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Study of Indigenous Knowledge, Attitude and Practice in Primary Health Care in Tribal Communities of Oyan Village of East Siang District of Arunachal Pradesh

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Abstract

The richness of the flora of north eastern region is well known to all. This region is a part of the Himalayas is ranging from the eastern part of Nepal, passing through Sikkim, Darjeeling part of West Bengal, Bhutan, Abor hills of Arunachal Pradesh and ultimately coming down to the plains in Myanmar. This region represents an important part of the Indo-Myanmar biodiversity hotspot, one of the 25 global biodiversity recognized currently. The Northeastern region of India is a home to a myriad tribal and other ethnic indigenous group of people. As they are tribe, their association with forest is intimate and plays an important role in their daily life, their culture, religious belief and practices, worship of nature, folklores and cosmologies of most of these indigenous societies maintain a conservationist ethos in order to sustain their natural resource base.

The East Siang district of Arunachal Pradesh has a vast biodiversity of floral and faunal wealth, because of its typical eco-climatic conditions. Due to its varied topography, climate and altitudinal conditions, this region is blessed with a matchless wealth of Medicinal plants which grow wild and are enormous in numbers and varied in characters. Oyan village of East Siang district is a hilly region with rich diversity of medicinal plants which are used by Arunachalee tribes as their traditional home remedies.

Methodology included a survey on the traditional herbal treatment of the Arunachalees was initiated by the number of families of medicine men engaged in tribal medical practices. Data collection and analysis by comprehensive questionnaires containing the local names of plants, parts used, dosage, method of preparation and administration were carefully documented through interviews with them and knowledgeable persons of the locality.

However, due to the lack of systematic study, the valuable information is still within the barrier of traditional folklore. Hence, an attempt is made in this paper to focus certain ethnomedicinal plants which are used traditionally by Oyan villagers of East Siang district of Arunachal Pradesh.

This study thus underlines the potentials of herbal practice and the need for documentation of indigenous knowledge pertaining the medicine utilization for the greater benefit of mankind.

Keywords: Indigenous Knowledge, Primary Healthcare, Tribal Communities, Oyan Village, Arunachal Pradesh, Ethnomedicinal Plants.

Introduction

The northeast region of India comprising the seven states, popularly known as seven sisters can be physiographical categorized into the eastern Himalayas, Northeast hills and the Brahmaputra and Barak valley plains. Northeast India is the home for more than 166 separate tribes. The northeast India- rich in plant diversity are a part of the biodiversity hotspot in Eastern Himalayas. Out of the recorded over 10,000 species of plants living on the Himalayas 31.6% are known to be endemic. Innumerable human activities cause wide scale modifications or loss of

natural habitat rendering these plant resources difficult to find ways for normal survival.

Arunachal Pradesh is a hilly region with rich biodiversity and is habitat of the different tribes, races and communities of human population. These groups of people use the medicinal plants and utilize herbal medicines for the treatment of various diseases. It is to such beliefs and practices regarding health and disease, which are products of indigenous cultural development and not explicitly derived from the conceptual frame work of modern medicine, that the term "Ethno-medicine" is applied according to Hughes (1968). With keeping view in this regard this study attempts to document on the ethnomedicinal plants used by the folkmen of Oyan village of East Siang District of Arunachal Pradesh and also to highlight the indigenous knowledge and beliefs of the communities with respect to nature have reflect their life, activities, skill, value addition, cultural and ritual practices.

