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## ETHNOMEDICINAL KNOWLEDGE AMONG THE ADI TRIBES OF LOWER DIBANG VALLEY DISTRICT OF ARUNACHAL PRADESH, INDIA

Nimasow Gibji<sup>1\*</sup>, Ngupok Ringu<sup>1</sup> and Nimasow Oyi Dai<sup>2</sup>

<sup>1</sup>Department of Geography, Rajiv Gandhi University, Rono Hills, Doimukh – 791112, Arunachal Pradesh, India

<sup>2</sup>Department of Botany, Rajiv Gandhi University, Rono Hills, Doimukh – 791112, Arunachal Pradesh, India

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\*Email: gibji26@yahoo.co.in

### ABSTRACT

The paper presents the traditional ethnomedicinal knowledge and uses of various plants among the Adi tribes of Lower Dibang Valley district of Arunachal Pradesh (India). These people in rural villages are still more or less dependent on herbal medicines in this age of modernization also for overcoming various diseases. A field survey was conducted in the year 2010 and 2011 using field schedules and interview was taken from randomly selected 35 respondents who are practicing ethnomedicinal treatments. An informant consensus factor ( $F_{IC}$ ) was derived to determine the homogeneity of respondent's knowledge on various reported ethnomedicinal plants. The study revealed 26 plant species belonging to 18 families used for treating various human ailments. The most common medicinal plants belong to shrubs (46%) followed by trees (35%) and herbs (19%). In most of the cases the leaves are used as medicines. However, roots, barks, stems and sometimes the whole parts of plants are also used as ethnomedicines. The respondents have good knowledge of the medicinal plants as revealed by the consensus analysis. The abundance of forest resources plays significant role in evolving traditional knowledge of herbal medicine among the Adi people to cure and prevent diseases. Hence, the ethnomedicinal plants play a crucial role in the traditional health care system of Adi community of the area.

**Keywords:** Adi tribe, Ethnomedicines, Traditional knowledge system, Arunachal Pradesh

### INTRODUCTION

In the tribal society the use of plants as medicines is well known since early days. They use different plant species in treatment of various diseases using the roots, stems, leaves, bark, etc. of the plants<sup>1</sup>. Ethnomedicine refers to the study of traditional medical practice which is concerned with the cultural interpretation of health, diseases and illness and also addresses the healthcare-seeking process and healing practices<sup>2</sup>. Today about 80% of the world's population rely predominantly on plants and plant extracts for healthcare<sup>3</sup>. Today, ethnomedicinal practices and beliefs are part of a total belief system that transcends class, ethnicity and religious beliefs in such a manner that the terms "folk or traditional" can be used to describe practices that are truly universal<sup>4</sup>.

During the last two decades, some notable progress has been made in the field of ethnomedicinal research on the tribes of Arunachal Pradesh by various scholars but still many tribes are awaited to be explored in terms of ethnobotanical knowledge of Arunachal Himalayan region<sup>5</sup>. The knowledge of medicinal plants is mostly inherited traditionally. Traditional medicines are the mainstay of healthcare in this region and are known to support the treatment of many illnesses such as malaria, bacterial infections, epilepsy, gynaecological problems and others<sup>6</sup>. The common diseases that are occurring in the villages are dysentery, fever, malaria, jaundice, cough, fracture, etc. Villagers in the remote localities still rely on the traditional medicines for the alleviation of the local ailments. They mostly use herbals and sometimes an admixture of plants, animal and mineral substances coupled with local rituals<sup>5</sup>. The use of plants for curing various ailments is known to several households. The elderly people have vast knowledge of the ethnomedicinal plants found in the nearby forest. They are good in identification, extraction, use, preparation and applications of plants and herbs in various kinds of ailments locally occur in the area<sup>7</sup>. They use traditional knowledge in health care system where herbs, plants, and roots of some wild trees and plants locally available are used for curing the ailments. They

have indigenous method of treatment for different kinds of diseases with the help of local herbal medicines.

The usage of ethnomedicinal plants by various tribes of Arunachal Pradesh like Nyishi, Hill Miri, Khampti, Apatani, Aka, Wancho, Tagin, etc. has been reported by different researchers<sup>8-14</sup>. However, the traditional ethnomedicinal practices by the Adi tribes have been partially reported. Among the Adi tribe, the uses of medicinal plants were found in various kinds of diseases. Mostly, dysentery, malaria, jaundice, fever, cough, fire sore, etc. are treated with various ethnomedicinal plants by the local people. The Adis also use body parts of some animals such as bear, antelopes, porcupine, etc. for curing diseases of orthopaedic, stomach and liver pain, etc. The use of ethnomedicinal plants vary from one place to another according to the availability of medicinal plants and presence of experts known as *Miri Abu* in the area. There is abundance of ethnomedicinal plants for different ailments, but there is lack of proper identification and application in the treatment of diseases. Proper documentation of traditional knowledge regarding plant use along with conservation and sustainable management of key habitats could contribute to safeguarding this heritage<sup>15</sup>. Medicinal plant use should be carried out under the supervision of a knowledgeable person, usually an elder, as some plants might be poisonous, or could cause adverse reactions when taken in combination with other plants or with western medicine<sup>16, 17</sup>. The present study attempts to reveal the ethnomedicinal plants used by the Adi tribes in curing diseases of orthopaedic, dermatology, gastroenterology, respiratory, odontology, blood and other health problems.

