



Indigenous uses of medicinal plants in North Garo Hills, Meghalaya, NE India

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Abstract

The present study was conducted to highlight the indigenous uses of medicinal plants by Garo tribe in North Garo Hills, Meghalaya. Villagers and traditional healers (Ojhas) were consulted to gather information on medicinal plants. In the present study a total of 66 medicinal plants belonging to 61 genera and 40 families were documented and information on local names, scientific names, family, habit, plant parts used and medicinal uses of these plants were also given. Trees were the main sources of medicinal plants followed by shrubs, climbers and herbs. The recorded plant species were used for common ailments like headache, stomach problems, cold, cough and fever, jaundice, skin diseases, blood pressure and epilepsy etc. Bark and leaves were mostly used plant parts, followed by roots, fruits and seeds for curing diseases. The recorded plants were consumed orally in the form of juice or decoction. It was also observed that knowledge of medicinal plants was confined only to elder people and traditional healers (ojhas) and source of extraction of these valuable resources were nearby forests.

Keywords: Garo tribe, medicinal plants, indigenous uses, bark, trees.

Introduction

India is rich in its biological resources and considered as one of 17 mega biodiversity countries of the world. The Eastern Himalayas, Western Ghats and Indo-Burma Region are the concentrated hotspots of India. Presently, it has rich vegetation of more than 45,000 plant species of which 15,000-20,000 plants have medicinal values. Out of these only 7000-7500 plants are used for medicinal purpose by traditional communities^{1,2}. The report of World Health Organization shows that 80% of world population still depend on traditional medicines as they are efficient, safe, cost effective, affordable and easily accessible by the poor.

North-East India is comprised of eight states namely Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim and supports 50% of India's biodiversity¹. In addition, this region is also a home of 130 major tribal communities³. Meghalaya, the abode of clouds, is one of eight sister states of NE India. It is bounded by Assam on north and north-east and Bangladesh on south and south-west. It has geographical area of 22,429 km² with 9,496 km² as recorded forest area⁴. In terms of tribal composition, Garo Hills, Khasi Hills and Jaintia Hills are three main regions of Meghalaya. Garo tribe comprises the second largest population of tribes after khasi and belongs to Tibeto-Burman sub family of Tibet Chinese linguistic group. While, Khasi and Jaintia tribe belong to Monkhemer culture of Austroic dialect³. Meghalaya is rich in its floral diversity and contributes about 18% of total flora of country. There are about 3128 species of flowering plants in the state of which 40% of total flora of state is endemic⁵. As per the

report of state level Planning Commission, Meghalaya is endowed with 850 medicinal plants, of which 377 species are used by majority of people for their primary health care needs⁶. The indigenous people have vast knowledge of their plant resources as medicines and have been using over the years. The available literature reveals that a very few studies have been conducted on medicinal uses of plants from Garo Hills⁷. Therefore, the present work is an attempt to document the information on indigenous medicinal uses of plants by Garo tribe of North Garo hills.

Material and Methods

Study site: The present study was carried out in Block Bajengdoba of North Garo Hills district of Meghalaya. The geographical co-ordinates of this district are 25°55'0" North and 90°31'0" East. It is bounded by Assam on north, East Garo Hills on south, West Khasi Hills on east and West Garo Hills on west side (Figure-1). Three villages namely Omorful, Torikha and Upper Bajengdoba dominated by Garo tribes were selected for the present study.

Survey and data analysis: The survey was conducted in selected villages with suitable questionnaires. Information on local names of plants, uses of plants and plant parts used were collected through personal interviews among villagers of all age group (except below 18 years) without any gender distinction. Special attention was paid to record information from elder people and traditional healers (Ojhas) having immense knowledge of plants in local dialect and well versed with their use.

