

# Ethno-medicinal Survey of Area under Aritar Gram Panchayat Unit, East Sikkim, India

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**ABSTRACT-** Aritar is a hilly area and altitude of the area varies from 800–3000 meter. The region harbors different tribal communities like Lepcha, Bhutia, Sherpa, Limboo, Newar, Chettri, Bhaun, Rai, Tamang, Sunwar, and Gurung. Due to the diversity of different tribal communities, traditional healers of different groups are found in this area. Medicinal importances of different plants were recorded after conducting interviews with traditional healers, old man, women of different tribal communities of the area. The traditional medicinal uses of 50 plant species belonging to 38 families were reported in this study.

**Key-words-** Aritar, Bhaun, Bhutia, Chettri, East Sikkim, Ethnomedicinal, Gurung, Lepcha, Limboo, Newar, Rai, Sherpa, Sunwar, Tamang, Traditional healers

## INTRODUCTION

From time immemorial, man has been depending on Mother Nature for all his basic needs. The plant diversity existed around him always attracted his curiosity. Man's preliminary interest in plants started need for food, shelter and protection. Then he sought among them the remedies for injuries and diseases. From this arose the science of medicine. Rig Veda says that man learned to distinguish edible plants from poisonous plants by observing animals, which feed on different plants. Gradually he domesticated many of the wild plants for his basic needs. This domestication and large scale cultivation were the result of the identification of the immense potential uses of each plant. It was also the result of the constant man-plant interaction in the past. The result is that the new generation cannot identify some of the vital medicinal and food plants which are immediately available in their surroundings and are capable of solving many of their health problems without a medical consultation. Thus the ethno botanical knowledge of the people and the listing of the plants of a particular region are important tools for a better understanding of the human-environment interactions.

The present era, marked by a massive destruction of the diversity of plants, animals and human cultures, makes an unavoidable demand on the basic exploration of the plant diversity. This perhaps is the most important and most relevant contribution of the ethnobotanist<sup>[1]</sup>.

The term Ethnobotany comes from the greek word Ethnos, which means 'people', and Botane which means 'herb', so literally it would be translated as 'the study of people and herbs', which usually is generalized as 'the study of people and plants'. This term was coined by American taxonomic botanist John W. Harshberger as "The study of the utilitarian relationship between human beings and vegetation in their environment, including medicinal uses"<sup>[1]</sup>.

Today, according to the World Health organization (WHO), as many as 80% of the world's people depend on traditional medicine for their primary healthcare needs. There are considerable economic benefits in the development of indigenous medicines and in the use of medicinal plants for the treatment of various diseases. Due to less communication means, poverty, ignorance and un-availability of modern health facilities, most people especially rural people are still forced to practice traditional medicines for their common day ailments. Most of these people from the poorest link in the trade of medicinal plants. A vast knowledge of how to use the plants against different illnesses may be expected to have accumulated in areas where the use of plants is still of great importance<sup>[2]</sup>. Our country is commonly called as the 'Botanical Garden' of the world, owing to her wealth of herbal medicines. Medicinal plants constitute a precious resource for

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mankind. Since times immemorial, plants have been put to medicinal use by the traditional herbalists/Hakims, Vaidays, Ayurvedic practioners and the common man. The health care obtained by utilizing the plants, plant parts or plant compounds has always been held in high esteem by the Indian folk. But over the past few decades with the onslaught of industrialization, urbanization and due to dwindling medicinal resources, herbal health care has suffered a setback [3].

