



Ethno-botanical survey of medicinal plants of unexplored hilly areas of district Ramban (J&K)

Munit Sharma¹, Rishi Thakur², Munish Sharma^{3*}

¹ Department of Botany and Microbiology, Gurukula Kangri Vishwavidyalaya, Haridwar, Uttarakhand, India

^{2,3} Department of Plant Sciences, Central University of Himachal Pradesh, Shahpur Kangra, Himachal Pradesh, India

Abstract

Medicinal plants have played significant roles in the lives of local peoples living in these regions by providing medicinal products. Medicinal plants are used for different purposes and in diverse uses of human beings. The use of medicinal plants is found in almost all cultures as a wellspring of medicine. Medicinal plants have been used for a large number of years to treat wellbeing issue and to avoid illness including epidemics. People had the basic information of medicinal values and curing various illness of medicinal plants from a period of past time that is evidenced with the aid of historic literature. The state of Jammu and Kashmir is well known for its splendour and biological reserves. A study was conducted in different areas of District Ramban(J&K) in order to check the present status of medicinal plants diversity their abundance and for suggested utilization measures for residential peoples of the area. District Ramban(J&K) ranged a totally rich variety due to varied altitude and latitude. During the field survey, medicinal plants used by the local community 79 plant species, specifically 55 herbs, 15 trees, and 09 shrubs the study area for treating various diseases and has great medicinal values. These plants are belonged to 38 families with Asteraceae was dominant in all sampling zones.

Keywords: Ethno-botany, medicinal plant, Asteraceae, Ramban, J&K

Introduction

Ethnobotany is a branch of medical anthropology which deals with the association between medicinal plants and human beings. Ethno-medicine plays very significant role in human health care since from the ages. According to statistics released by the World Health Organization (WHO), ethno-medicine has its constant popularity in all over regions of the developing world and its use is quickly expanding in the industrialized countries. At this time one can observe a global trend in the traditional system of medicines as well as ethnobotanical studies have become increasingly highly valuable in the development of healthcare system in different areas of the world by (Ahmed, 2007) ^[1]. Ethnobotanical surveys have been found to be one of the consistent approaches to drug discovery (Fabricant and Fornsworth, 2001) ^[8]. India is fortunate to have incredible and wide-ranging medicinal plants resources dispersed broadly in the forest ecosystem. Human beings have been dependent on mother nature for their survival since from their existence on this earth. The Indian Himalayan Region (IHR) extend across Jammu & Kashmir, Himachal Pradesh, Uttarakhand, West Bengal, and Arunachal Pradesh (Mani, 1974) ^[34] and have about an average of 18,440 plants species (Singh and Hajra, 1996) ^[33], 1748 medicinal plants species (Samant *et al.*, 1998. Five hundred million people in India, depends directly or indirectly on plants derived drugs for their health care needs. Jammu and Kashmir harbours a rich diversity of medicinal plants that has been used in traditional health care

system. It stretches between 34°08'14 N latitude and 75°02'16 E degree longitude, and the altitude rises steeply from 305 meters to 6910 meters above sea level. The total area of the J&K is about 22,22,236 sq. kms. Due to the variations in topography, the region has a huge diversity of plant species. Almost 70 per cent of India's medicinal plants have been present to be in tropical region; whereas in temperate and alpine areas, although their occurrence is less than 30 per cent, yet they include species of high medicinal value (Nautiyal and Kaul, 2003) ^[24]. Many studies have been carried out from time to time to document the ethno-medicinal information from different districts of Jammu and Kashmir, India (Sharma *et al.*, 2019; Dar *et al.*, 1984; Chak *et al.*, 2009; Kapahi *et al.*, 1993; Khan *et al.*, 2004) ^[28, 4, 12, 18] but the past literature shows that no methodical study of locally available medicinal plants from ethno-medicinal point of view has been carried out in the unexplored area of District Ramban. Local peoples of District Ramban. Therefore, in the present study, an effort has been made to document some locally available medicinal plants used by the local community of district Ramban, Jammu and Kashmir (India) for curing various diseases. The present data has its importance because recorded for the first time.

Material and methods

Description about study area

The study area was divided into three sampling zones for the collection of medicinal plants. Monthly sampling was conducted in every zone.

- Zone 1**
 - **Pogal Valley (Sarvadhara to Omnagar)**
 - Sarvadhara (33°21'16.99 N longitude, 75°20'04.08 E latitude)
 - Omnagar (33°20'01.96 N longitude, 75°25'51.41 E latitude)
- Zone 2**
 - **Omnagar Valley (Omnagar to Neel)**
 - Neel (33°25'20.03 N longitude, 75°25'30.08 E latitude)
- Zone 3**
 - **Sanasar Valley (Sanasar to Nathatop)**
 - Sanasar (34°08'36.56 N longitude, 74°79'73.71 E latitude)
 - Nathatop (33°07'77.78 N longitude, 75°19'36.88 E latitude)