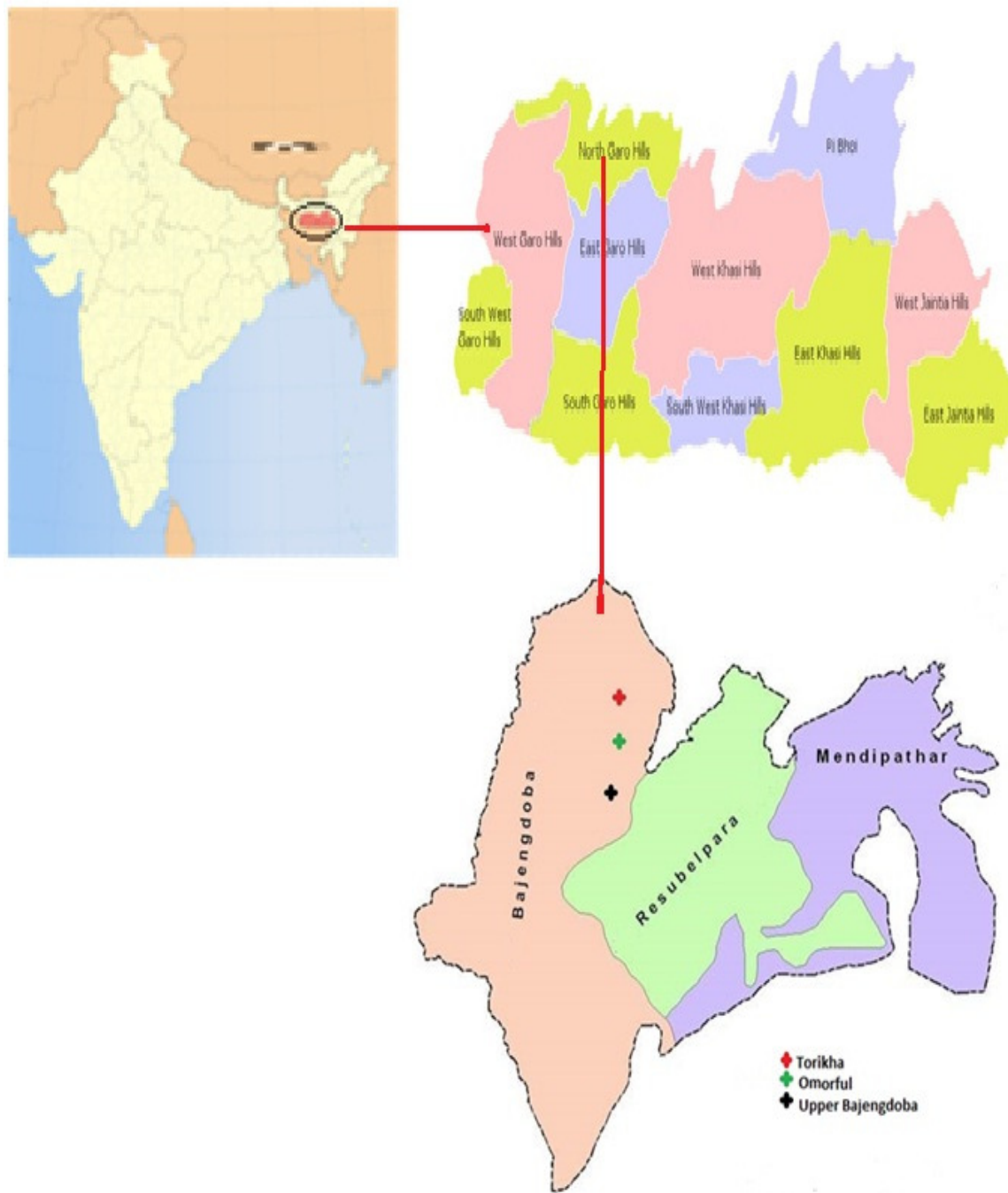


Figure -1
Location Map of Bajengdoba Block showing study area in North Garo Hills District of Meghalaya

The plants were observed in natural habitat with the help of villagers and their photographs were taken. Plant parts were also collected and pressed for herbarium preparation. These were identified by authors, faculty, Department of Forestry, NERIST and by consulting existing literature^{8,9}. A random sampling technique was used and a total of 60 questionnaires were distributed among men and women.

Results and Discussion

A total of 66 medicinal plants having 61 genera and 40 families are recorded in the present work. The information on scientific names, local names, families, habits, plant parts used and therapeutic uses of recorded plants are given alphabetically in table 1 and the photographs of some plants are given in figure 2-28.