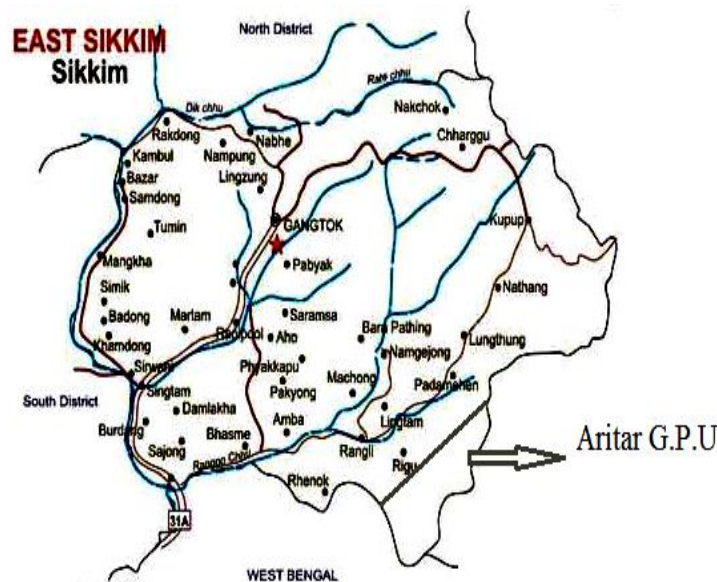
Aritar due to the diversity of different tribal communities, traditional healers of different groups are found in this area. Apart from medicinal, tribal people also used different plants and their products for religious use as fetish dolls, voodoo dolls and the smoking out of a possessing spirit or spell. The major villages come under the Aritar GPU are Lower khamdong, Upper khamdong, Agrigoan, Aritar, Middle aritar, Thungsung, Haticheray and Kingstone.

Medicinal and aromatic plants can play an important role in the subsistence livelihood enhancement rural people, especially women through an environmentally sustainable manner while maintaining the biodiversity of these natural products [4]. New approaches to biotechnology and conservation strategy can help preserve and utilizing the indigenous knowledge of medicinal plants for human kind [4].

**MATERIALS AND METHODS**

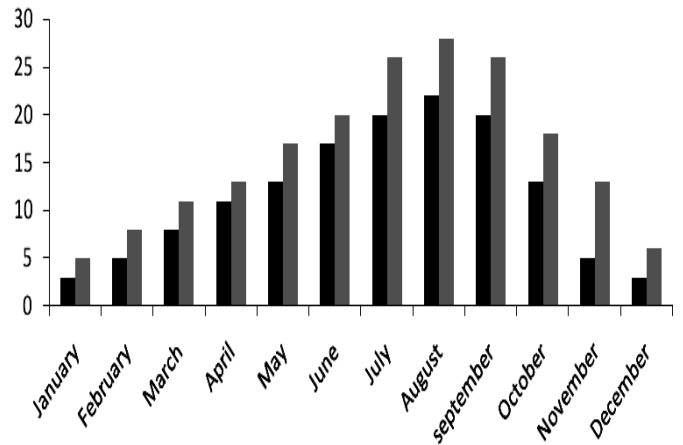
**Study area**

The present study was conducted in the Aritar GPU (Gram Panchayat Unit) of the district East Sikkim in duration of March 2016.



**Fig. 1:** Map showing Study area in East Sikkim, India

Geographical it resides at latitude 27°12'56"N 88°40'58" E- 27°12'60"N 88°40'62"E. The highest temperature of the area reaches up to 28°C in the month of August and lowest in the month of January. Seasonal variation in the temperature of the area is shown in Fig. 2.



**Fig. 2:** Seasonal variation in the temperature of the area

**Methodology**

For the present study, we followed Rao [5] method for collection of data from the study area. The traditional healers of different tribal communities were approached for the present study. Plants were collected from different sampling sites and identified with the help of available flora [6,7]. Data were obtained through interviews using both structures and semi structures questionnaires, group discussion and reviewing published and unpublished documents. Purposive sampling was used to interview in elder person, traditional midwives, folk healers in eight villages of Aritar G.P.U. The sample involves 32 elderly person, 11 traditional midwives and 22 folk healers. Medicinal importances of different plants were recorded after conducting interviews with traditional healers, old man, women of different tribal communities of the area. Identity of plant species was confirmed with the help of Professors of Department of Botany. Threatened status of the plant was recorded with the help of BSI survey [8].

**Data presentation**

For the presentation of the data in the present work we first provide accepted name of the plant species, family of the species, followed by the vernacular name of the plant, taxonomic description of the plant, medicinal importance of the plant and conservation status of the plant.

