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A STUDY ON ETHNOMEDICINAL PLANTS OF TWO KANI TRIBAL SETTLEMENTS OF PERINGAMMALA PANCHAYATH, THIRUVANANTHAPURAM, KERALA, INDIA

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ABSTRACT

Documentation of indigenous knowledge through ethnobotanical studies is important for the conservation and utilization of biological resources. The present study is an attempt to document the ethno medicinal knowledge of two Kani tribal communities residing in the floristically rich Peringammalapanchayath of Nedumangadutaluk, Thiruvananthapuram, Kerala, South India. Ethno botanical uses of medicinal plants were obtained from them through intensive interviews from traditional practitioners and few elderly people. The present investigation revealed that the Kani tribes of Njaraneeli and Elanjium settlements of Peringammalapanchayath were using a number of plants for curing various ailments. A total of 101 medicinal plants were documented. The reported medicinal plants belong to 47 families. Regarding the plants mentioned by the respondents, the most-cited families were Leguminoceae, followed by Euphorbiaceae, Asteraceae and Apocynacea.From the data analyses, it is clear that; the Kanis use herbs (48%), followed by climbers (28%), trees (12%), shrubs (11 %), and lianas (1%). The study revealed that most healers use plants that are easily accessible and available for the treatment of minor and common illnesses such as gastrointestinal problems, gynaecological problems, leucorrea, skin disorders, cold, fever, cough, headache, wounds, rheumatism, hair falling, snake poison, jaundice and urinary

problems. The results add new data to the ethno pharmacological literature and provide information that could be useful for the development of new drugs.

Key Words: Documentation, Ethno medicine, Kani tribes, Traditional knowledge

Introduction

India is one of the leading countries in Asia in terms of the wealth of traditional knowledge systems related to the use of plant species. In the developed countries, these knowledge systems are used as templates for manufacturing modern pharmaceutical drugs whereas, in developing countries they are an important resource for the treatment of various illnesses, and are a major component of treatment within the primary health care systems (Ngari et al., 2010). Ethno medicine denotes plants, animal products and minerals used by tribal communities of a particular region or country for medicinal purposes other than those mentioned in classical streams of the respective cultures. These tribal communities draw their sustenance largely from forests for food,medicine and other requirements. Ethno medicinal studies have offered immense scope and opportunities for the development of new drugs (Sivaperumal, et al, 2010). Documentation of indigenous knowledge through ethno botanical studies is important for the conservation and utilization of biological resources.

According to 2011 census the scheduled tribe population of Kerala is 4.85 (3.64 in 2001 census) lakhs, which constitutes1.45 (1.14 in 2001 census) per cent of the total population and is unevenly distributed in the districts. Wayanad has the highest tribal concentration in the State (17.43 per cent). More than 37 per cent of the Scheduled Tribes are concentrated in Wayanad District. Idukki accounts for 14 per cent. The lowest proportion of tribal population is in Alappuzha District (0.15 per cent). The population of Scheduled Tribes has slightly increased in 2011 compared to 2001 census (1.25 per cent). Kasargod and Palakkad together constitute more than 19 per cent of the scheduled tribes in the State. Scheduled tribe population is steadily increasing from 1981 Census onwards, though their growth-rate has declined from 22.75 per cent in 1991 to 13.47 percent in 2001. Nedumangad and Neyyattinkarataluks of the Thiruvananthapuram district constitute the Thiruvananthapuram tribal region. Kanikkar of Travancore is the most important tribal community living in this region. As on 2011 census the tribal communities in the district numbered 26759 with 0.81 percentage of total population in the district.