Table-1

List of medicinal plants used against various ailments by villagers and traditional healers of North Garo Hills, Meghalaya

Scientific Name	Local Name	Family	Habit	Part Used	Ailments
<i>Aegle marmelos</i> (Linn.) Corr	Sempri	Rutaceae	Tree	Leaves, Bark	Gastric problem, dysentery
<i>Allbizia odoratissima</i> (Linn. f.) Benth	Siso	Fabaceae	Tree	Bark	Headache, dizziness
<i>Alstonia scholaris</i> (Linn.) R. Br.	Sokson	Apocynaceae	Tree	Leaves, Bark	Fever, epilepsy and respiratory diseases
<i>Anacardium occidentale</i> Linn.	Cashewnut	Anacardiaceae	Tree	Bark, Fruit and Leaves	Inflammation, urinary disorder
<i>Annona squamosa</i> L.	Ata bol	Anonaceae	Tree	Bark, Leaves, Roots, Unripe fruits and Seed	Indigestion
<i>Antidesma acidum</i> Retz.	Arobakh	Euphorbiaceae	Tree	Leaves	Blood pressure
<i>Aristolochia clematitis</i> L.	Esamul	Aristolochiaceae	Climber	Leaves, Roots	Snakebite
<i>Artocarpus gomezianus</i> Wall. Ex.Trecul	Armum	Moraceae	Tree	Bark	Headache, dizziness
<i>Bauhinia variegata</i> L.	Megong	Fabaceae	Tree	Leaves	Blood pressure
<i>Bombax ceiba</i> L.	Bolchu	Bombaceae	Tree	Leaves	Diarrhoea
<i>Bridelia retusa</i> Spreng.	Khasi	Euphorbiaceae	Tree	Bark and Fruit juice	Wound healing and earache
<i>Calotropis procera</i> (Linn.) R. Br.	Memangtebrong	Apocyanaceae	Shrub	Bark, Leaves, Roots, Latex and Flower	Paralysis, leprosy, skin diseases and cough
<i>Carica papaya</i> L.	Modipol	Caricaceae	Tree	Root, Latex and Seed	Dogbite, earache
<i>Cassia fistula</i> L.	Snaru	Fabaceae	Tree	Bark	Stomach pain
<i>Cestrum nocturnum</i> L.	Gamini	Solanaceae	Shrub	Bark, Leaves	Toothache and headache
<i>Cinnamomum tamala</i> Fr. Nees	Tejpatta	Lauraceae	Tree	Bark	Urinary disorder
<i>Cissus quadrangularis</i> L.	Haljora	Vitaceae	Climber	Whole plant	Sprain and piles
<i>Clerodendrum glandulosum</i> Coleb.	Dongam	Verbanaceae	Shrub	Leaves	Blood pressure
<i>Crataeva nurvala</i> Buch. Ham.	Jongchia	Oleaceae	Tree	Bark, Leaves	Skin disease and toothache
<i>Crecentia cujete</i> L.	Rutdibol	Bignoniaceae	Tree	Bark	Headache
<i>Cuscuta reflexa</i> Roxb,	Dodimit	Convolvulaceae	Climber	Leafless stem	Jaundice and headache
<i>Crypteronia paniculata</i> Blume.	Mosuginsep	Crypteroniaceae	Tree	Bark, Leaves	Snake bite and wound healing
<i>Derris robusta</i> (Roxb. Ex DC.) Benth.	Kakharu	Fabaceae	Tree	Leaves	Headache
<i>Dillenia indica</i> Linn.	Tedike	Dilleniaceae	Tree	Bark, Leaves	Diarrhoea
<i>Dillenia scabrella</i> Roxb.	Agatchi	Dilleniaceae	Tree	Bark	Snake bite
<i>Drimycarpus racemosus</i> (Roxb.) Hk. f.	Babari	Anacardiaceae	Tree	Bark, Leaves	Skin diseases
<i>Duabanga grandiflora</i> (Roxb.ex DC) Walp.	Bolchim	Lythraceae	Tree	Bark, Leaves, Root and Flower	Headache, epilepsy
<i>Erythrina stricta</i> Linn.	Mandal	Fabaceae	Tree	Leaves, Root	Asthama, epilepsy
<i>Ficus hispida</i> L.	Thiwek	Moraceae	Tree	Root	Dysentary
<i>Firminia colorata</i> (Roxb.)R. Br.	Walgem	Sterculiaceae	Tree	Bark, Leaves	Wound healing
<i>Gmelina arborea</i> Roxb.	Gambal	Verbanaceae	Tree	Bark, Leaves	Cough, snakebite
<i>Grevillea robusta</i> A. Cunn,	Silver oak	Proteaceae	Tree	Bark, Leaves	Headache, dizziness
<i>Hibiscus rosa-sinensis</i> word L	Jova	Malvaceae	Shrub	Flower	Headache, abortion