**RESULTS**

The traditional medicinal uses of 50 plant species belonging to 38 families were reported. Zingiberaceae and Leguminosae were the most-frequently cited family and followed by others. The most dominant life form was herbs, followed by shrub, tree and climber. The most used plant parts were fruit followed by root, leaves, stem, whole plant, seed, branches, flower, bark and latex. Medicinal plants of the area along with their uses are summarized in the below Table 1.

**Table 1:** Medicinal plants of area along with their scientific names Family, Vernacular names, Parts used and medicinal properties

| S.No. | Scientific name                         | Family           | Vernacular name | Parts use                     | Medicinal properties   |
|-------|---|------------------|-----------------|-------------------------------|--|
| 1.    | <i>Acorus calamus</i> L.                | Acoraceae        | Bojo            | Fruit                         | Used In Amenorrhea, Aphrodisiac, Asthma, Ayurvedic ,Colds, Congestion, Headache/Migraine, Sore Throat, Stop Smoking  |
| 2.    | <i>Aconitum heterophyllum</i>           | Ranunculaceae    | Bikhma          | Root                          | Used in vomiting   |
| 3.    | <i>Antidesma acidum</i>                 | Phyllanthaceae   | Archal          | Root and bark                 | Used in cheek boils and skin boils   |
| 4.    | <i>Aloe barbadensis</i>                 | Xanthorrhoeaceae | Ghew kumara     | Leaves                        | Used in burn portion, diabetes control, pressure control, facial cream   |
| 5.    | <i>Artemisia vulgaris</i> L.            | Compositae       | Titayapati      | Leaves                        | Used in nose bleeding, cutting parts to control blood  |
| 6.    | <i>Astilbe rivularis</i>                | Saxifragaceae    | Buro ookhati    | Root and leaves               | Used in bone fractured and body pain   |
| 7.    | <i>Amomum subulatum</i> Roxb            | Zingiberaceae    | Elaichi         | Fruit                         | Used for the treatment of indigestion, vomiting, biliousness, abdominal pains and rectal diseases  |
| 8.    | <i>Azadirachta indica</i> A.Juss.       | Meliaceae        | Nimpat          | Leaves as well as branches    | Used in fever, cough and cold  |
| 9.    | <i>Bauhinia variegata</i> L.            | Leguminosae      | Koirala         | Flower                        | Used in diabetes control   |
| 10.   | <i>Bombax ceiba</i>                     | Malvaceae        | Simal           | Root                          | Curing dysentery   |
| 11.   | <i>Betula cylindrostachya</i>           | Betulaceae       | Saurr           | Bark of tree and fruit        | Used in body pain, brushing teeth and coughing   |
| 12.   | <i>Betula utilis</i>                    | Betulaceae       | Vojpatra        | Leaf and bark                 | Used in fever  |
| 13.   | <i>Brassica alba</i>                    | Brassicaceae     | Sarsoo          | Fruit                         | Smoke used in killing hair pest  |
| 14.   | <i>Brassica juncea</i> L.               | Brassicaceae     | Rayoo sag       | Oil from fruit                | Used in body pain  |
| 15.   | <i>Bergenia ciliata</i> (Haw.) Sternb.  | Saxifragaceae    | Pakhan bedd     | Leaf and root                 | Used in fractured in bone, paste use in body pain  |
| 16.   | <i>Carica papaya</i> L.                 | Caricaceae       | Mewa            | Fruit, root, latex and leaves | Used in pressure control, sugar control, cleaning of kidney, widely in folk medicine for many ailments: the juice for warts, corns, cancers, tumors, and thickened skin; for cancers of the uterus |
| 17.   | <i>Calotropis gigantea</i> (L.) Dryand. | Apocynaceae      | Aak             | Leaf                          | Used in swelling fractured of body parts   |