The Kanis, also known as Kanikkar, an indigenous tribal community in Southern India, live in the tropical forests of the Western Ghats. Kani people are spread out in two South Indian states, Tamil Nadu and Kerala. They speak a mixture of two languages, Malayalam and Tamil. In Kerala state Kani people are spread out in three districts such as Thiruvananthapuram, Pathanamthitta and Kollam. There are very few houses in most of the Kani settlements and are spread out in a large area. They are also seen in the Adimali hills of Idukki. They are engaged in agriculture and collection of forest produces. They are mainly live in Vithura, Peringammala, Tholikkode, Pangode, and AmbooriPanchayaths of Thiruvananthapuram districts. They were called 'Kanikkar' by the Sage Agastya, signifying 'hereditary proprietor of the land'. Earlier they subsisted on hunting, minor forest produce collection and cultivation. Now they practise settled agriculture like cultivation of rice and tapioca. Kanis are now well known for their healing tradition.

The 'Kanikudi' (settlement) is the basic unit of social, economic, political and religious organisation. Each 'Kanikudi' is headed by the oldest member of that settlement called 'Moottukani' who enjoys great powers. Plathi (medicine man) is the repository of all medical knowledge. Plathi used to form an integral part of all Kani rituals. The services rendered by Plathis were free. Now as the rituals have become less and the government health centers have become more accessible, plathi's role has become less important in the community.

The practice of traditional medicine is based on the knowledge that has been passed orally from generation to generation. Only a very few written documents are available, because the language used by the tribals are not having the script. Very few authentic reports on ethno botanical studies are available about tribal communities of different hillocks of Western Ghats (JanakiAmmal and Prasad, 1984; Ignacimuthu et al., 1998; Viswanathan et al., 2001; Ayyanar and Ignacimuthu, 2005). Preserving the knowledge of tribal community and documentation of the traditional uses of medicinal plants is the useful need of the hour. Medico botanical studies have been under taken in Kerala by a number of workers. The major references are Udayan et al (2005), Silja et al (2008), Sabu et al (2011), Shyma and Devi Prasad(2012), and Latheef et al (2014).In the preliminary survey, 26 plant species belonging to 22 families often used by Kanis of Peringammalapanchayath for their common ailments are documented (Sarukrishna and NusaifaBeevi, 2017).

The objective of this study is to investigate the medicinal efficacies and methods of plant utilization of Kani tribes in selected areas of PeringammalaGramaPanchayath of

NedumangaduTaluk, Thiruvananthapuram district and to document the traditional medical practices in healing the aliments. The study also aimed to know whether any of the medinal plants used by them is under Rare,Endangered and Threatened (RET)category.

Materials and Methods

Study Area:

The present study was conducted in two tribal settlements, Njjaraneeli and Elanchiyam of PeringammalaGramaPanchayath of Thiruvanathapuram district. Located in the lap of Western Ghats, Thiruvananthapuram District is the southernmost district of the coastal state of Kerala. It is the largest city and densest district in Kerala with 1,509 inhabitants per square kilometre. Thiruvananthapuram district is situated between north latitudes 8°17' and 8°54' and east longitudes 76°41' and 77°17'. The southern-most extremity, Parassala, is just 54 kilometres away from the southern peninsular tip of India, KanyaKumari. The district stretches 78 kilometres along the shores of the Arabian Sea on the west, Kollam district lies on the north with Tirunelveli and Kanyakumari districts of Tamil Nadu on the east and south respectively.The district is 33.75% urbanised. Thiruvananthapuram, Chirayinkeezhu, Neyyattinkara, Nedumangadu, Varkala and Kattakada are the six taluks under the district. The study area, the PeringammalaGramaPanchayath, comes under the Nedumangadutaluk. The verdant village of Peringammala is located in the valley of the Ponmudi hills. It is the second largest panchayath in Kerala with an area of 217.94 Sq.Km. In the olden days this area was reputed for various forest products like honey, pepper, arechanut etc.. Agriculture is the main occupation of this area. Peringammalagramapanchayth is inhabited by 1251 tribal families spread over 25 kani tribal settlements. Njaraneeli and Elanjium are the two kani tribal settlements each with 83 and 96 families respectively. Both these settlements are adjacent to each other and 5.9 kms away from palode in Chayam – Palode road.