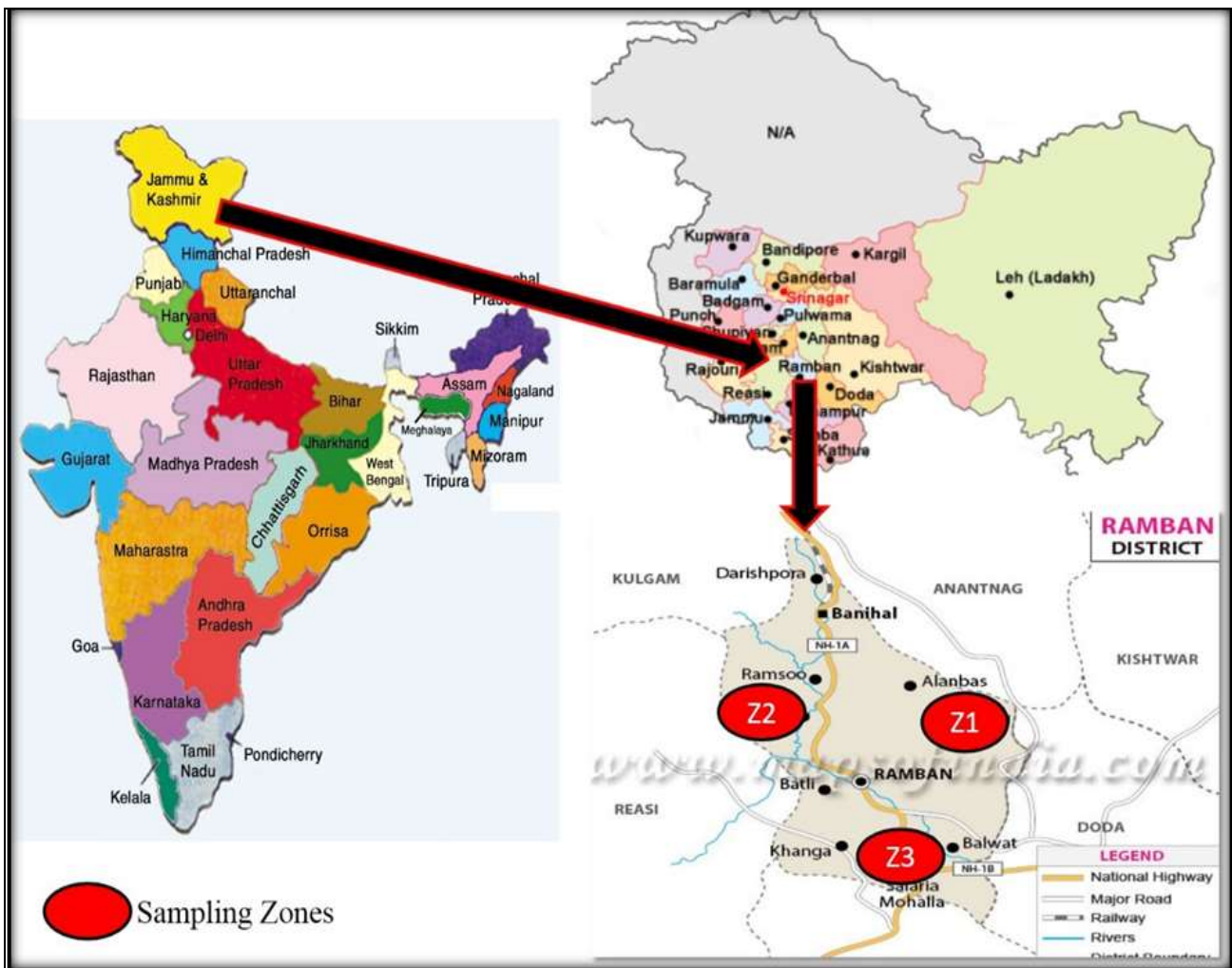


Figure 1: Map showing location of sampling zones

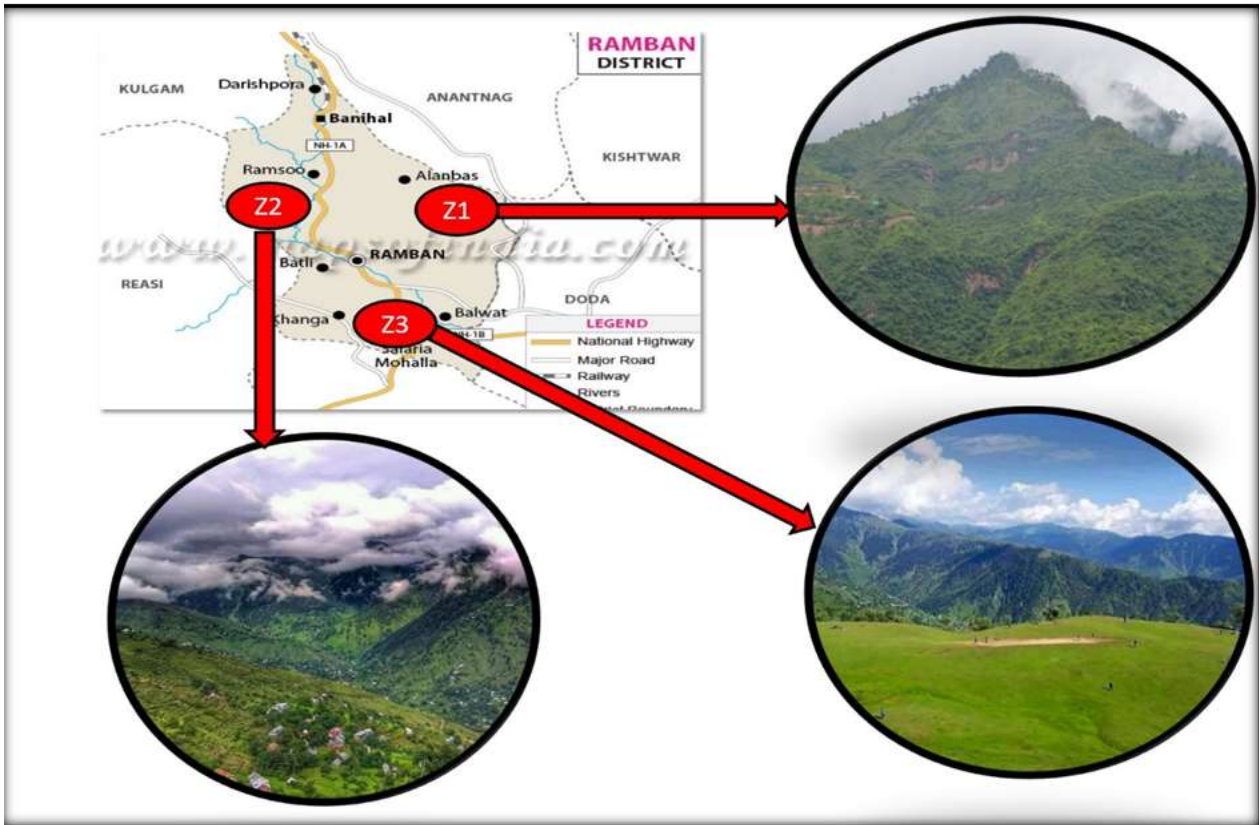


Fig 2: Map showing views of selected sampling zones

Sampling strategy

The study was conducted on monthly basis on all the three-sampling zones of district Ramban. The sampling process was completed in three days every To collect first-hand information on sources of drugs, foods and folk knowledge regarding Ethnobotany, intensive exploration will be made in the study area.

Collection of Medicinal plants

Field surveys of the entire study sampling zones were systematically planned and carried out in every month during the present research work. The specimens were pressed in blotting sheets with the help of wooden and iron presses in the field. In case of trees and shrubs, branches of suitable size in flowering or fruiting stages were taken. Field number for each collected sample was assigned. Larger specimens were folded in shape of V, N, or M. Flowers of the Himalaya, Flora Britanica and other local floras for confirmation of identity. Voucher specimens were collected for authentication of information and future reference. The technique for collection of plants was the same as suggested by (Jain and Rao, 1978) [17]. Classification and nomenclature was made with the help of various recent taxonomic literature. After ascertaining the correct identity of the plant specimens collected from the Ramban District J&K, the plant species were referred to their respective families. The genus within each family and species within each genus has been arranged alphabetically.

Identification of Medicinal plants

The plants were identified with the help of flora (Raizada and Saxena, 1978; Gaur, 1999; Duthie, 1903-1929). The identified medicinal plants were confirmed by consulting the herbaria of different standards keys.

