidata</i> (DC.) Anderb.
17.		18.	
	<i>Drepanostachyum falcatum</i> Nees.		<i>Fagopyrum esculentum</i> Moench
19.		20.	
	<i>Flemingia strobilifera</i> (L.) W.T.Aiton.		<i>Geranium wallichianum</i> D.Don ex Sweet

21.		22.	
	<i>Hedychium spicatum</i> Ham. ex Sm.		<i>Hypericum oblongifolium</i> Choisy
23.		24.	
	<i>Juglans regia</i> Linn.		<i>Crepidium acuminatum</i> (D.Don) Szlach.
25.		26.	
	<i>Osbeckia stellata</i> Buch. -Ham. ex Ker Gaw		<i>Persicaria capitata</i> (Buch. - Ham. Ex D.Don) H.Gross
27.		28.	
	<i>Pinus wallichiana</i> A. B. Jack		<i>Plantago major</i> L.

29.	 <i>Podophyllum hexandrum</i> Royle	30.	 <i>Potentilla fulgens</i> Wall. ex Hook.
31.	 <i>Fragaria indica</i> Andrews	32.	 <i>Prunus cerasoides</i> D. Don.
33.	 <i>Pyracantha crenulata</i> D. Don	34.	 <i>Pyrus pashia</i> Buch
35.	 <i>Quercus leucotrichophora</i> Camus	36.	 <i>Rhododendron arboreum</i> Sm.

37.	 Bina, Uttarakhand, India Kangerchitra - Mallika Mandir, Bina, Uttarakhand 263629, India Lat: 25.762745° Long: 75.70805° Friday, 07/11/2025 04:34 PM GMT +05:30	38.	 Rubia cordifolia Linn.
39.	 Almora Range, Uttarakhand, India Kumail - Saranath Road, Almora Range, Uttarakhand 263628, India Lat: 25.762745° Long: 75.70805° Friday, 07/11/2025 02:05 PM GMT +05:30	40.	 Thapali, Uttarakhand, India Dhara, Kangerchitra - Mallika Mandir, Thapali, Uttarakhand Lat: 25.762745° Long: 75.70805° Friday, 07/11/2025 04:30 PM GMT +05:30
41.	 Smilax aspera L.	42.	 Taraxacum officinale Weber.
43.	 Taxus wallichiana Zucc.	44.	 Thalictrum foliolosum DC.

45.		46.	
	<i>Urtica parviflora</i> Roxb.		<i>Valeriana jatamansi</i> Jones ex Roxb.
47.		48.	
	<i>Verbascum thapsus</i> Linn.		<i>Viburnum cotinifolium</i> D.Don
49.		50.	
	<i>Viola pilosa</i> Blume.		<i>Zanthoxylum alatum</i> Roxb.

Quantitative data analysis of plants used in various disease conditions

Primary use of plants were organised in 42 disease categories. The explanatory details of primary uses of

plants are presented in Figure 3. The details of the documented plants species mentioned in along with their traditional uses are presented in Table 2.

Table 2: Ethnomedicinal uses of plants in the Gananath hill.

S.No.	Botanical Name	Ethnomedicinal indication
1.	<i>Abies pindrow</i> (Royle ex. D.Don) Royle	Fever, cold, pain & swelling, Cough, Asthma Respiratory Diseases
2.	<i>Acorus calamus</i> Linn.	Cold and cough, Fever, Pain and inflammation, Worm infestation
3.	<i>Asparagus racemosus</i> Willd.	Lactation, Diuretic, Urinary disorders, Stomachache, Dysentery, Health tonic
4.	<i>Berberis lycium</i> Royle.	Fever, Jaundice, Diabetes, Eye Inflammation
5.	<i>Bergenia ciliata</i> (Haworth) Sternberg	Swelling, Micturation Problem, Renal-calculi
6.	<i>Cedrus deodara</i> (Roxb. ex D.Don) G.Don.	Joint pain, Sotha, Skin disease
7.	<i>Crepidium acuminatum</i> (D.Don) Szlach.	Bronchitis, Purgative, Health Tonic
8.	<i>Hedychium spicatum</i> Ham. ex Sm.	Pneumonia, Fever, Cough, Asthma, Cuts or Wounds
9.	<i>Juglans regia</i> L.	Sunburns, itching, Scalp dandruff, toothache, ringworm