Ethno medicinal data collection -Interview with traditional healers

There is no information available in published form with respect to these two tribal settlements and hence deserve a great attention for ethno medicinal research. Detailed survey was conducted from June 2016 to March 2017. Representative informants including local knowledgeable persons and tribals (Kanikkar)) were sampled during random visits to houses

in the study area. Besides, efforts were made to approach as many traditional medical practitioners as possible.

The ethno botanical information was collected from the indigenous people of different age groups by interviewing them and filling a questionnaire for documentation. The information was gathered from respondents who use plants for self-medication and from people who treat others for ailments. From the informants, information on medicinal plants with their local names, parts in use, mode of preparation and administration were obtained. The reliability of the information of the plants used was assessed after repeated verification. The plants specimens were collected and the botanical names and families were identified with the help of regional floras and finally confirmed with taxonomist. Herbariums were prepared for the studied plants and deposited at the Department of Botany, Iqbal College, Peringammala.

Results

The present investigation revealed that the Kani tribes of Njaraneeli and Elanjium settlements of Peringammalapanchayath were using a number of plants for curing various ailments. A total of 101 medicinal plants were documented. The reported medicinal plants belong to 47 families. Single member families with binomial is listed in Table.1 and other families each with more than one plants and total number of plants under each family is presented in Table 2. Regarding the plants mentioned by the respondents, the most-cited families were Leguminoceae with fourteen plants, followed by Euphorbiaceae, Asteraceae and Apocynacea, each with five plants, which is followed by Lamiaceae, Asclepiadaceae, Solanaceae and Liliaceae, each with four plants. Three plants each were reported from Aristolochiaceae, Menispermaceae, Moraceae, Piperaceae and Acanthaceae. Families like Amaranthaceae, Bignoniaceae, Rutaceae, Verbanaceae, Scrophulariaceae, Zingiberaceae and Malvaceae included two plant species each and 27 families were represented with only one species (Table.1).

Among the plants documented, 52 were herbs, 12 were shrubs, 16 were trees, and 20 were climbers. Habit of the plants under study is depicted in Figure 1. Most healers use plants that are easily accessible and available for the treatment of minor and common illnesses. It was also observed that some plants were used in more than one form of preparation. It also comes into notice that various plant parts are also used in the form of decoction, infusion, paste or powder. The medicine is administered mostly with additives like honey or coconut milk or

cow milk or rice water. This is due to the fact that different plant parts have various active ingredients. As observed in the present study, different plants have different routes of administration. Some of them are taken orally while others may be applied externally. It was very common for one species to be used to treat two or more diseases. The results of the present study provide evidences that the most frequently used plant parts are the leaves. 67% of plant parts is utilized internally and 33% is applied externally only (Figure 2).

The plants under study were used to treat a variety of diseases: 15 of these plants were used for Digestive /gastro intestinal problems; 12 for skin diseases, Eg. *Murrayakoeinigii, Cynodondactylon, Ageratum conisoids etc*. 11 as ingredients of health providing tonics; 10 for treating rheumatism and gynaecological problems; 8 for cough/ fever and also for pain relief ; 5 for treating asthma, wound healing and urinary disorders. Other uses are as follows: Fruit juice made from *Phyllanthusemblica*can be effectively utilized against urinary infections. *Datura*flower is used as an inhaler. *Emilia sonchifolia, Vernoniacinerea, Boerhaviadiffusa*are used for eye diseases. *Asparagus racemosus, Acacia catechu* are used as blood purifiers. *Entadascandens*and *Vitisquadrangularis*are used for curing bone fracture. *Aristolochiaindica* L.,*Adenocalymaalliaceum*and *Cycleapeltata* as antidotes against snake bite. Jaundice is treated effectively by using *Phyllanthusniruri* L. and *Curculigoorchioids.*Epilepsy is cured by using *Bacopamonnieri.* People also make use of the heart wood of *Cassia fistula* L. against psoriasis. Plants like *Tylophoraindica* (Burm.),*Acalyphaindica* L.,*Adhatodavasica*Nees.,*Aeglemarmelos* (L.) Corr.,*Daturastramonium* L., *Euphorbia hirta*Linn., *Piper betle* L., *Mimosa pudicaL.etc.* can effectively be used to cure asthma.*Catharanthusroseus, Euphorbia hirta, Helicteresisora, Tinosporacordifolia*and *Aeglemarmelos* (L.)Corr are used for curing diabetes.*Murrayakoeinigii* is a multipurpose medicinal plant used for skin diseases, wound healing and also as ingredients of health providing tonics. The latex of *Alstoniascholaris,*and *Calotropisgigantea* are used to cure skin diseases, while that of *Wrightiatinctoria* is utilized for curing tooth ache (Figure 3).Among the different plant parts used by kanis in Njaraneeli and Elanjium settlements, the leaves are most frequently used for the treatment of diseases (49). This is followed by root (18), whole plant (15) and bark (12), fruits(6), seeds(5), rhizome(3) and latex for two diseases (Figure 4).