Documentation of local traditional knowledge.

The info regarding the old knowledge, local uses of medicinal plants of the sampling area, their local names, parts used, purpose for which it is used, modes of administration were recorded through talks and conversation with elderly persons and local healers in villages. Most of the info was gotten from the nomadic tribes who spend most of the time with the agriculture practices. Field research covered survey, stay in area of work, discussions and consultations with well-informed persons and travel in forest region with local resource persons as per the guidelines given by (Jain, 2000) [14].

Result and discussion

The present research work based on ethno-botanical survey of medicinal plants from hilly area of District Ramban (J&K), mainly focus on survey and the parts used of recorded 79 medicinal plant species belonging to 38 families from the selected sampling zones. The results related to this data have been described in table 1. Thirty five families of medicinal plants included Asteraceae, Pteridaceae, Asparagaceae, Sapindaceae, Rosaceae, Amaranthaceae, Ranunculaceae, Apiaceae, Berberidaceae, Saxifragaceae, Betulaceae, Polygonaceae, Cannabaceae, Saxifragaceae, Boraginaceae, Solanaceae, Dioscoreaceae, Elaeagnaceae, Lamiaceae, Geraniaceae, Hypericaceae, Oleaceae, Juglandaceae, Cupressaceae, Brassicaceae, Phytolaccaceae, Pinaceae, Plantaginaceae, Salicaceae, Lythraceae, Ericaceae, Fabaceae, Rutaceae, Taxaceae, Urticaceae, Valerianaceae, Scrophulriaceae and Rhamnaceae was recorded in sampling zones 1. 10 species of Asteraceae – *Achillea mill folium*, *Arctium lappa* Linn, *Artemisia vestita*, *Bidens pilosa* Linn., *Bidense tripartita*, *Solidago virgaurea*, *Sonchus asper*, *Tagetes minuta*, *Taraxacum*