|     |  |                  |              |                           |  |
|-----|--|------------------|--------------|---------------------------|--|
| 18. | <i>Cissus quadrangularis</i> L.        | Vitaceae         | Harjora      | Whole plant, everything   | Paste used in fractured bone will cure within 15 days  |
| 19. | <i>Cannabis sativa</i> L.              | Cannabaceae      | Ganja bhanga | Whole plant               | Used in Stomach ache, mouth disease, dysentery, wound  |
| 20. | <i>Drymaria cordata</i>                | Caryophyllaceae  | Abhijal      | Whole plant               | Paste is applied externally on fractured bone and bandaged with the help of cotton cloth   |
| 21. | <i>Entada phaseoloides</i>             | Leguminosae      | Pangroo      | Fruit                     | used for animals to cure insect in their stomach   |
| 22. | <i>Eupatorium cannabinum</i> L.        | Compositae       | Banmara      | Leaves                    | Stop bleeding, is given in fever, vomiting, dysentery  |
| 23. | <i>Fraxinus floribunda</i>             | Oleaceae         | Lakuri       | Bark                      | Paste used in body pain and bone fractured   |
| 24. | <i>Fragaria nubicola</i>               | Rosaceae         | Bhui Ainselu | Leaves and fruit          | Treatment for diarrhea and dysentery   |
| 25. | <i>Kaempferia rotunda</i>              | Zingiberaceae    | Bhuee champa | Whole plant               | Used in fractured of bone  |
| 26. | <i>Litsea cubeba</i>                   | Lauraceae        | Sil timbur   | Leaf, root and fruit      | Used in Stomach ache, headache and fractured in bone   |
| 27. | <i>Mentha viridis</i> L.               | Lamiaceae        | Pudina       | Root and leaf             | Is given in fever, vomiting, dysentery   |
| 28. | <i>Mimosa pudica</i> L.                | Leguminosae      | Buhari Jhar  | Stem, root                | Used in heart problem  |
| 29. | <i>Mesua ferrea</i> L.                 | Calophyllaceae   | Nageswari    | Fruit                     | used in devils soul and producing smoke  |
| 30. | <i>Myristica fragrans</i>              | Myristicaceae    | Jaidana      | Fruit                     | Used to fall asleep while in sick  |
| 31. | <i>Nephrolepis cordifolia</i> L.       | Nephrolepidaceae | Pani amla    | Fruit                     | used in cleaning blood and paste of fruit used in removing wound patches from skin   |
| 32. | <i>Neopicrorhiza scrophulariiflora</i> | Plantaginaceae   | Kutkii       | Root                      | Used in high fever   |
| 33. | <i>Nyctanthes arbor-tristis</i> L.     | Oleaceae         | Parijat      | Leaf                      | Paste liquid used in ear pain  |
| 34. | <i>Oroxylum indicum</i> L.             | Bignoniaceae     | Totalla      | Seed, bark, Fruit, Flower | Used medicinally for alleviating pain, in an antiphlogistic medicine, jaundice, arthritic and rheumatic problems, gastric ulcers, tumors, respiratory diseases, diabetes, and diarrhea and dysentery |
| 35. | <i>Ocimum tenuiflorum</i> L.           | Lamiaceae        | Tulsi        | Leaf, seed                | Used in fever, cold and cough  |

|     |                                  |                |             |                       |  |
|-----|----------------------------------|----------------|-------------|-----------------------|--|
| 36. | <i>Piper longum</i> L.           | Piperaceae     | Pipla       | Fruit                 | Used in cold and cough   |
| 37. | <i>Pteris biaurita</i> L.        | Pteridaceae    | Thado unew. | Stem                  | Used in cut and wounds   |
| 38. | <i>Rauwolfia serpentina</i> L.   | Apocynaceae    | Sarpaganda  | Root                  | Paste used in brain damage   |
| 39. | <i>Rhododendron arboreum</i>     | Ericaceae      | Guras       | Flower                | treatment of diarrhea and dysentery  |
| 40. | <i>Swertia chirayita</i>         | Gentianaceae   | Chirattoo   | Branch, root and stem | used in fever  |
| 41. | <i>Thysanolaena latifolia</i>    | Poaceae        | Amlisso     | Root                  | Paste applied to cheek boils   |
| 42. | <i>Tinospora smilacina</i>       | Menispermaceae | Gurjoo      | Root                  | Used in pressure control and diabetes control                              |
| 43. | <i>Terminalia chebula</i>        | Combretaceae   | Haroo       | Fruit                 | Used in throat pain  |
| 44. | <i>Terminalia bellirica</i>      | Combretaceae   | Baroo       | Fruit                 | Cure gastric problem   |
| 45. | <i>Tectaria macrodonta</i>       | Tectariaceae   | Kali nigro. | Root                  | Paste used in pails disease  |
| 46. | <i>Trachyspermum ammi</i>        | Apiaceae       | Juwanu      | Fruit                 | Caur tumor   |
| 47. | <i>Urtica dioica</i>             | Utricaceae     | Sisnu       | Roots                 | Paste of roots is applied externally to bone fractures with a cotton cloth |
| 48. | <i>Viscum album</i>              | Santalaceae    | Hard joda   | Whole plant           | Used in fractured of bone  |
| 49. | <i>Zanthoxylum acanthopodium</i> | Rutaceae       | Jat timbur  | Fruit                 | Used in throat pain  |
| 50. | <i>Zingiber officinale</i>       | Zingiberaceae  | Aduwa       | Rhizome               | For treatment of cold and cough  |