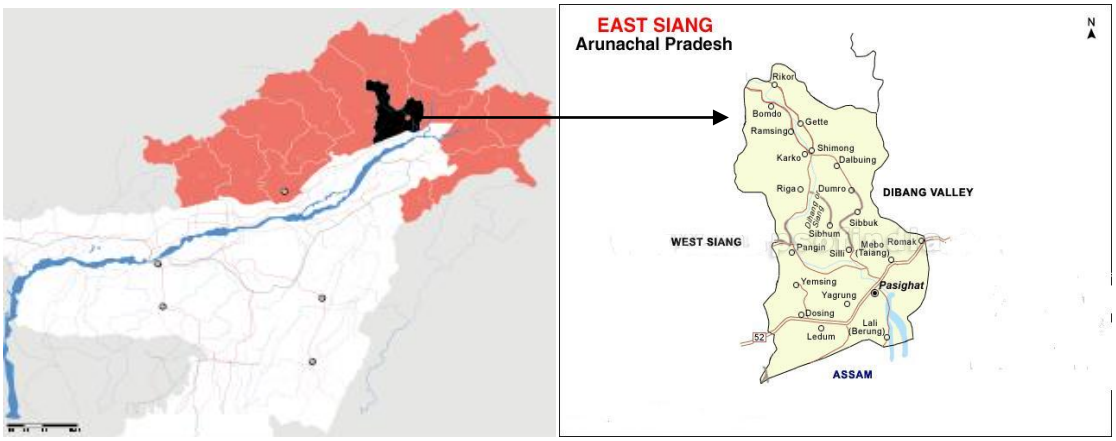
The villagers protect the landscape out of fear of a deity and due to the presence of traditionally used plant materials from the forest, which are also economically important and a good reason for the conservation of biodiversity for the future, R.K. Bhakat(1990). As aptly pointed out by Tribhuwan and Gambhir (1995), every culture, has its own beliefs and practices regarding health and disease. The World Health Organization (WHO) estimates that 4 billion people or 80 percent of the world's population use herbal medicine for some aspect of primary health care. According to Ved Prakash (1998), more than 20,000 species of higher plants are used as medicines in the traditional treatment practices of indigenous cultures living around the world. Investigations on growth performance of medicinal plants have gained adequate attention in India. Historically, the tribal community of India has adopted the nature as their habitats. Their subsistence pattern, economic, social institutions, beliefs and practices have been close linked with the environment. Since time immemorial tribal have been living in the forest, hills and naturally isolated regions, known by different names. The popular names are Adivasi (first-settlers), Vanyajati (castes of forest), Vanvasi (inhabitants of forest) Amitabha Sarkar & S. Dasgupta (2000). But, the fear of fallibility in the use of the clandestine knowledge in locating, identifying plants with associated modalities of their use has increased, due to the lack of attention of young adults, for the slow creeping of modernism into their capsule-like closed society; and those may vanish even, S. Das, S.K. Dash & S.N. Pandhy. Also, the Ethnomedicinal plants for women health care are common in this part of the world, P.C. Trivedi & N.K. Sharma (2004). So, it is important to identify the bioactive compound present in plant and its proper medicinal use, Anonymous (2005).

Objectives

Objective of the study was to document the herbal medicines used by indigenous people of Oyan village of East Siang district of Arunachal Pradesh. To identify the medicinal plants in different habitat, the procedure of the preparation and the use of the medicine by the traditional healer.

Study Area

The study area, Oyan village of East Siang district of Arunachal Pradesh lies between 27˚43' and 29˚20' N Latitude to 94˚42' and 95˚35' E Longitude. The altitude of the area is 155m above sea level. The population of the village Oyan is 2600 approx.



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Methodology

Methodology included a survey of the number of families of medicinal man engaged in traditional medicine practices. During the course of investigation, the entire and adjoining areas both forest and non forest of the locality of Oyan village was surveyed.

Information regarding the ailment, dosage, method of preparation, administration, plant identification etc. was carefully documented through interviews, questionnaires, discussion and observation of knowledgeable and experienced persons, villagers, headmen of the village, foresters and local medicinal healers. Quadrate sampling technique was followed for the study of diversity and the abundance of plant population in the Oyan village and the neighbouring areas of East Siang district.

Result and Discussion

Present study includes information recorded by interviewing of traditional herbal healers from adjacent areas of Oyan village of East Siang district of Arunachal Pradesh. The East Siang district is harbours of numerous varieties of medicinal plants of which only thirty plant species are recorded here.

Medicinal healer, out of their own experience and knowledge they can easily define the disease that a patient suffers from. Observing and recognizing the symptoms are most reliable methods of diagnosis for the healer. Feeling the patient's pulse of heart beat is the first step in starting the diagnosis. For diseases like Jaundice, Leucorrhoea, Diabetes, Stomach ache etc. the patient's urine colour tests are also done as a process of diagnosis. For broken bones or intestinal disorders, they may also touch and feel the aching part.

Different parts of plants are processed in several ways before its administration to a patient as a paste, juice, infusion, or tea, as powder, decoction and plants are also used in the form of syrup linctuses, pills and tablets etc. The quadrate study also reveals that semi natural habitat of Oyan has moderate amount of medicinal diversity. The increasing population pressure of Oyan also leads to the loss of various medicinal plants and most of the people ignore the significance of medicinal plants. The quadrate sampling studies in ten selected sites shows that the diversity of medicinal plant is higher in the natural habitat than the semi-natural habitat, since natural habitat is less exposed to the human interferes than the semi-natural habitat. The density, frequency and relative abundance shows that the medicinal plant is in moderate amount in both semi-natural and natural habitat. The density represents the number of plants in a particular area, the calculated value of density is 1.002 individuals/m^2 is clearly indicates that more competition is there within the species, because the density of the medicinal plant is higher in study sites which grown along with other plant species.