officinale, *Xanthium strumarium*. were present. 5 species of Rosaceae- *Agrimonia pilosa*, *Cotoneaster microphylla*, *Prunus armeniaca*, *Prunus persica*, *Rosa brunonii*, 4 species of Ranunculaceae- *Anemone vitifolia*, *Delphinium denudatum*, *Ranunculus laetus*, 3 species of Apiaceae - *Angelica glauca*, *Bupleurum falcatum*, *Selinum vaginatum*, 3 species of Berberidaceae- *Berberis aristate*, *Berberis lyceum*, *Podophyllum hexandrum* Royle. 4 species of Polygonaceae- *Bistorta amplexicaulis*, *Fagopyrum cymosum*, *Polygonum hydropiper*, *Rumex nepalensis*. Total 35 families were recorded from sampling zone 1 in which Asteraceae family was most dominant family (10 species) followed by Lamiaceae (6 species), Rosaceae (5 species), Ranunculaceae (3 species), Polygonaceae (4 species), Apiaceae (3 species), Berberidaceae (3 species) etc. *Pinus wallichiana* was recorded as dominant species (7%) followed by *Juglans regia* (6%), *Cedrus deodara* (5%), *Plantago lanceolata* (5%), *Valeriana jatamansi* (4%), *Ocimum basilicum* (3%) etc as in figure 3. Ethnomedicinal uses of 10 species belonging to 7 families being practiced by tribe's rural people of Pulwama District for the treatment of hair problems and 13 species belonging to 11 families for the treatment of boils (Chak *et al.*, 2009). Similar observation on ethno-botanical was recorded by (Chauhan, 1984) and reported uses of 85 species from Valley of Pabber in Himachal Pradesh. (Murty and Sharma, 1984) reported different use of some plants used as narcotic by tribals of Orissa included *Anthocephalus chinensis*, *Holarrhena antidysenterica* etc. Thirty eight families of medicinal plants included Asteraceae, Pteridaceae, Asparagaceae, Sapindaceae, Rosaceae, Amaranthaceae, Ranunculaceae, Apiaceae, Berberidaceae, Saxifragaceae, Betulaceae, Polygonaceae, Cannabaceae, Convolvulaceae, Boraginaceae, Solanaceae, Dioscoreaceae, Elaeagnaceae, Lamiaceae, Geraniaceae, Hypericaceae, Oleaceae, Juglandaceae, Cupressaceae, Brassicaceae, Phytolaccaceae, Pinaceae, Plantaginaceae, Salicaceae, Lythraceae, Ericaceae, Fabaceae, Rutaceae, Taxaceae, Urticaceae, Valerianaceae, Scrophulariaceae and Rhamnaceae was recorded in sampling zones 2. 13 species of Asteraceae – *Achillea millefolium*, *Ainsliaea aptera* DC., *Anaphalis contorta*, *Arctium lappa* Linn, *Artemisia vestita*, *Bidens pilosa* Linn., *Bidens tripartita*, *Siegesbeckia orientalis*, *Solidago virgaurea*, *Sonchus asper*, *Tagetes minuta*, *Taraxacum officinale*, *Xanthium strumarium* were present. 5 species of Rosaceae- *Agrimonia pilosa*, *Cotoneaster microphylla*, *Prunus armeniaca*, *Prunus persica*, *Rosa brunonii*, 1 species of Amaranthaceae - *Amaranthus spinosus*, 4 species of Ranunculaceae- *Anemone vitifolia*, *Delphinium denudatum*, *Thalictrum foliolosum*, *Ranunculus laetus*, 3 species of Apiaceae - *Angelica glauca*, *Bupleurum falcatum*, *Selinum vaginatum*, 3 species of Berberidaceae- *Berberis aristate*, *Berberis lyceum*, *Podophyllum hexandrum* Royle. 4 species of Polygonaceae- *Bistorta amplexicaulis*, *Fagopyrum cymosum*, *Polygonum hydropiper*, *Rumex nepalensis*, 6 species of Lamiaceae - *Elsholtzia fruticosa*, *Lamium album*, *Leonurus cardiaca*, *Mentha longifolia*, *Ocimum basilicum*, *Origanum vulgare*, was recorded in sampling zones 2. (Hosagaudhar and Henry, 1993) reported various type of the traditional use of plants for persuading sterility and increasing fertility in

women, by the tribes of the Rangana Betta in Mysore and reported that the roots of *Adiantum lunulatum* and *Nephrolepis cordifolia* are used in some cases of permanent sterility. The bark of stem (*Elaeocarpus tuberculatus* and *Scheichera oleosa*) is used to promote fertility in women. (Aminudin, 1996) reported different use of locally available medicinal plant wealth by the tribals of Bonar hills in district Sundargarh. Total 35 families were recorded from sampling zone 1 in which Asteraceae family was most dominant family (13 species) followed by Lamiaceae (6 species), Rosaceae (5 species), Ranunculaceae (4 species), Polygonaceae (4 species), Apiaceae (3 species), Berberidaceae (3 species) etc. *Pinus wallichiana* was recorded as dominant species (6%) followed by *Juglans regia* (5%), *Cedrus deodara* (4%), *Plantago lanceolata* (4%), *Capsella bursapastoris* (3%), *Valeriana jatamansi* (3%), *Taxus baccata* (2%), *Ocimum basilicum* (2%) etc. as in figure 1. (Saberwal, 1994) inspected the origins and ecological consequences of resource use by Gaddis herders of Himachal Pradesh, North India. (Singh, 1997) conveyed 58 ethno-medicinal plants used by Jaunsari people of Dehradun district, Uttaranchal. Ethnobotanical info on 104 Shola forest species of Kerala was documented by (Kumar, *et al.*, 1999) and also discussed various causes for the decline of medical plant. (Uniyal, 2003) documented 24 aromatic and medicinal plant species used by tribals in the Ketapurna Wildlife Sanctuary of Akola District of Maharashtra. (Singh, 2004) counted 90 aromatic and medicinal plant species of Western Himalayas and among these species, 47 were found to have medicinal value and majority of the plants (43%) are used to cure stomach problems. (Singh and Chauhan, 2005) recorded the medicinal plant habit, its characteristics, type and plant part used of 43 plant species belonging to 25 families and also their local use in curing different diseases in Lahaul valley. (Mitra and Mukherjee, 2005) reported the tradition of 27 ethnobotanical grasses belonging to 16 taxa from West Dinajpur District of West Bengal. Total 35 families were recorded from sampling zone 3 in which Asteraceae family was most dominant family (11 species) followed by Lamiaceae (6 species), Rosaceae (5 species), Ranunculaceae (3 species), Polygonaceae (3 species), Apiaceae (2 species), Berberidaceae (3 species) etc. *Juglans regia* was recorded as dominant species (7%) followed by *Capsella bursapastoris* (5%), *Cedrus deodara* (5%), *Pinus wallichiana* (5%), *Tagetes minuta* (4%), *Anaphalis contorta* (3%), *Ocimum basilicum* (3%), *Plantago lanceolata* (3%), *Ranunculus laetus* (3%) etc. as in figure 5. Alternate study suggested, (Bisht and Pundir, 2008) reported 67 medicinal plants used by the local people of Jaunsar-Bawar (Western Himalayas), Uttarakhand. (Dixit and Gopal, 2008) conducted ethno-medico-botanical studies on the plants used by tribals of Indo-Nepal Sub-Himalayan Terai region of Pilibhit District, Uttar Pradesh. 65 important medicinal plants along with parts used as medicine by these local have been documented and in an ethnobotanical survey, medicinal food plants of Manipur were identified (Srivastav *et al.*, 2009). Total 3 type of medicinal plant was collected in the form of Tree, Herb and Shrub in which Herb (46 number) was recorded as dominant followed by Tree (14 number) and Shrub (8 number) as in table 1 and figure 8.