## DISCUSSION

The Aritar G.P.U people have a close relationship with nature. They are dependent upon the forest for food, fruits, fodder, and medicinal plants for their healthcare. Local people of the region, especially older age people and women heavily use these traditionally available medicinal plants to fulfill their healthcare needs. These plants are easily available and plant products are less expensive and have no side effects as compared to modern medicine. The present situation of traditional knowledge regarding to medicinal plants everywhere is an issue of deep anxiety as the traditional knowledge is gradually declining and disappearing from the countryside. Deforestation, impact of

tourism on the natural vegetation of the region, population explosion, and heavy construction is responsible for declining practices of the traditional medicine in the area.

Earlier, a recent report of Government of Sikkim <sup>[9]</sup> enumerated total number of medicinal plants of Sikkim. In this report, a total of 160 medicinal and aromatic plants grown and found in Sikkim has been discussed, which were prescribed or used by the different traditional medicine systems of the Sikkim. Sherpa *et al.* <sup>[10]</sup> also studied and enumerated total number of medicinal plant of Sikkim. They listed the total of 123 medicinal plants used in different traditional system of medicine in Sikkim state.





**a: *Thysanolaena latifolia***



**b: *Eupatorium cannabinum***



**c: *Kaempferia rotunda***



**d: *Amomum subulatum***



**e: *Aloe barbadensis***

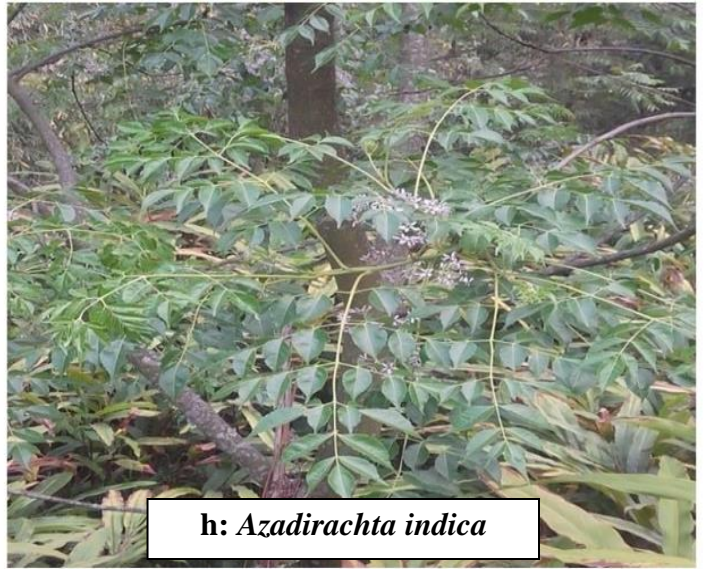


**f: *Tinospora smilacina***





**g:** *Pteris biaurita*



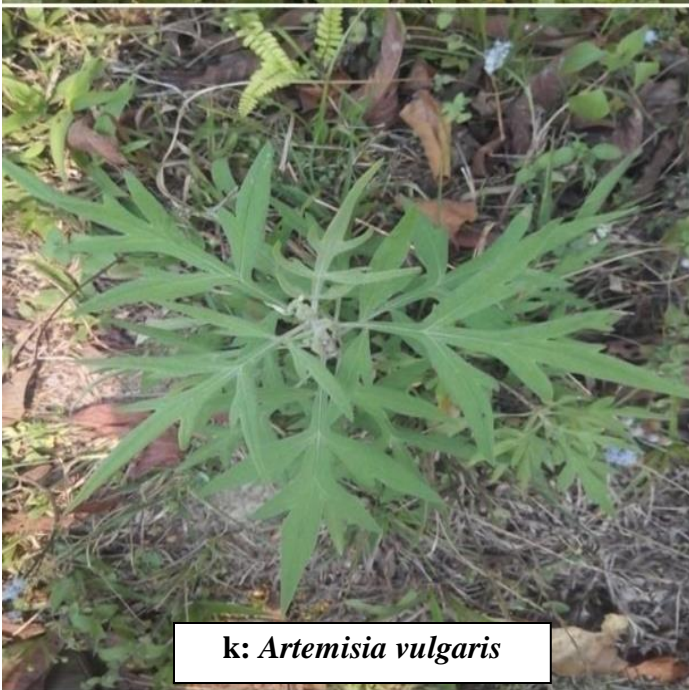
**h:** *Azadirachta indica*



**i:** *Mentha viridis*



**j:** *Bergenia ciliata*

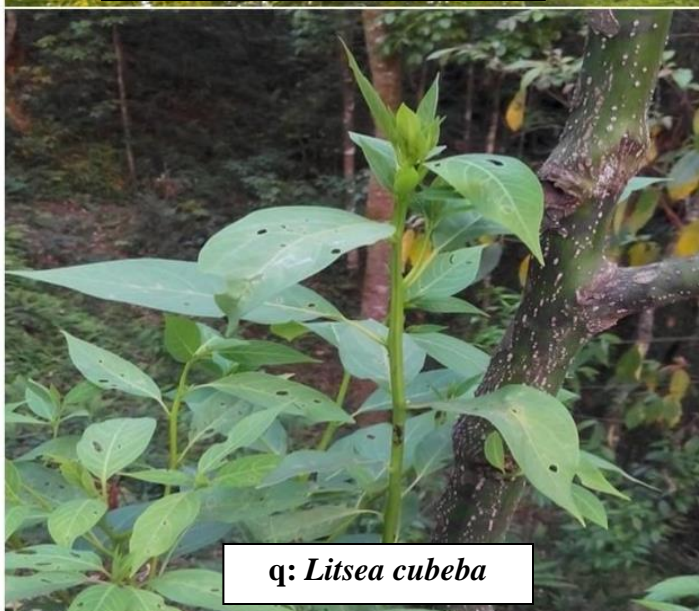
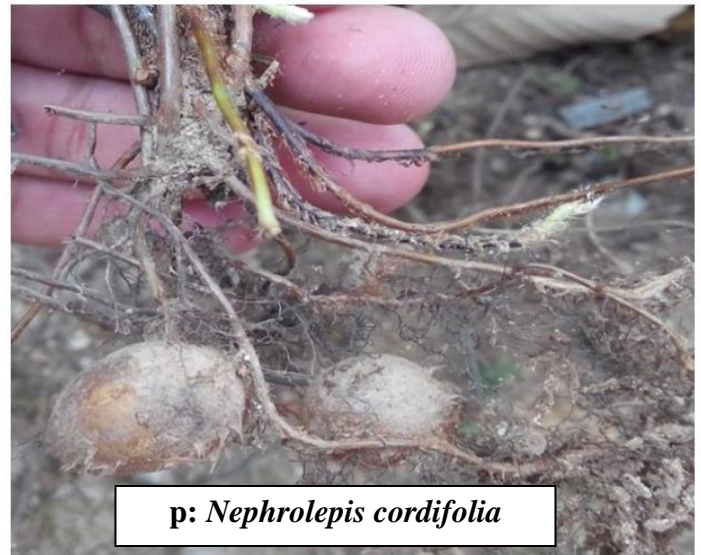