The utilization and exploitation of the medicinal plant is very frequent. Sometimes the people for using barks as medicine they take out the whole plant. The local practitioner always collects a good number of medicinal plants from their habitat for preparing medicine daily. If such type of activities and exploitation is continue without taking any conservation measure it will be detrimental to the medicinal plant diversity of Oyan village of East-Siang District of Arunachal Pradesh.

Data Collection

(A) Identified Medicinal Plants

Sl. No.	Local Name	Part used	Scientific Name	Used for
1.	Aada	Modified stem	*Zingiber officinalie*	Cold and Cough
2.	Akon	Gum	*Calotropis gigantea*	Septic
3.	Amita	Fruits	*Carica papaya*	Gastric, antifertility
4.	Amlokhi	Fruits	*Emblica officinalis*	Skin disease
5.	Arjun	Bark	*Terminalia arjuna*	Heart weakness
6.	Ban jaluk	Whole plant	*Oldenlandia corymbosa*	Gastric
7.	Belipoka	Stem	*Thadiantha cordifolia*	Anti-fertility

8.	Bel	Fruits	*Aegele marmelos*	Gastric
9.	Bon amlokhi	Whole plant	*Phylanthus niruri*	Gastric
10.	Bongali ara	Gum	*Jatropha curcus*	Swollen Gum
11.	Bon kopahi	Leaves	*Abroma augusta*	Septic
12.	Chalkunwari	Leaf and Leaf pulp	*Aloe vera*	Burns, wounds and cut
13.	Chotiona	Bark	*Alostonia scholaris*	Jaundice, Malaria
14.	Daalim	Bark	*Punica granatum*	Tapeworm
15.	Dimoru	Leaves	*Ficus glomerala*	Asthma
16.	Halodhi	Modified stem	*Curcurma longa*	Body pain
17.	Jaaluk	Fruit	*Piper nigrum*	Sore throat, Arthritis
18.	Jetuka	Leaves	*Lawsoria inermis*	Skin disease, headache
19.	Kalmegh	Leaves	*Andrographis paniculata*	Fever, dysentery
20.	Manimuni	Whole plant	*Cantella asiatica*	Stomach pain
21.	Modhuri	Tender leaves	*Psidium guayava*	Dysentery
22.	Narji phool	Leaves	*Tagetes patula*	Cuts and Wounds
23.	Neem	Leaves	*Azadirachta indica*	Skin disease
24.	Panitenga	Leaves	*Marsilea quardrifolia*	Kidney stone
25.	Papal	Fruit	*Piper longrum*	Body pain and Bronchitis
26.	Pudina	Leaves	*Mentha viridis*	Stomach and indigestion
27.	Sajeena	Bark	*Moringa oleifera*	Antifertility
28.	Sewali	Leaves	*Nyctanthes arbor-tristis*	Malaria, diabetes
29.	Teteli	Fruits	*Tamarindus indica*	Fever
30.	Tulsi	Leaves	*Ocimum sanctum*	Skin disease

(B) Quadrate sampling Date: 24- 12-2009

Quadrate no. 1

Place- Oyan (VKV) Altitude- 155 m Remarks- Average

Sl. No.	Local Name	Scientific Name	No. of Plants	Habits of Plants	Remarks
1.	Manimuni	*Cantella asiatica*	12	Herbs	Average
2.	Dubori bon	*Cynodon dactylon*	23	Herbs	Average
3.	Bonguti	*Chrysopogon aciculatus*	08	Shrubs	Average
4.	Panitenga	*Marsilea quardrifolia*	12	Herbs	Average
5.	Bon amlokhi	*Phyllanthus neuri*	10	Herbs	Average
6.	Kachoo	*Colocasia escluenta*	13	Shrubs	Average
7.	Bon kopahi	*Abroma augusta*	09	Herbs	Moderate
8.	Kukurajar	*Celosia anetala*	12	Shrubs	Moderate
	Total no. of individuals		99		