The present study also documented some medicinal plants used by the kanitribalswhich are included in the list of rare and endangered category, such as *Janakiaarayalpathra,*

Acoruscalamus, Aristolochiatagala, Holostemmaada-kodien, Adhathodavasica, Piper nigrum, Piper longum, Knema attenuate, and*Rauvolfiaserpantina*. The study revealed that some of the most important medicinal plants like*Janakiyaarayalpatra, Tylophoraindica, Rotulaaquatica, Aristolochiatagala, and Knemaattenuata*are vanishing from the tribal settlement areas. So special attention should be needed to conserve these plants.

Discussion

The present study documented 101 medicinal plants which belong to 47 families. The most-cited families were Leguminaceae and are mostly herbaceous plants. This result is in agreement with Jespin Ida and Anami (2016), who documented a total of 83 medicinal plants used by the Kani tribes in Keeripara of Kanyakumari district, South India, were majority, belonged to Fabaceae. Subitha,et al (2011) also documented 58 species of medicinal plants belonging to 27 families used by Kani tribes in Pechipara forests of Southern Western Ghats in which the dominant families with more number of medicinal plants are in Solanaceae with 6 species and it was followed by Fabaceae and Apocynaceae.

The plants under study were utilized for curing diseases like gastrointestinal problems, gynecological problems, leucorrea, skin disorders, cold, fever, cough, headache, wounds, rheumatism, hair falling, snake poison, jaundice and urinary problems. This is consistent with the general observations made earlier in relation to ethno botanical studies on some of the other tribal communities of Kerala and kanitribals of Tamilnadu (Prasad et al., 1996; Viswanathan et al, 2001; Ayyanar and Ignacimuthu, 2005; Jespin Ida and Anami, 2016).According to Subitha,et al (2011), most of people interviewed by them were familiar with the species dealing with common ailments like cold, cough, fever, digestive problems, fever, headache, skin infection, and plant remedies were used on regular basis.

Among different plant parts used by kanis in Njaraneeli and Elanjium settlements, the leaves are most frequently used for the treatment of diseases, followed by root, whole plant, bark, fruit, seeds, rhizome and latex. This is also in agreement with Subitha,et al (2011), who documented ethno medicinal plants used by Kani tribes in Pechipara forests of Southern Western ghats, in which leaves are frequently used and it was followed by fruit, root, rhizome, latex, whole plant, stem, flower, seed and tender shoot.

Common knowledge was learned from the elders and community members who share knowledge of mode of collection, preparation and administration of medicinal plants to cure

diseases. Earlier studies on traditional medicinal plants revealed that the economically backward local people of Kanitribals prefer folk medicine due to low cost and sometimes it is a part of their social life and culture (Ignacimuthu et al., 1998; Viswanathan et al., 2001; Ayyanar and Ignacimuthu, 2005). The present study shows that the Njaraneeli and Elanchiyam forest areas have great diversity of medicinal plants with rich ethno medicinal uses, since this type of research must be promoted to understand the potential use of their plant resources, as well as a means to better promote basic healthcare. The present study revealed that many of medinal plants used by the Kani tribes is under RET category such as *Aristolochiatagala*Cham(vulnerable), *Janakiaarayalpathra(*rare and endemic to the Southern forests of Western Ghats), *Rauvolfia serpentine* (Rare),*Hydnocarpus alpine* (Threatened)etc.