		infestation, rheumatic pain.
10.	<i>Pinus roxburghii</i> Sarg.	Bone fracture, Asthma, Scorpion sting, Snake bite, Heel Crack, Joint pain, Swelling
11.	<i>Plantago major</i> L	Constipation, Cuts and wounds, Dry cough
12.	<i>Podophyllum hexandrum</i> Royle.	Cuts and wounds, Skin disease, Boils, cold, Constipation
13.	<i>Prunus cerasoides</i> Buch.-Ham. ex. D.Don	Swelling and contusion, Psychomedicine, Cut and wound, Burn, Fever
14.	<i>Rhus parviflora</i> (Roxb.) F.A. Barley	Cholera
15.	<i>Rubia cordifolia</i> Linn.	Wound, Blood purifier, Dysentery, Skin disease, Jaundice
16.	<i>Taraxacum</i> sect. <i>Taraxacum</i> F.H. Wigg.	Fever, Joint pain, Jaundice, Skin disease
17.	<i>Taxus wallichiana</i> Zucc.	Muscles and joints problems, Fracture, Cough and cold, Respiratory problems
18.	<i>Thalictrum foliolosum</i> DC.	Gout, Rheumatism, Eye inflammation
19.	<i>Valeriana jatamansi</i> Jones ex Roxb.	Fever, Wound, Joint pain, Insomnia Hysteria, Epilepsy
20.	<i>Verbascum thapsus</i> Linn.	Inflammation, Chest complaints, Diarrhoea, Earache, Cuts and wounds
21.	<i>Viola pilosa</i> Blume.	Cold and cough, Headache, jaundice, Pain, Inflammation, fever.
22.	<i>Zanthoxylum armatum</i> Roxb.	Cough, Pyorrhoea, Gum bleeding, Toothache
23.	<i>Acmella oleracea</i> (L.) R.K. Jansen	Toothache and oral infections, sore throats, Wounds, skin infection
24.	<i>Ageratina adenophora</i>	Cuts bleeding, sores, ringworm, cuts, wound, burns, cough cold
25.	<i>Ainsliaea aptera</i> DC.	Fever, Stomach-ache
26.	<i>Ajuga parviflora</i> Benth.	Abdominal problems, skin diseases, Acne, Earaches
27.	<i>Anaphalis triplinervis</i> (Sims.) C. B. Clarke	cuts & tears
28.	<i>Boenninghausenia albiflora</i> (Hook.)	Cuts and wounds, Malaria
29.	<i>Cirsium verutum</i> (D.Don) Spreng.	Wounds, boils, Liver disorders, digestive problems, skin infection
30.	<i>Daphne papyracea</i> Wall. ex G.Don.	Joint pain, Skin disease, Purgative
31.	<i>Dictyocarpus chinensis</i> (L.) Juss	Fever, cough, cuts, wounds, skin infections, swelling, pain
32.	<i>Duhaldea cuspidata</i> (DC.) Anderb.	Cuts, wounds, skin infection, fever, digestive disorders, pain, cough, cold
33.	<i>Drepanostachyum falcatum</i> (Nees) Keng f.	In indigestion, acidity
34.	<i>Fagopyrum esculentum</i> Moench	Diabetes management, Hypertension, cardiovascular disorders, Post delivery in females
35.	<i>Flemingia strobilifera</i> (L.) W.T. Aiton.	Joint pain, Swelling, Expectorant
36.	<i>Geranium wallichianum</i> D.Don ex Sweet	Leucorrhoea, back pain, diarrhoea, general fitness
37.	<i>Hypericum oblongifolium</i> Choisy	Fever, wound, boils
38.	<i>Osbeckia stellata</i> Buch. -Ham. ex D.Don	Toothache, wounds, Jaundice, leucoderma
39.	<i>Persicaria capitata</i> (Buch. - Ham. Ex D.Don) H.Gross	Wounds, boils, urinary disorder, stomach disorder, swelling, dysentery, diarrhoea
40.	<i>Potentilla fulgens</i> Wall. ex Hook.	Toothache, Wound, Eye disease, throat infections
41.	<i>Potentilla indica</i> (Andrews) Th. Wolf	antiseptic properties. digestive issues, to burns, insect bites and wounds
42.	<i>Pyracantha crenulata</i> D. Don	Fever, Rejuvenation, Joint pain
43.	<i>Pyrus pashia</i> Buch.- Ham. ex. D.Don	constipation. sore throat, baldness, typhoid, asthma
44.	<i>Quercus leucotrichophora</i> A.Camus	Jaundice, indigestion, cuts & wounds
45.	<i>Rhododendron arboreum</i> Sm.	Indigestion, Dysentery, Asthma, Fever
46.	<i>Rubus ellipticus</i> Sm.	Headache, Skin infections and ulcers, Burns, cold, cough, headache, and fever, Diarrhea and dysentery
47.	<i>Rumex hastatus</i> D. Don	Cuts and wounds, Mouth ulcers, Tonic, Skin disease
48.	<i>Smilax aspera</i> L.	Wound healing, boils, swelling, arthritis joint pain, rheumatism
49.	<i>Urtica parviflora</i> Roxb.	Baldness, sprains and swelling, coughs, fevers, blood purifier.
50.	<i>Viburnum cotinifolium</i> D.Don	Jaundice, indigestion, cuts & wounds