Date: 19- 01-2010

Quadrate no. 2

Place- Oyan (River bank) Altitude- 155 m Remarks- Average

Sl. No.	Local Name	Scientific Name	No. of Plants	Habits of Plants	Remarks
1.	Manimuni	*Cantella asiatica*	11	Herbs	Average
2.	Dubori bon	*Cynodon dactylon*	20	Shrubs	Average
3.	Bonguti	*Chrysopogon aciculatus*	11	Herbs	Average
4.	Panitenga	*Marsilea quardrifolia*	15	Herbs	Average
5.	Bon amlokhi	*Phyllanthus neuri*	19	Herbs	Average
6.	Kachoo	*Colocasia escluenta*	17	Shrubs	Average
7.	Bon jaaluk	*Oldenlandia corymbosa*	14	Herbs	Average
8.	Kukurajar	*Celosia anetala*	12	Shrubs	Average
	Total no. of individuals		119		

Date: 28- 01-2010
Quadrate no. 3
Place- Oyan (Village area) Altitude- 155 m Remarks- Average

Sl. No.	Local Name	Scientific Name	No. of Plants	Habits of Plants	Remarks
1.	Manimuni	*Cantella asiatica*	14	Herbs	Average
2.	Dubori bon	*Cynodon dactylon*	22	Herbs	Average
3.	Bonguti	*Chrysopogon aciculatus*	11	Shrubs	Average
4.	Panitenga	*Marsilea quardrifolia*	11	Herbs	Average
5.	Bon jaaluk	*Oldenlandia corymbosa*	12	Herbs	Average
6.	Kachoo	*Colocasia escluenta*	14	Shrubs	Average
7.	Bon amlokhi	*Phyllanthus neuri*	07	Herbs	Average
8.	Kukurajar	*Celosia anetala*	12	Shrubs	Average
	Total no. of individuals		102		

Date: 13- 02-2010
Quadrate no. 4
Place- Oyan (Lower river bank) Altitude- 155 m Remarks- Average

Sl. No.	Local Name	Scientific Name	No. of Plants	Habits of Plants	Remarks
1.	Manimuni	*Cantella asiatica*	20	Herbs	Average
2.	Dubori bon	*Cynodon dactylon*	12	Herbs	Average
3.	Bonguti	*Chrysopogon aciculatus*	08	Shrubs	Average
4.	Panitenga	*Marsilea quardrifolia*	15	Herbs	Average
5.	Bon jaaluk	*Oldenlandia corymbosa*	12	Herbs	Average
6.	Kachoo	*Colocasia escluenta*	17	Shrubs	Average
7.	Bon amlokhi	*Phyllanthus neuri*	14	Herbs	Average
8.	Kukurajar	*Celosia cristata*	12	Shrubs	Average
	Total no. of individuals		100		

Date: 15- 02-2010
Quadrate no. 5
Place- Oyan (VKV) Altitude- 155 m Remarks- Average

Sl. No.	Local Name	Scientific Name	No. of Plants	Habits of Plants	Remarks
1.	Manimuni	*Cantella asiatica*	12	Herbs	Average
2.	Dubori bon	*Cynodon dactylon*	11	Herbs	Average
3.	Bonguti	*Chrysopogon aciculatus*	11	Shrubs	Average
4.	Panitenga	*Marsilea quardrifolia*	12	Herbs	Average
5.	Bon jaaluk	*Oldenlandia corymbosa*	18	Herbs	Average
6.	Kachoo	*Colocasia escluenta*	12	Shrubs	Average
7.	Bon amlokhi	*Phyllanthus neuri*	10	Herbs	Average
8.	Kukurajar	*Celosia cristata*	08	Shrubs	Average
	Total no. of individuals		94		

Date: 21- 02-2010
Quadrate no. 6
Place- Oyan (Village area) Altitude- 155 m Remarks- Average

Sl. No.	Local Name	Scientific Name	No. of Plants	Habits of Plants	Remarks
1.	Manimuni	*Cantella asiatica*	18	Herbs	Average
2.	Dubori bon	*Cynodon dactylon*	12	Herbs	Average
3.	Bonguti	*Chrysopogon aciculatus*	11	Shrubs	Average
4.	Panitenga	*Marsilea quardrifolia*	13	Herbs	Average
5.	Bon jaaluk	*Oldenlandia corymbosa*	14	Herbs	Average
6.	Kachoo	*Colocasia escluenta*	07	Shrubs	Average
7.	Bon amlokhi	*Phyllanthus neuri*	12	Herbs	Average
8.	Kukurajar	*Celosia cristata*	13	Shrubs	Average
	Total no. of individuals		100		