Table 1: List of medicinal plant recorded from selected sampling zone along with their family and habit type

S.No.	Botanical Name	Zone 1	Zone 2	Zone 3	Family	Habit
1.	<i>Achillea millefolium</i>	P	P	A	Asteraceae	Herb
2.	<i>Adiantum venustum</i>	P	P	P	Pteridaceae	Herb
3.	<i>Asparagus filicinus</i>	P	P	P	Asparagaceae	Herb
4.	<i>Aesculus indica</i>	A	P	P	Sapindaceae	Tree
5.	<i>Agrimonia pilosa</i>	P	P	P	Rosaceae	Herb
6.	<i>Ainsliaea aptera DC.</i>	A	P	P	Asteraceae	Herb
7.	<i>Amaranthus spinosus</i>	P	P	P	Amaranthaceae	Herb
8.	<i>Anaphalis contorta</i>	A	P	P	Asteraceae	Herb
9.	<i>Anemone vitifolia</i>	P	P	P	Ranunculaceae	Herb
10.	<i>Angelica glauca</i>	P	P	P	Apiaceae	Herb
11.	<i>Arctium lappa Linn</i>	P	P	P	Asteraceae	Herb
12.	<i>Artemisia vestita</i>	P	P	P	Asteraceae	Herb
13.	<i>Berberis aristata</i>	P	P	P	Berberidaceae	Herb
14.	<i>Berberis lycium</i>	P	P	P	Berberidaceae	Herb
15.	<i>Bergenia ciliata</i>	P	P	P	Saxifragaceae	Herb
16.	<i>Bergenia stracheyi</i>	P	P	A	Saxifragaceae	Herb
17.	<i>Betula utilis</i>	P	P	P	Betulaceae	Tree
18.	<i>Bidens pilosa Linn.</i>	P	P	P	Asteraceae	Herb
19.	<i>Bidense tripartita</i>	P	P	P	Asteraceae	Herb
20.	<i>Bistorta amplexicaulis</i>	P	P	A	Polygonaceae	Herb
21.	<i>Bupleurum falcatum</i>	P	P	A	Apiaceae	Herb
22.	<i>Cannabis sativa</i>	P	P	P	Cannabaceae	Herb
23.	<i>Capsella bursapastoris</i>	P	P	P	Brassicaceae	Herb
24.	<i>Cedrus deodara</i>	P	P	P	Pinaceae	Tree
25.	<i>Celtis australis</i>	P	P	P	Cannabaceae	Tree
26.	<i>Corylus colurna</i>	P	P	P	Betulaceae	Tree
27.	<i>Cotoneaster microphylla</i>	P	P	P	Rosaceae	Shrub
28.	<i>Cuscuta reflexa</i>	P	P	P	Convolvulaceae	Herb
29.	<i>Cynoglossum glochidiatum</i>	P	P	A	Boraginaceae	Herb
30.	<i>Datura stramonium</i>	P	P	P	Solanaceae	Herb
31.	<i>Delphinium denudatum</i>	P	P	P	Ranunculaceae	Herb
32.	<i>Dioscorea deltoidea</i>	P	P	P	Dioscoreaceae	Herb
33.	<i>Elaeagnus umbellata</i>	P	P	P	Elaeagnaceae	Shrub
34.	<i>Elsholtzia fruticosa</i>	P	P	P	Lamiaceae	Shrub
35.	<i>Fagopyrum cymosum</i>	P	P	P	Polygonaceae	Herb
36.	<i>Geranium wallichianum</i>	P	P	P	Geraniaceae	Herb
37.	<i>Hypericum perforatum</i>	P	P	P	Hypericaceae	Herb
38.	<i>Jasminum humile</i>	P	P	P	Oleaceae	Shrub
39.	<i>Juglans regia</i>	P	P	P	Juglandaceae	Tree
40.	<i>Juniperus recurva</i>	P	P	P	Cupressaceae	Tree
41.	<i>Lamium album</i>	P	P	P	Lamiaceae	Herb
42.	<i>Leonurus cardiaca</i>	P	P	P	Lamiaceae	Herb
43.	<i>Mentha longifolia</i>	P	P	P	Lamiaceae	Herb
44.	<i>Nasturtium officinale</i>	A	P	P	Brassicaceae	Herb
45.	<i>Ocimum basilicum</i>	P	P	P	Lamiaceae	Herb
46.	<i>Origanum vulgare</i>	P	P	P	Lamiaceae	Herb
47.	<i>Phytolacca acinosa</i>	P	P	A	Phytolaccaceae	Herb
48.	<i>Pinus wallichiana</i>	P	P	P	Pinaceae	Tree
49.	<i>Plantago lanceolata</i>	P	P	P	Plantaginaceae	Herb
50.	<i>Plantago major</i>	P	P	P	Plantaginaceae	Herb
51.	<i>Podophyllum hexandrum Royle</i>	P	P	P	Berberidaceae	Herb
52.	<i>Polygonum hydropiper</i>	P	P	P	Polygonaceae	Herb
53.	<i>Populus ciliata</i>	P	P	P	Salicaceae	Tree
54.	<i>Prunus armeniaca</i>	P	P	P	Rosaceae	Tree
55.	<i>Prunus persica</i>	P	P	P	Rosaceae	Tree