<i>Jatropha curcas</i> L.	Banglagash	Euphorbiaceae	Shrub	Stem	Burn
<i>Jatropha gossypifolia</i> L.	Banglagash	Euphorbiaceae	Shrub	Latex	Dysentary
<i>Justicia gendarussa</i> Linn.	Dojagipe	Acanthaceae	Shrub	Whole Plant	Cough, throat infection and sprain
<i>Lagerstroemia parviflora</i> Roxb.	Sidai	Lythraceae	Tree	Bark, Leaves	Skin diseases
<i>Lagerstroemia speciosa</i> L. Pers.	Asari	Lythraceae	Tree	Bark, Root	Dysentary, Jaundice
<i>Litchi chinensis</i> Sonn.	Letchu	Sapindaceae	Tree	Bark, Root, Seed	Stomach and throat pain
<i>Lygodium japonium</i> Thunb. Ex Murr.	Ruatip	Lygodiaceae	Fern	Whole Plant	Wound healing
<i>Mangifera indica</i> L.	Tekatchu	Anacardiaceae	Tree	Bark, Seed	Jaundice and itching
<i>Macropanax undulatus</i> (Wall ex D. Don) Seem	Samborong	Araliaceae	Tree	Leaves	Headache
<i>Melia azedarach</i> L.	Neem	Meliaceae	Tree	Leaves	Fever and stomach pain
<i>Mikania micrantha</i> H. B. K.	Sampangguri	Asteraceae	Climber	Leaves	Wound healing
<i>Mussaenda glabra</i> Vahl.	Sonarupa	Rubiaceae	Shrub	Flower, Leaves, Root	Jaundice, leprosy and fever
<i>Oryza sativa</i> L.	Minil	Poaceae	Grass	Stem	Gall bladder stone and urinary disorder
<i>Oroxylum indicum</i> (Linn.) Vent.	Khiring	Bignoniaceae	Tree	Bark, Flower, Leaves, Root and Seed	Fever and jaundice
<i>Phlogacanthus thyrsoiflorus</i> (Roxb.) Nees	Ellot	Acanthaceae	Shrub	Bark and Leaves	Cough, fever, jaundice and gastric problem
<i>Piper betel</i> Linn.	Pan	Piperaceae	Climber	Leaves	Dysentary
<i>Piper longum</i> L.	Golmoris	Piperaceae	Climber	Fruit	Fever and cough
<i>Plumbago indica</i> L.	Achitragitchak	Plumbaginaceae	Shrub	Leaves, Root	Headache
<i>Premna latifolia</i> Roxb.	Dukhemi	Vrebanaceae	Tree	Leaves Bark	Diabetes
<i>Prunus persica</i> Linn.	Bispol	Rosaceae	Tree	Leaves	Skin diseases
<i>Sabia lanceolata</i> Colebr.	Madri	Sabiaceae	Tree	Bark, Leaves, Root	Epilepsy
<i>Sida acuta</i> Burm.	Chirotha	Malvaceae	Herb	Bark, Leaves	Malaria
<i>Spilanthes acmella</i> Murr.	Sonapul	Asteraceae	Herb	Stem, Leaves, Flower	Toothache
<i>Spondias pinnata</i> (L.F.) Kurz	Ambarerongtong	Anacardiaceae	Tree	Bark	Nasal bleeding
<i>Sterculia villosa</i> Roxb.	Olmak	Sterculiaceae	Tree	Bark	Throat pain
<i>Tamarindus indica</i> L.	Cheeng	Fabaceae	Tree	Leaves, Roots	Skin diseases
<i>Thevetia peruviana</i> (Pers.) K. Schum.	Ceiling bol	Apocynaceae	Tree	Latex	Cough
<i>Terminalia bellerica</i> (Gaerth.) Roxb.	Chirore	Combretaceae	Tree	Bark, Fruit, Root, Seed	Headache, Jaundice and gastric problem
<i>Terminalia chebula</i> Retz.	Arithak	Combretaceae	Tree	Bark, Fruit	Dysentary,
<i>Terminalia myriocarpa</i> Heurck. And Muell.	Rakseng	Combretaceae	Tree	Bark, Root	Urinary disorder, heart problem
<i>Tinospora cordifolia</i> (Willd.) Miers	Dumandal	Menispermaceae	Climber	Stem	Urinary disorder
<i>Vitex glabrata</i> R. Br.	Bandi-kuri	Verbanaceae	Tree	Bark, Leaves	Inflammation
<i>Ziziphus jujuba</i> Lam.	Kangkil	Rhamanaceae	Tree	Bark	Cough, tuberculosis



Figure-2
Aegle marmelos (Linn.) Corr.