Date: 04- 03-2010
Quadrate no. 7
Place- Oyan (VKV) Altitude- 155 m Remarks- Average

Sl. No.	Local Name	Scientific Name	No. of Plants	Habits of Plants	Remarks
1.	Manimuni	*Cantella asiatica*	15	Herbs	Average
2.	Dubori bon	*Cynodon dactylon*	20	Herbs	Average
3.	Bonguti	*Chrysopogon aciculatus*	14	Shrubs	Average
4.	Panitenga	*Marsilea quardrifolia*	06	Herbs	Average
5.	Bon jaaluk	*Oldenlandia corymbosa*	11	Herbs	Average
6.	Kachoo	*Colocasia escluenta*	09	Shrubs	Average
7.	Bon amlokhi	*Phyllanthus neuri*	11	Herbs	Average
8.	Kukurajar	*Celosia cristata*	13	Shrubs	Average
	Total no. of individuals		99		

Date: 06- 03-2010
Quadrate no. 8
Place- Oyan (Forest area) Altitude- 155 m Remarks- Average

Sl. No.	Local Name	Scientific Name	No. of Plants	Habits of Plants	Remarks
1.	Manimuni	*Cantella asiatica*	12	Herbs	Average
2.	Dubori bon	*Cynodon dactylon*	20	Herbs	Average
3.	Bonguti	*Chrysopogon aciculatus*	13	Shrubs	Average
4.	Panitenga	*Marsilea quardrifolia*	06	Herbs	Average
5.	Bon jaaluk	*Oldenlandia corymbosa*	13	Herbs	Average
6.	Kachoo	*Colocasia escluenta*	13	Shrubs	Average
7.	Bon amlokhi	*Phyllanthus neuri*	12	Herbs	Average
8.	Kukurajar	*Celosia cristata*	11	Shrubs	Average
	Total no. of individuals		100		

Date: 18- 03-2010
Quadrate no. 9
Place- Oyan (Lowland area) Altitude- 155 m Remarks- Average

Sl. No.	Local Name	Scientific Name	No. of Plants	Habits of Plants	Remarks
1.	Manimuni	*Cantella asiatica*	12	Herbs	Average
2.	Dubori bon	*Cynodon dactylon*	23	Herbs	Average
3.	Bonguti	*Chrysopogon aciculatus*	06	Shrubs	Average
4.	Panitenga	*Marsilea quardrifolia*	10	Herbs	Average
5.	Bon jaaluk	*Oldenlandia corymbosa*	08	Herbs	Average
6.	Kachoo	*Colocasia escluenta*	12	Shrubs	Average
7.	Bon amlokhi	*Phyllanthus neuri*	10	Herbs	Average
8.	Kukurajar	*Celosia cristata*	10	Shrubs	Average
	Total no. of individuals		91		

Date: 27- 03-2010
Quadrate no. 10
Place- Oyan (River bank) Altitude- 155 m Remarks- Average

Sl. No.	Local Name	Scientific Name	No. of Plants	Habits of Plants	Remarks
1.	Manimuni	*Cantella asiatica*	11	Herbs	Average
2.	Dubori bon	*Cynodon dactylon*	12	Herbs	Average
3.	Bonguti	*Chrysopogon aciculatus*	15	Shrubs	Average
4.	Panitenga	*Marsilea quardrifolia*	07	Herbs	Average
5.	Bon jaaluk	*Oldenlandia corymbosa*	19	Herbs	Average
6.	Kachoo	*Colocasia escluenta*	11	Shrubs	Average
7.	Bon amlokhi	*Phyllanthus neuri*	12	Herbs	Average
8.	Kukurajar	*Celosia anetala*	11	Shrubs	Average
	Total no. of individuals		98		

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Evaluation

Site no. 1 Total no. of Individuals = 99
Site no. 2 Total no. of Individuals = 119
Site no. 3 Total no. of Individuals = 102
Site no. 4 Total no. of Individuals = 100
Site no. 5 Total no. of Individuals = 94
Site no. 6 Total no. of Individuals = 100
Site no. 7 Total no. of Individuals = 99
Site no. 8 Total no. of Individuals = 100
Site no. 9 Total no. of Individuals = 91
Site no. 10 Total no. of Individuals = 98

Total number individuals in 10 (Ten) sites = 1002

To study the population of medicinal plant diversity we need Density, relative abundance, Frequency and Relative frequency as follows:-

(A) Density = No. of Individual of the selected species/Sampling unit area
= 1002 / 1000 m^2 X 10
= 1.002 Individuals / m^2