Tribals and the affected population had to find out non-conventional wild food plant species. Unripe fruits of Arogyappacha (*Tricopuszeylanicus*) are eaten by Kani tribe to remain healthy and agile during their long tracking trips in the high mountainous forests of Agasthyar hills in Kerala. Kanitribals claim that one can live energetically without food for long days and perform rigorous physical work after consumption of a few fruits of this plant daily (Pushpangadan et al., 1988). Tribal communities consume wild tubers, rhizomes and corms either in raw or baked or boiled or roasted form. Important medicinal plants like*Janakiyaarayalpatra.,Tylophoraindica., Rotulaaquatica., Aristolochiatagala.,and Knemaattenuata*deserves special attention, because, they are vanishing from these tribal settlement areas.Special care should be taken to conserve these plants, either through conventional methods or other non-conventional methods like micropropagation.

Due to lack of interest among the younger generation of tribals as well as their tendency to migrate to cities for lucrative jobs, the kanitribals face the possibility of losing this wealth of knowledge in the near future. The Kani tribal healers are rapidly dying of old age, and with them their traditions also. Documentation of this knowledge is valuable for the communities and their future generations and for scientific consideration of wider uses of traditional knowledge. Traditional medicines also have the potential to form the basis of pharmaceutical drugs for the treatment of a range of diseases. The wealth of this tribal knowledge of medicinal plants points to a great potential for research and the discovery of new drugs.

Conclusion

The ethnic communities have their own pool of secret ethno medicinal knowledge about the plants available in their surroundings which has been serving them with its superiority.. However, with the passage of time and development of technological medicine and health infrastructure, this knowledge is under serious threat. Peringammalagramapanchayth is inhabited by a group of ethnic/tribal people called kanikkar or kani tribes. They have a worthy traditional culture and way of living, and are a prominent group among the Scheduled tribes in Kerela. The study area selected for the present investigation was two important kani tribal settlements, viz; Njaraneeli and Elanjiyam in Peringammalagramapanchayat. Methods used to collect ethnomedicinal data included semi-structured interviews, focus group discussions and field visits with local knowledgeable persons. Informants were stimulated to talk freely about their ethno medicinal knowledge, and were asked to mention all the medicinal plants known or used.

The present investigation revealed that the Kani tribes of Njaraneeli and Elanjium settlements of Peringammalapanchayath were using a number of plants for curing various ailments. A total of 101 medicinal plants were documented. Most healers use plants that are easily accessible and available for the treatment of minor and common illnesses. They used these plants to cure diseases like gastrointestinal problems, gynecological problems, leucorrea, skin disorders, cold, fever, cough, headache, wounds, rheumatism, hair falling, snake poison, jaundice and urinary problems.

Traditional knowledge of plants in many tribal communities is changing because of rapid socioeconomic and cultural changes. This is particularly true in Kani tribal communities in PeringammalaPanchayath of Thiruvananthapuram district, of Kerala. Due to lack of interest among the younger generation of tribals as well as their tendency to migrate to cities for lucrative jobs, there is a possibility of losing this wealth of knowledge in the near future. The Kani tribal healers are rapidly dying of old age, and with them their traditions also. Documentation of this knowledge is valuable for the communities and their future generations and for scientific consideration of wider uses of traditional knowledge. The information gathered from the tribals is useful for further researchers in the field of taxonomy and pharmacology. The wealth of this tribal knowledge of medicinal plants points to a great potential for research and the discovery of new drugs to fight diseases, obtaining foods and other uses. So, further scientific assessment of these medicines for phytochemical, biological

and clinical studies is however greatly needed. Measures should be taken to protect these areas of high biodiversity and medicinal plants of high interest.