Figure-3
Alstonia scholaris (Linn.) R. Br.



Figure-4
Annona squamosa L.



Figure-5
Bridelia retusa Spreng.



Figure-6
Calotropis procera (Linn.) R. Br.



Figure-7
Cinnamomum tamala Fr.Nees



Figure-8
Cissus quadrangularis L.



Figure-9
Crataeva nurvala Buch. Ham



Figure-10
Crecentia cujete L



Figure-11
Cuscuta reflexa Roxb,



Figure-12
Dillenia indica Linn.



Figure-13
Derris robusta (Roxb. Ex DC.)
Benth



Figure-14
Drimycarpus racemosus (Roxb.) Hk.
f.



Figure-15
Lagerstroemia speciosa L. Pers.
f.



Figure-16
Lygodium japonicum Thunb. Ex
Murr.



Figure-17
Melia azedarach L.



Figure-18
Mikania micrantha H. B. K.



Figure-19
Oroxylum indicum (Linn.) Vent.



Figure-20
Piper betel Linn.



Figure-21
Sabia lanceolata Colebr.



Figure-22
Sida acuta Burm



Figure-23
Spilanthes acmella Murr.



Figure-24
Spondias pinnata (L. F.) Kurz



Figure-25
Thevetia peruviana (Pers.) K. Schum.



Figure-26
Terminalia myriocarpa (Heurck.)
And Muell.



Figure-27
Tinospora cordifolia (Willd.) Miers



Figure-28
Ziziphus jujuba Lam

Trees are the main sources of medicines followed by shrubs, climbers, herbs, grasses and ferns (figure-29). The present study shows that almost all plant parts are used as medicine. The most used plant parts for curing diseases are bark followed by leaves, roots, fruits, seeds, latex, flowers and stems (figure-30). The maximum utilization of bark and leaves may be due to presence of more active chemical compounds in them. These plants are used to cure number of diseases ranging from stomach problem to dog bite. Even the plants are used to cure epilepsy, jaundice, diabetes, gall bladder stones etc. Maximum number of plants are used for curing ailments like stomach problem (dysentery, diarrhoea and gastric problem), headache and dizziness while minimum number of plants are used to cure diabetes, epilepsy and gall bladder stone which are included together in 'others' category (figure-31). It is observed that a single plant may be used to cure many diseases such as *Carica papaya* and *Calotropis procera*. Similarly, different plants can be used to cure one ailment. The bark of *Artocarpus gomezianus* is boiled together with the barks of *Shorea robusta*, *Ziziphus jujuba* and *Cassia fistula* to cure headache and dizziness.

The frequent use of *Mikania micrantha* for wound healing, *Cuscuta reflexa* for headache, jaundice and *Spilanthes acmella* for toothache reflects the long conserved indigenous knowledge of Garo tribe for weeds. Majority of medicinal plants are consumed in the form of juice or decoction by boiling with

water and rarely in paste or powder form. It was observed that sometimes the honey, seeds of *Amomum eletaria* and leaves of *Cinnamomum tamala* are added in decoction which shows their innovative ideas to improve the taste and aroma of bitter and tasteless decoction for consumption.

During survey, it is also observed that younger generation does not have any knowledge about medicinal plants due to their inclination towards allopathic system of medicine. The old people above 55 years of age are quite familiar with these plants and use them for curing common diseases like cold, cough, fever, headache etc. Traditional healers are consulted in case of serious ailments like gall bladder stone, epilepsy, heart problem etc. They maintain secrecy in preparation of medicine and prefer to collect the desired plant parts from wild. But due to over exploitation of these valuable resources, there is tremendous pressure on some of the plant species which is resulting in reduction of their population. It is, therefore extremely essential to cultivate and conserve these plant species in their environment and to conserve the indigenous knowledge of Garo tribe for curing various diseases. In addition, there is an urgent need to take up phytochemical studies for analysis of active ingredients present in documented plants which may justify scientifically the indigenous knowledge for the welfare of local people.