(B) Relative abundance = Total no. of Individuals of the selected species /Total No. of individuals on the sampling X 100
= 1002 / 1002 X 100
= 100 individuals / sampling

(C) Frequency = Total no. of individuals in all the samplings / no. of Samplings
= 1002 / 10

(D) Relative frequency = Total no. of individuals all the samplings / No. of Samplings X 100
= 1002 / 10 X 100
= 10020

We have calculated the Density, Relative abundance, Frequency, and Relative frequency for Manimuni, Scientific name- *Centella asiatica*, which are as follows:-

Total number of individuals in 10 (Ten) samples = 12 + 20 + 14 + 20 + 12 + 18 + 15 + 12 + 12 + 11=146
=146

(a) Density = 146 / 1000 m^2 X 10
= 1.46 Individuals / m^2

(b) Relative abundance = 146 / 1002 X 100
=14.60 Individuals/sampling

(c) Frequency = 146 / 10
= 14.6 no. of Individuals/ sampling

(d) Relative frequency = 146 / 10 X 100 = 1460

Data sheet for understanding exploitation / utilization of medicinal plants:

Date: - 07- 04-2010

Name and address of the Informer:

1) Mr. Santiram Pao
Vill. - Oyan. P.O. - Sille
Dist. East Siang
(Arunachal Pradesh)
Place:- Oyan, Age:- 41 yrs

2) Mr. Sundar Bori
Mr. Santiram Pao
Vill. - Oyan. P.O. - Sille
Dist. East Siang
(Arunachal Pradesh)
Place:- Oyan, Age:- 55 yrs

Sl. No.	Local Name	Scientific Name	Quantity No./Kg	Frequency of Collection	Parts Used	Remarks
1.	Neem	*Azadirachta indica*	100gms in 1 time	Frequent	Leaves	Destructive
2.	Amita	*Carica papaya*	2-4 seeds in 1 time	Frequent	Seeds	Non-destructive
3.	Manimuni	*Centella asiatica*	10-15gms in 1 time	Frequent	Whole plant	Destructive
4.	Chotiona	*Alostomia scholaris*	1-2kg in 1 time	Frequent	Bark	Destructive
5.	Belipoka	*Thaladiantha cordifolia*	1 creeper at 1 time	Occasionally	Stem	Non-destructive
6.	Sajeena	*Moringa oleifera*	1-2kg at a time	Occasionally	Bark	Destructive
7.	Bongali ara	*Jatriopha curcus*	5-10gms at a time	Occasionally	Leave stalk	Non-destructive
8.	Jetuka	*Lawsoria inermis*	3-4 roots at a time	Occasionally	Roots	Destructive
9.	Sewali	*Nyctanythus arbortritis*	10-20gms at a time	Frequent	Leaves	Non-destructive
10.	Bel	*Aegele marmelos*	2-3 seeds at a time	Frequent	Seeds	Non-destructive
11.	Tulsi	*Ocimum sanctum*	10-30gms at a time	Frequent	Leaves	Destructive
12.	Bon amlokhi	*Phylanthus niruri*	20-40gms at a time	Frequent	Leaves	Destructive
13.	Modhuri	*Psidium guayava*	5-10gms at a time	Frequent	Tender leaves	Non-destructive
14.	Daalim	*Punica gunatum*	0.5-1kg at a time	Occasionally	Bark	Destructive
15.	Pudina	*Mentha viridis*	10-20gms at a time	Frequent	Whole plant	Destructive
16.	Arjun	*Terminalia arjuna*	1-2kg at a time	Occasionally	Bark	Destructive
17.	Jaaluk	*Piper nigrum*	10-20gms at a time	Frequent	Fruits	Non-destructive
18.	Chalknowri	*Aloe vera*	5-10gms at a time	Frequent	Leaf and pulp	Non- destructive

Conclusion

It has been concluded from the study that the indigenous people always try to utilize the medicinal plant which are easily accessible to them. For this reasons each tribe have its own ethnological medical knowledge system according to which they exploit the nature for their well being. But unfortunately, because of the over exploitation, shrinkage of forest areas and many other reasons, this traditional knowledge have been diminishing for which collection and documentation of this knowledge in of utmost importance before this knowledge is lost forever.

The benefit of indigenous knowledge can be improved upon by its appropriate use, establishing the knowledge with the modern technology by separating the effective compounds and also by encouraging the herbal practitioner as well as villagers for their

cultivation which will lead to its conservation and socio-economic development.

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