Table 1.Represented families with single member and their binomial.

Sl. No	Family	Binomial	Sl. No	Family	Binomial
1	Cyperaceae	*Cyperusmalaccensis*	13	Salvodoraceae	*Azimatetracantha*
2	Moringaceae	*Moringapterygosperma*	14	Geraniaceae	*Biophytumsensitivum*
3	Dioscoriaceae	*Dioscoreatriphylla*	15	Sapindaceae	*Cardiospermumhalicacabum*
			16	Apiaceae	*Centellaasiatica*
4	Nyctaginaceae	*Boerhaviadiffusa*	17	Flacourtiaceae	*Hydnocarpus alpine*
5	Amaryllidaceae	*Curculigoorchioids*	18	Sterculiaceae	*Helicteresisora*
6	Poaceae	*Cynodondactylon*	19	Boraginaceae	*Rotala aquatic*
7	Anacardiaceae	*Anacardiumoccidentale*	20	Convolvulaceae	*Ipomeamauritiana*
			21	Meliaceae	*Azadiractaindica*
8	Simaroubiaceae	*Quassiaindica*	22	Ebenaceae	*Diospirosbarberi*
9	Averrhoaceae	*Averrhoabilimbi*	23	Vitaceae	*Vitisquadrangularis*
10	Myristicaceae	*Knemaattenuata*	24	Periplacoceae	*Janakiaarayalpathra*
11	Oxalidaceae	*Oxalis corniculata*	25	Plumbaginaceae	*Plumbagorosea*
			26	Sapotaceae	*Mimusopselengi*
12	Araceae	*Acoruscalamus*	27	Musaceae	*Ensetaesuperba*

Table 2.Represented families, total number of plants under each family and binomial.

Sl. No	Family	No.of Plants	Binomial
1	Leguminosae	14	*Abrusprecatorius,Adenantherapavonina,Acaciacatechu,Cajanuscajan, Cassia fistula,Clitoriaternatea,Desmodiumtriflorum,EntadascandensIndigoferatinctoria, Mimosa pudica, Pterocarpusmarsupium, Saracaindica, Sennaoccidentalis, Sesbaniagrandiflora*
2	Euphorbiaceae	5	*Acalyphaindica, Euphorbia hirta, Phyllanthusniruri, Phyllanthusemblica,Tragiahispida*
3	Apocynaceae	5	*Alstoniascholaris, Catharanthusroseus, Gymnemasylvestre,Rauvolfia serpentine,Wrightiatinctoria*
4	Asteraceae	5	*Ageratum conyzoides, Eclipta alba, ElephantopusscaberEmeliasonchifolia, Vernoniacinerea*
5	Lamiaceae	4	*Leucasaspera, Ocimumsanctum,Ocimum*sps,*Plectranthusamboinicus*
6	Asclepiadeaceae	4	*Calotropisgigantia, Hemedesmisindica, Holostemmaada-kodien, Tylophoraindica*
7	Solanacea	4	*Capsicum frutescense, Daturastramonium, Physalis minima, Solanumtorvum*
8	Liliaceae	4	*Aloe vera, Asparagus racemosus, Sansevieriaroxburghiana, Smilax zeylanica*
9	Aristolochiaceae	3	*Aristolochiaindica, Aristolochiatagala,Thotiasiliquosa*
10	Menispermaceae	3	*Cissampelosperiera, Cycleapeltata,Tinosporacordifolia*
11	Moraceae	3	*Ficusbengalensis, Ficusreligeosa, Ficusracemosa*
12	Piperaceae	3	*Piper betle,Piper longum,Piper nigrum*
13	Acanthaceae	3	*Adhathodavasica, Andrographispaniculata,Hemigraphiscolorata*
14	Amaranthaceae	2	Aervalanata, *Alternanthera canella*
15	Bignoniaceae	2	*Adenocalymaalliaceum, Pajanelialongifolia*
16	Rutaceae	2	*Aeglemarmelos, Murrayakoenigii*
17	Verbanaceae	2	*Clerodendroninfortunatum, Vitexnegundo*
18	Scrophulariaceae	2	*Bacopamonnieri, Toreneatravancorica*
19	Zingiberaceae	2	*Curcuma amada, Alpiniacalcarata*
20	Malvaceae	2	*Hibiscus rosa-sinensis,Sidarhombifolia*