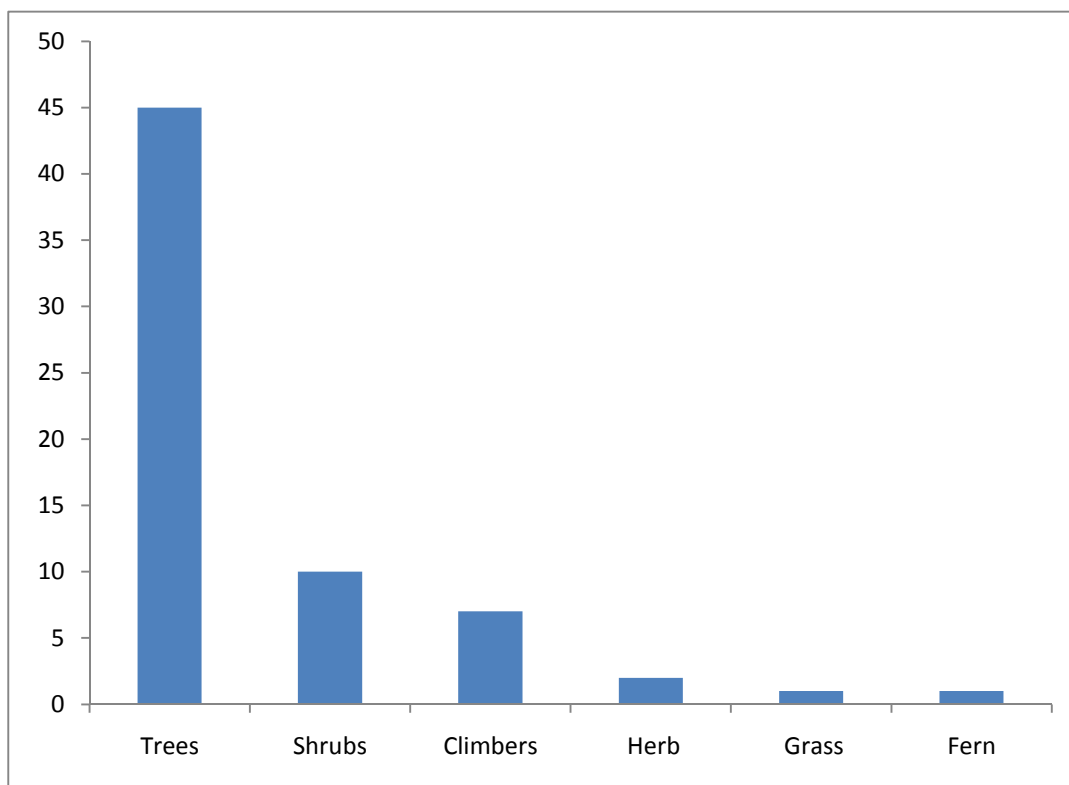


Figure-29
 Bar diagram showing number of plant species habit wise used for medicinal purposes