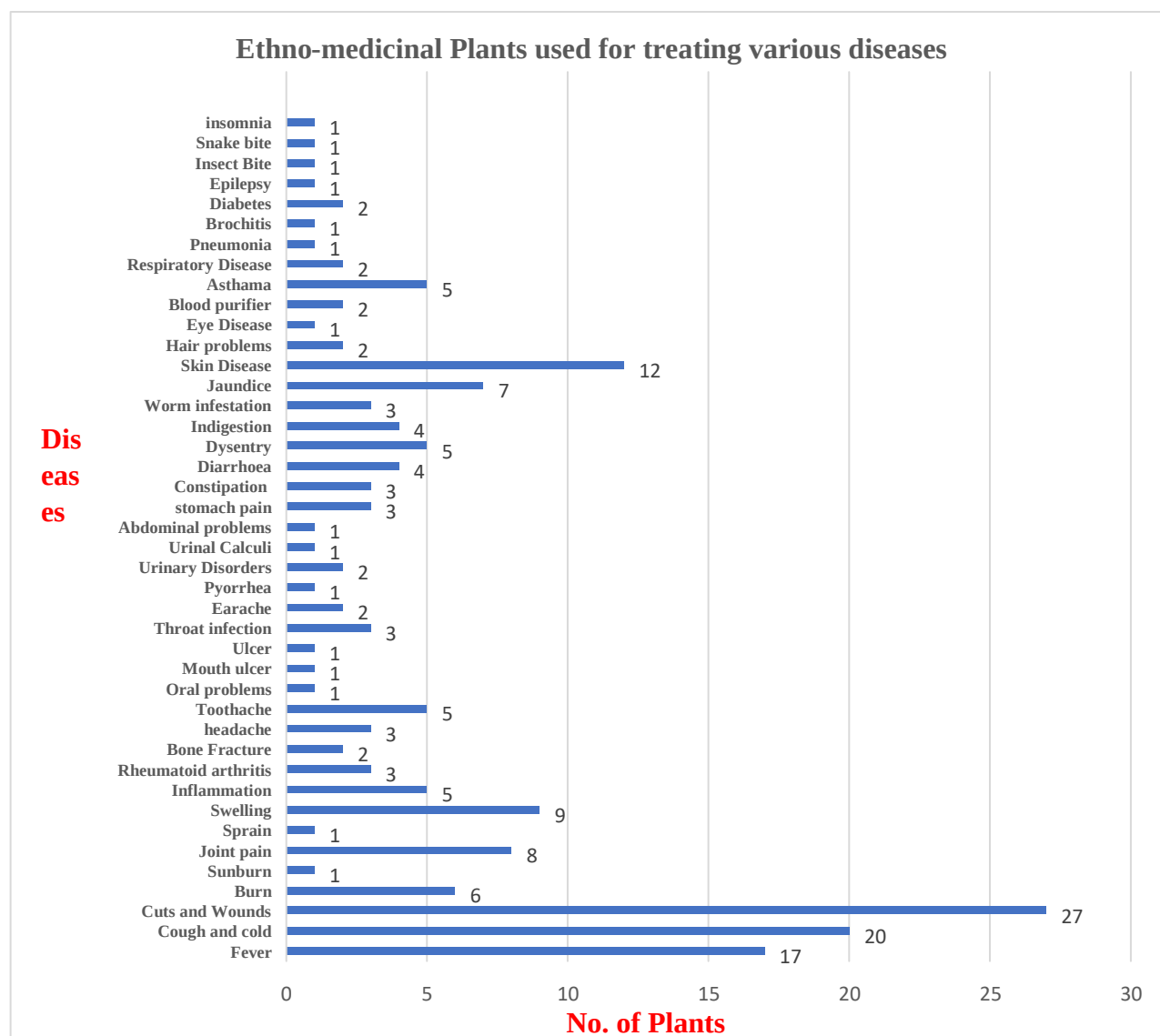


Figure 3: Ethno-medicinal Plants used for treating various diseases.

The significant plant wealth in the Himlayan region can be potential source for the development of the socioeconomic conditions of the populations residing in the study area. As mentioned earlier that there are several socio-economic challenges are present in front of the rural people of the study area. The gathered plants can substantially improve the economic conditions of the native people of the study area. For instance, cultivation of different important plants like *Berberis*, and *Bergenia* could provide high economic outcomes in terms as these plants are endangered and possess a huge market value due to their potential uses in the Ayurvedic and other traditional medicine formulations. Moreover, value addition in the form of product development from various Himalayan medicinal plants like *Rhododendron* and many others have the potential to generate great market values. Due to changing lifestyles, great secrecy of traditional healers and disinterest of youngsters, the

practice of, and dependence of ethnic societies on folk medicines is in rapid decline globally. Therefore, ethnobotanical exploitation and documentation of indigenous knowledge about the usefulness of such a vast pool of genetic resources is deliberately needed (Behera, Misra 2005, Bussmann, Sharon 2006, Kunwar *et al.* 2006, Longuefosse, Nossin 1996, Saikia *et al.* 2006, Singh). The original *shloka* is mentioned in Figure 4.

ओषधीर्नामरूपाभ्यां जानते ह्यजपा वने। अविपाश्चैव गोपाश्च ये चान्ये
वनवासिनः॥

चरकसंहिता सु. स्था. खण्ड-१ ॥१२१॥

(*ausadhi nāmrūpabhyāṃ jānte hyajapā vane, avipāśchāiv gopāśch ye chānye
vanvāsinaḥ*)

Figure 4: Shloka given in “Charaksamhita” mentioning about the importance of various forest people in the identification of the plants.

CONCLUSION

In the rural areas of Uttarakhand, practice of plant based medicine and local traditional knowledge plays a vital role in people's lives, and such knowledge is widespread. This knowledge is becoming even more important in the primary healthcare system of the rural mountainous areas where there is a huge scarcity of registered medical practitioners. This explorative survey accentuated the importance of preservation and documentation of traditional knowledge for various disease conditions and for additional elaborative scientific research on these as well as other plants for the evaluation of their therapeutic efficacy and safety. Proper scientific validation is an important step for the standardization and optimum utilization of the therapeutic claims in the field of drug discovery from natural products.

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