56.	<i>Punica granatum</i>	P	P	P	Lythraceae	Shrub
57.	<i>Ranunculus laetus</i>	P	P	P	Ranunculaceae	Herb
58.	<i>Rhododendron arboreum</i>	P	P	P	Ericaceae	Tree
59.	<i>Robinia pseudoacacia</i>	A	P	A	Fabaceae	Tree
60.	<i>Rosa brunonii</i>	P	P	P	Rosaceae	Shrub
61.	<i>Rumex nepalensis</i>	P	P	P	Polygonaceae	Herb
62.	<i>Salix babylonica</i>	P	P	P	Salicaceae	Tree
63.	<i>Selinum vaginatum</i>	P	P	P	Apiaceae	Herb
64.	<i>Siegesbeckia orientalis</i>	A	P	A	Asteraceae	Herb
65.	<i>Skimmia laureola</i>	P	P	A	Rutaceae	Shrub
66.	<i>Solanum nigrum</i>	P	P	P	Solanaceae	Herb
67.	<i>Solidago virgaurea</i>	P	P	P	Asteraceae	Herb
68.	<i>Sonchus asper</i>	P	P	A	Asteraceae	Herb
69.	<i>Tagetes minuta</i>	P	P	P	Asteraceae	Herb
70.	<i>Taraxacum officinale</i>	P	P	P	Asteraceae	Herb
71.	<i>Taxus baccata</i>	P	P	P	Taxaceae	Tree
72.	<i>Thalictrum foliolosum</i>	A	P	A	Ranunculaceae	Herb
73.	<i>Thymus serpyllum</i>	P	P	P	Lamiaceae	Shrub
74.	<i>Trifolium repens</i>	P	P	P	Fabaceae	Herb
75.	<i>Urtica dioica</i>	P	P	P	Urticaceae	Herb
76.	<i>Valeriana jatamansi</i>	P	P	P	Valerianaceae	Herb
77.	<i>Verbascum thapsus</i>	P	P	P	Scrophulariaceae	Herb
78.	<i>Xanthium strumarium</i>	P	P	P	Asteraceae	Herb
79.	<i>Zizyphus mauritiana</i>	P	P	P	Rhamnaceae	Shrub
	Total	72	79	68		

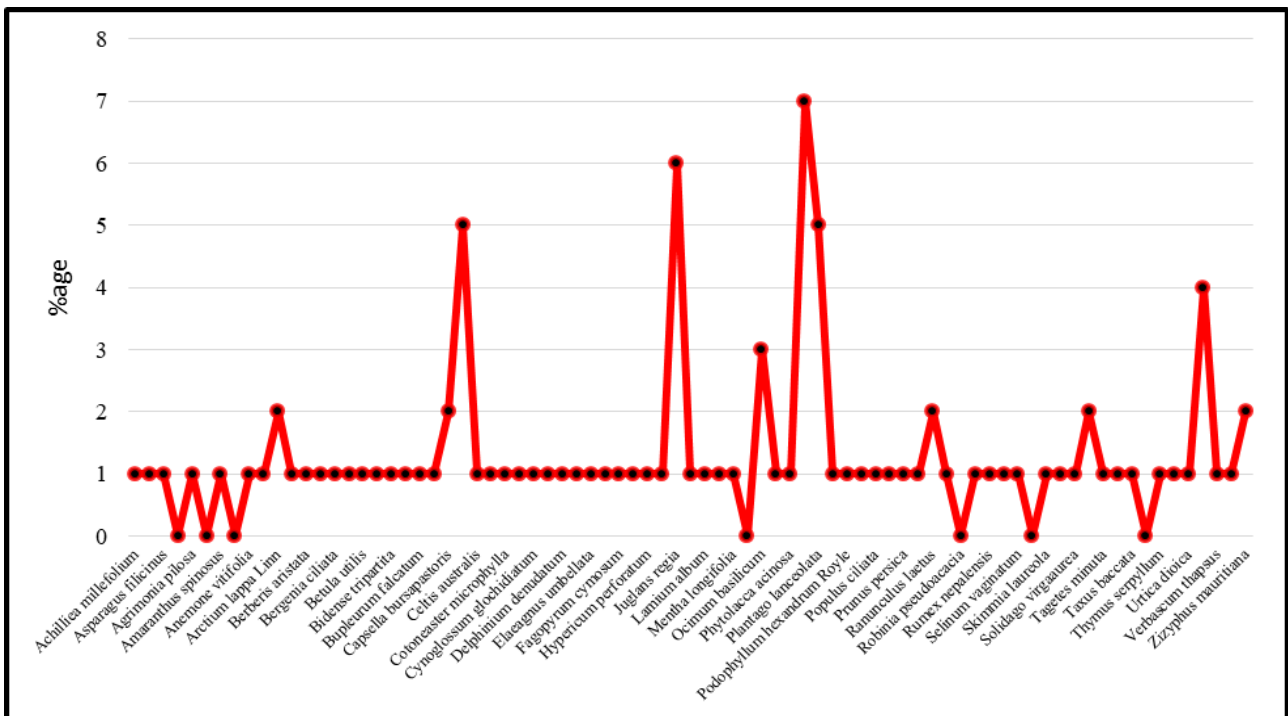


Fig 3: Line diagram showing the abundance (%age) of medicinal plants collected at sampling zone 1