**k:** *Artemisia vulgaris*



**l:** *Bauhinia variegata*

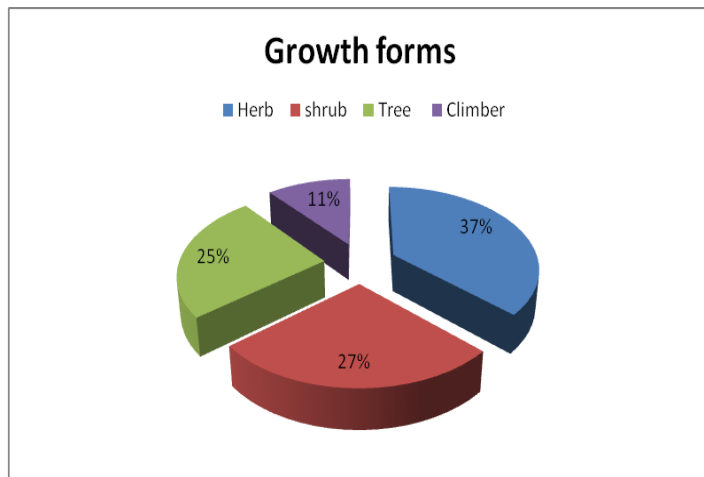




**Fig. 3 (a-r):** Some Medicinal plants of Area under Aritar GPU, East Sikkim, India



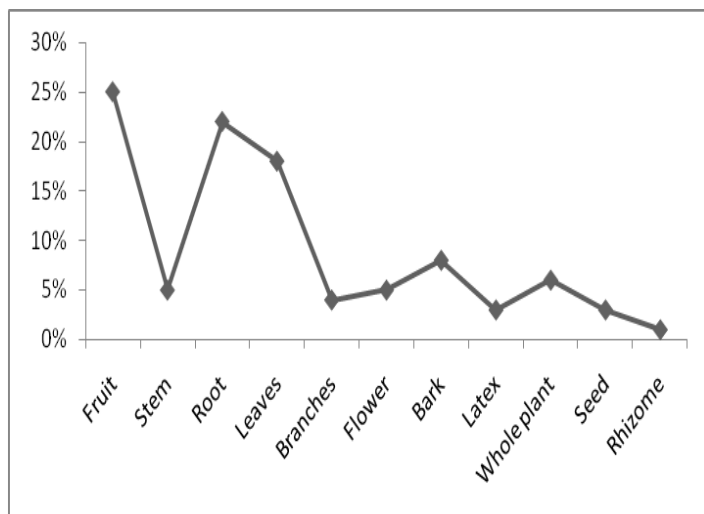
During the present study, it was found that 19 (37%) more herbs were used by tribal people in the study area than shrubs 14 (27%), trees 13 (25%), and climber 4 (11%) is shown in Fig. 4.



**Fig. 4:** Showing growth forms from study data

Among different plant parts used by the people of the study area, where fruit 19 (25%) followed by root 17 (22%), leaves 14 (18%), bark 6 (8%), whole plant 5 (6%), stem 4 (5%), flower 4 (5%), branches 3 (4%), latex 2 (3%), seed 2 (3%), and rhizome 1 (1%) is shown in Fig. 5.

The results also revealed that many wild species were growing under pressure from various anthropogenic factors, thus public awareness and community based management need to be encouraged at all levels to maintain the biodiversity and the ethno medicinal knowledge of the Aritar G.P.U people.



**Fig. 5:** Graph showing plant parts used in study data

## CONCLUSIONS

The results of the study revealed that there is high diversity of medicinal plants and traditional knowledge of medicinal plants among people of Aritar G.P.U. The preservation of this knowledge appears to be the result of continued reliance of the local communities on the medicinal plants. However, the knowledge of herbal remedies is held by elder men and women of between 41–70 years of age. The decline in the use of medicinal plants by the younger generation may gradually lead to the fading away of the indigenous knowledge associated with the plants.

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