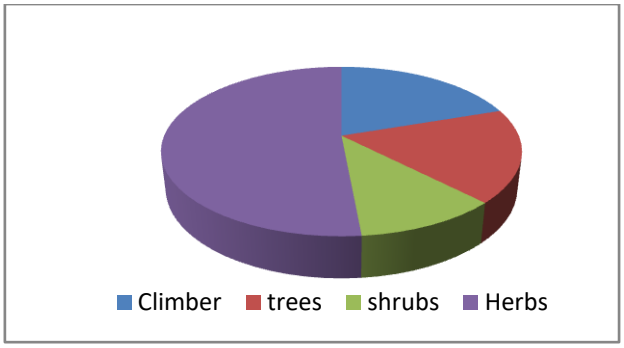

Figure 1.Habit of collected plants under study.

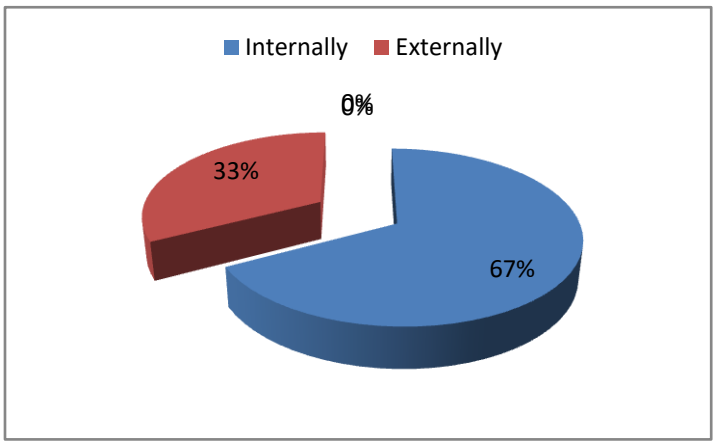

Figure 2 . Percentage of plants administered externally & internally

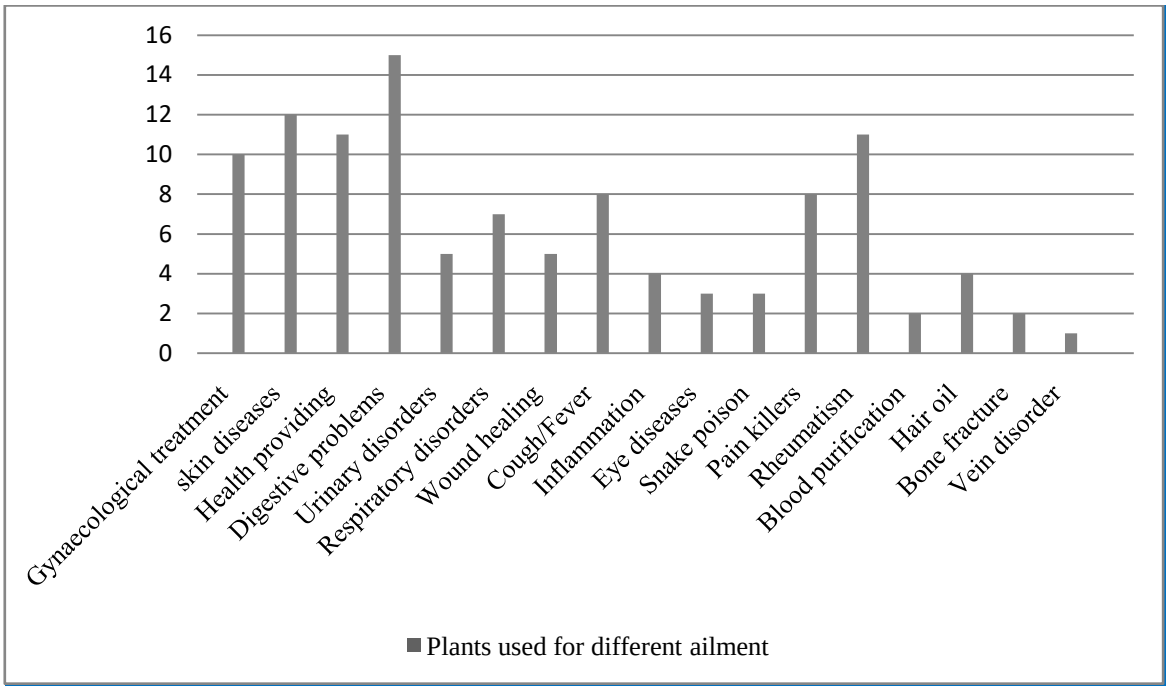