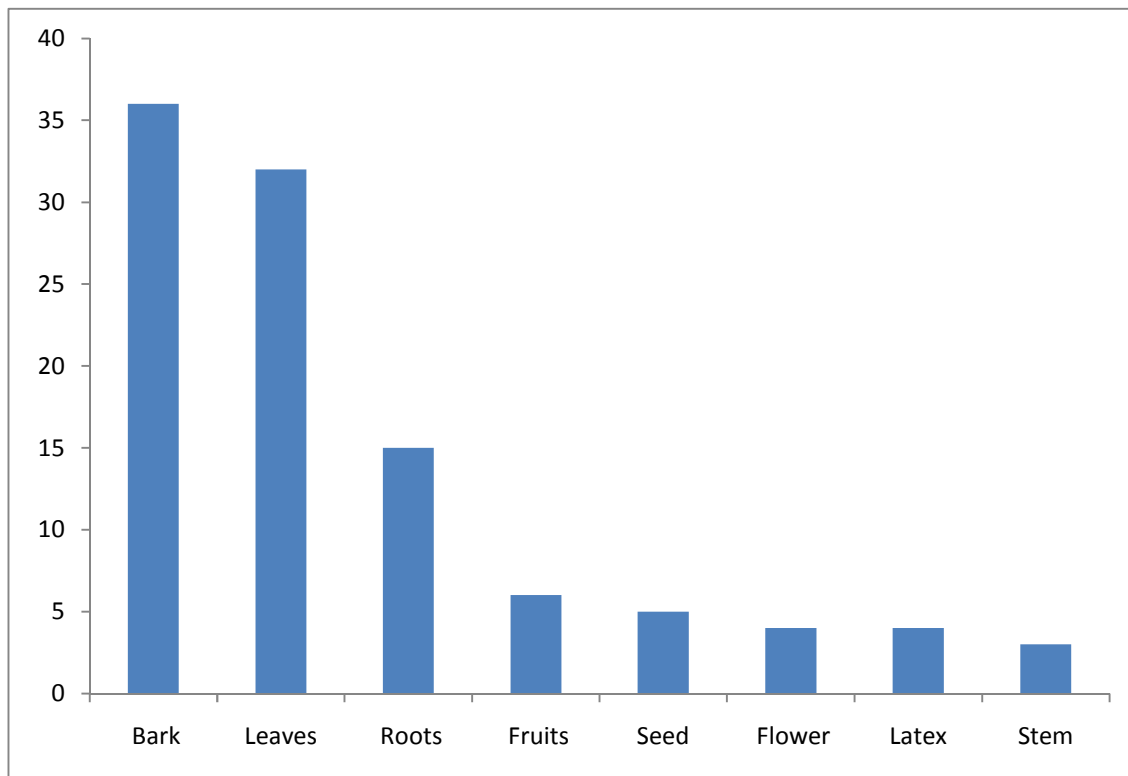


Figure-30
Bar diagram showing plant parts used for medicines

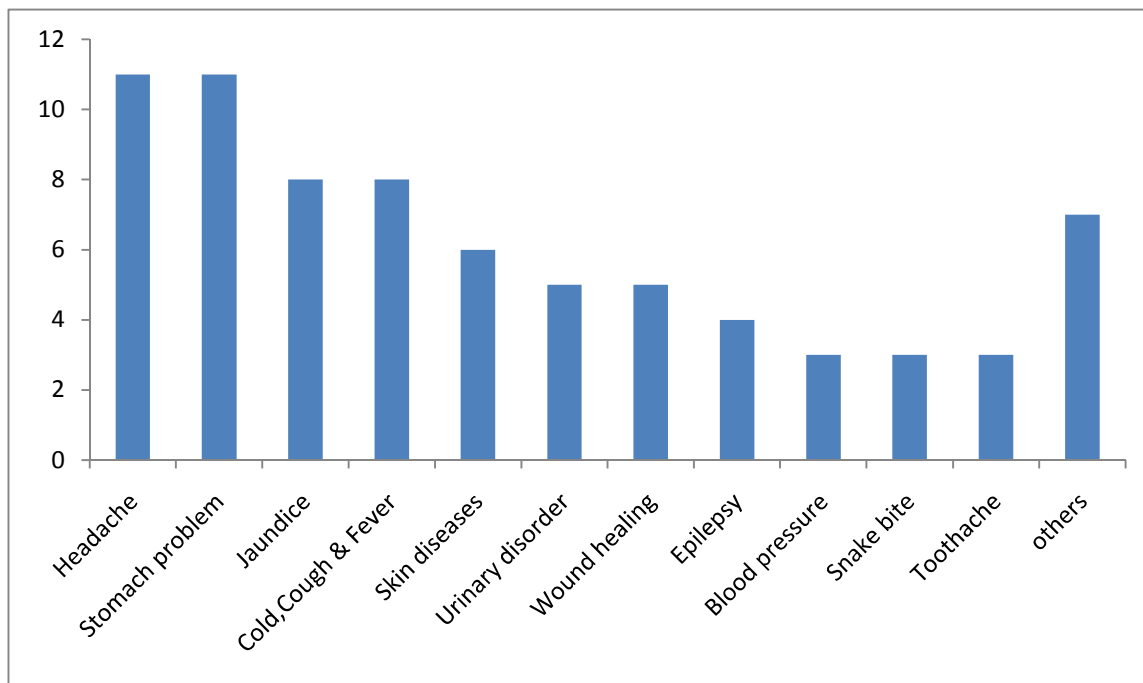


Figure-31
Bar diagram showing number of plant species used for various ailments

Conclusion

The present study reveals that people of North Garo Hills, Meghalaya have immense knowledge of medicinal plants and rely on them for treatment of common diseases. Trees are the main source of medicinal plants as compared to shrubs and herbs. Relevant information on medicinal plants is held by traditional healers. Younger generation is least concerned about their uses because of their inclination towards allopathic medicines. Hence, there is need to motivate younger generation to acquire the knowledge on medicinal uses of plants otherwise it will vanish with time.

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