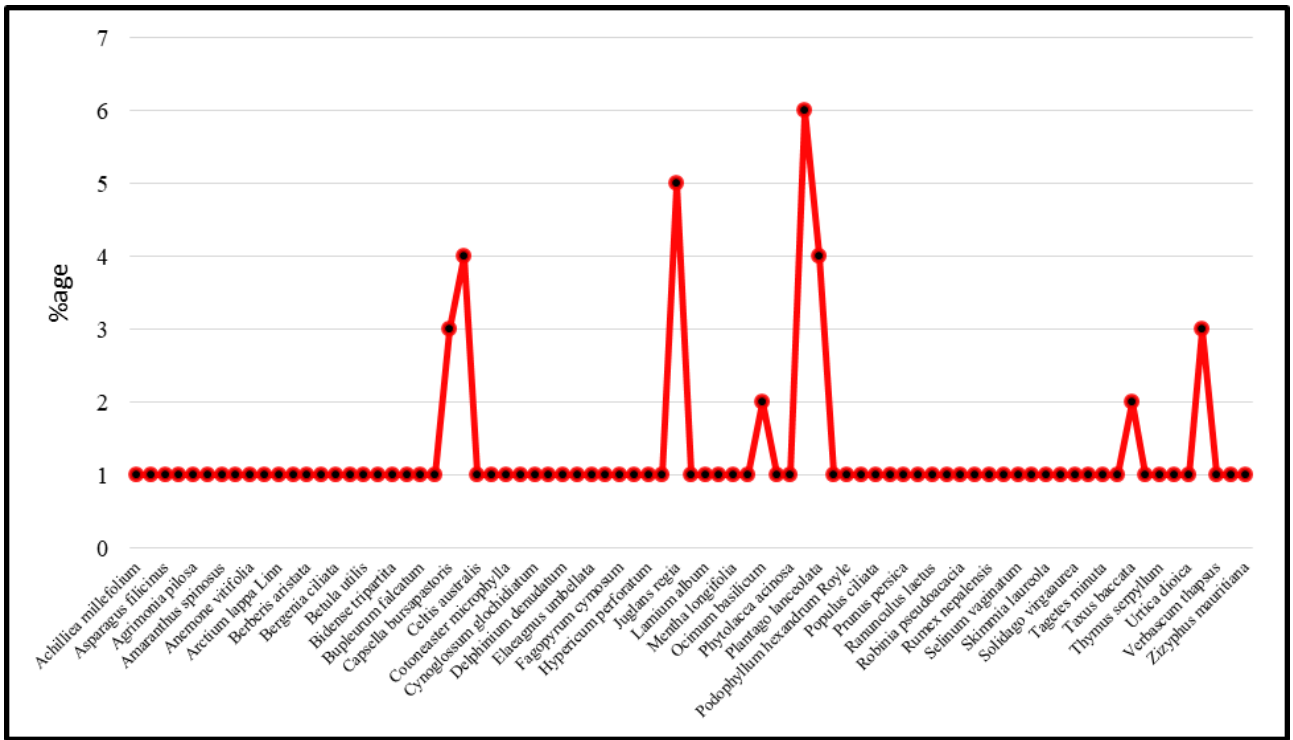


Fig 4: Line diagram showing the abundance (%age) of medicinal plants collected at sampling zone 2