Figure 3. Number of plants used for different ailments.

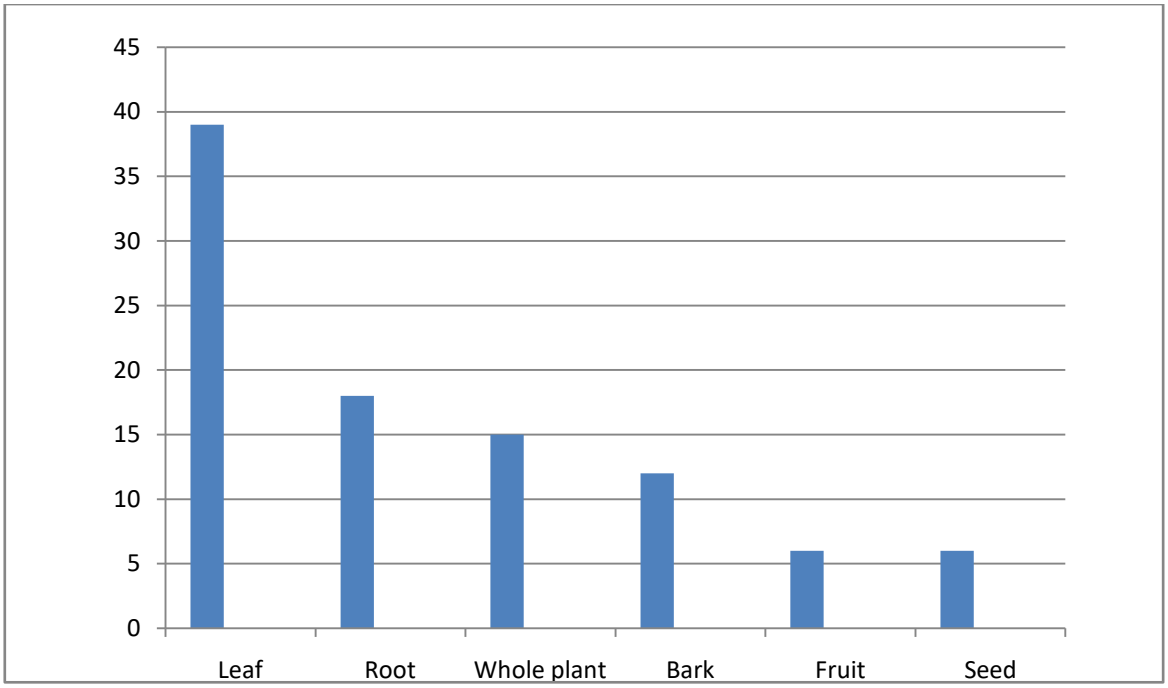

Figure 4. Percentage of different plant parts used for treatments.

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