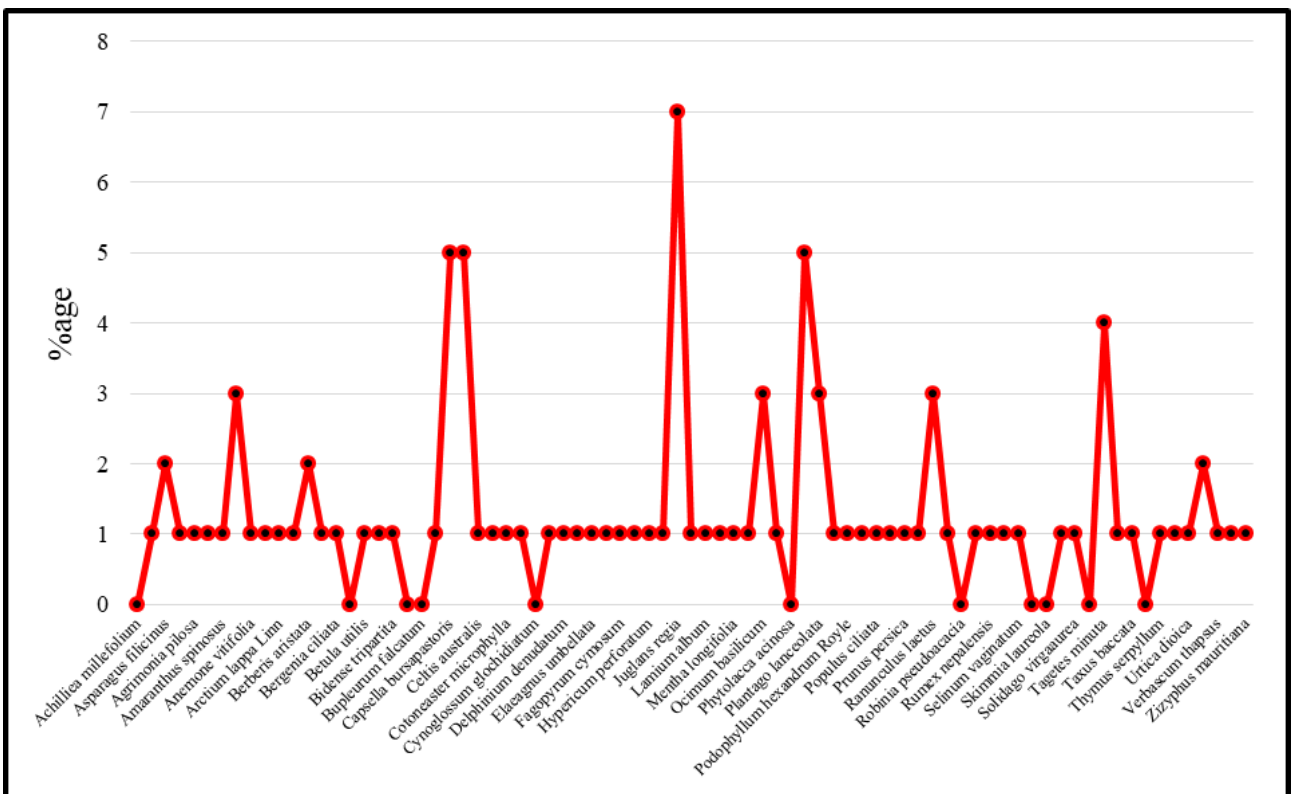


Fig 5: Line diagram showing the abundance (%age) of medicinal plants collected at sampling zone 3

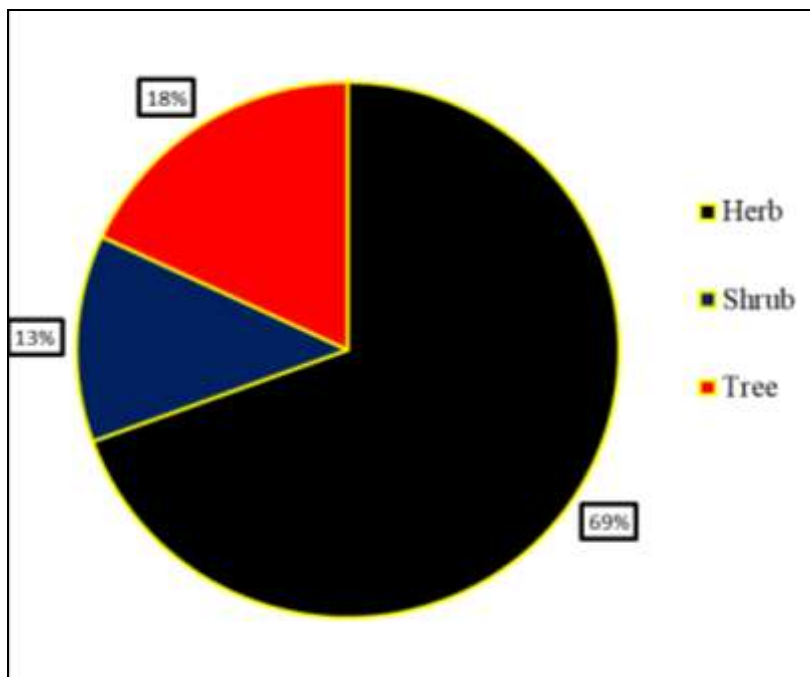


Fig 6: Pie diagram showing medicinal plant type at zone 1

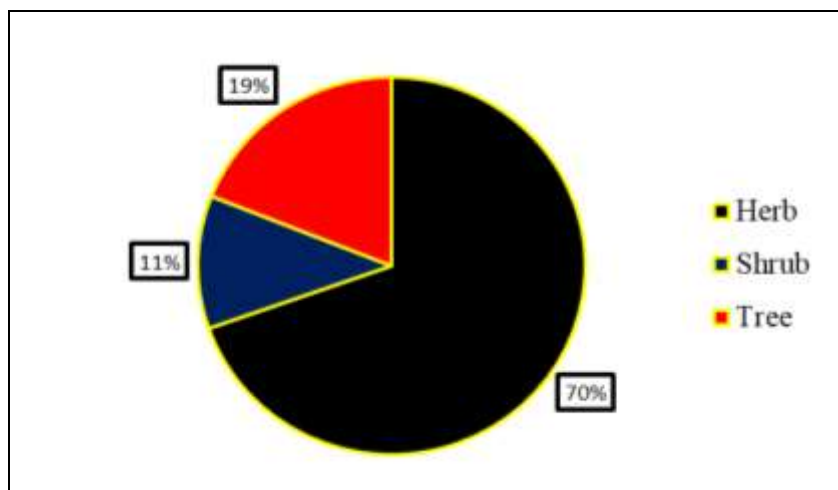


Fig 7: Pie diagram showing medicinal plant type at zone 2

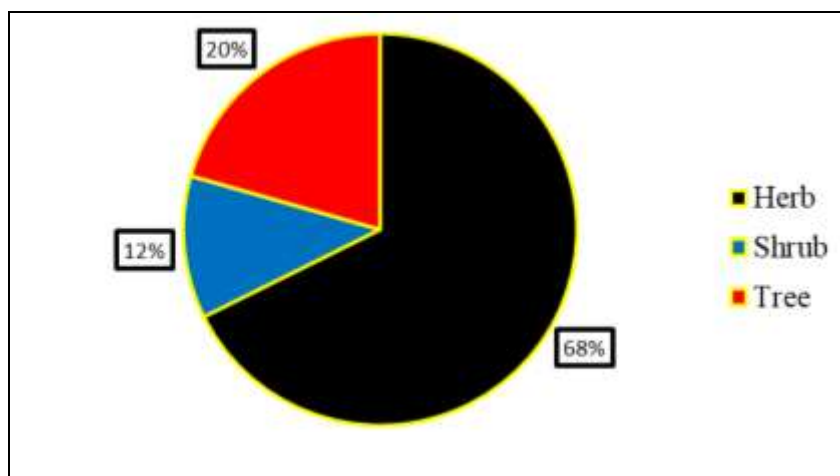


Fig 8: Pie diagram showing medicinal plant type at zone 3

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