### STUDY AREA

Lower Dibang Valley District is located on the eastern part of Arunachal Pradesh in between 27° 30' N to 28° 33' N latitudes and 95° 15' E to 96° 30' E longitudes. The study area covers three circles viz. Roing, Dambuk and Paglam of the district (Figure 1). These circles cover an area of 1632.96 km<sup>2</sup> with a total population of 48, 595 persons. The Dibang River divides the study area into two parts. The

upper hilly and mountainous tract is thickly vegetated while large patches of evergreen forest are found in lower deposited areas. The altitude ranges between 150m to 3000m. The natural vegetation consists of mixed deciduous trees, grasses and bushes of sub-tropical species. There are three types of forest viz. tropical semi-evergreen forest, sub-tropical forest and tropical wet evergreen forest. Dambuk circle recorded higher dense vegetation cover in the area. The soil of study area varies from loamy to clayey with thick humus content especially in forested areas. Mountain soil is mostly found in the upper hilly area with wide varieties of rocks and soil composition. Vast extension of alluvial deposits are found along the bank of Iphi Pani, Deopani, Tapat river, Sirki, Dotung, Sissiri/Sisar, Dibang and along the streams in low lying areas. The area falls under humid sub-tropical to temperate climate. The average maximum and minimum temperature of the area is 40° C and 9.8° C respectively and the annual rainfall is about 4863. 60 mm.

The study area is inhabited by mainly two tribes i.e. Adi tribes in the plains and some hilly portions and Idu-Mishmi tribes in the upper hilly areas of the district. The Adi tribe is a major collective tribe living in the Himalayan hills of Arunachal Pradesh, and they are found in the temperate and sub-tropical areas in the districts of West Siang, East Siang, Upper Siang, Lower Dibang Valley and Lohit. The economy of Adi people is based on agriculture, but they also depend on the plant resources for supplementing the food shortages and other requirements.

#### MATERIALS AND METHODS

Some of the information has been collected from secondary sources like office booklets, statistical abstracts, books and journals. The necessary thematic information has been collected from topographical maps such as 82p/6, 82 p/7, 82 p/10, 82 p/11, 82 p/12, 82 p/16, 83 m/9, 83 m/13, 91 d/3, and 91 d/4 in 1: 50, 000 scale, published by survey of India. The soil samples from different places like agricultural field, dense forest, river side, settlements, etc. has been collected and soil texture analysis has been carried out in the departmental laboratory. The Global Positioning System (GPS) has been used for locating individual plant species in the randomly selected plots.

A detailed ethnobotanical field survey has been conducted in the areas like Roing, Dambuk and Hunli circle in the year 2010 and 2011 to make vivid observation. Relevant information through personal interview has been noted down in household schedules and field diary. In some areas, plant samples have been collected for taxonomic identification with the help of photographs, herbarium and Taxonomists of Department of Botany, Rajiv Gandhi University, Itanagar Prof. A. K. Das and Dr. Hui Tag. The nomenclature of the plants has been made in line with the flora of Arunachal Pradesh<sup>18</sup>. The plants indicated by 35 respondents have been taken into account for the final analysis. The informant consensus factor (F<sub>IC</sub>) has been calculated by following the method proposed by Trotter and Logan<sup>19</sup> as given below:

$$F_{IC} = \frac{N_{ur} - N_t}{(N_{ur} - 1)}$$

This factor provides a range of 0 to 1, where a high value means a good indicator for high rate of informant consensus. N<sub>ur</sub> is the number of use reports by informants for usage of particular illness, and N<sub>t</sub> refers to number of species used for particular illness category by all informants. The use of illness categories adopted is based on other ethnobotanical researchers<sup>20</sup>. These 24 illnesses were clustered into 3 usages (dermatological, gastro-intestinal and general health disorders).

#### RESULT AND DISCUSSION

The study reveals different plant species used for curing various diseases found in the locality by the Adi tribes of Arunachal Pradesh. Majority of the species reported in this paper are widely known throughout the Adi inhabited area. The plants were often used by most of the informants more or less for the same purpose with only slight variations in recipes. The plants are usually collected from wild. The informants easily identify the plant species but in local Adi dialect nomenclature. Most of the plants belong to Solanaceae, Rutaceae, Asteraceae, Musaceae, Solanaceae, Euphorbiaceae, Acanthaceae, Leguminosae, Zingiberaceae and Malvaceae families. All together 26 plant species belonging to 18 families have been documented (table 2) in this study. As shown in Figure 2, majority of the medicinal plants belong to shrubs (46%) followed by trees (35%) and herbs (19%). The most frequently used ethnomedicinal plants are *Coptis teeta* Wall, *Dendrocalamus strictus*, *Terminalia bellerica* Roxb., *Spilanthes paniculata* Wall., *Zingiber zerumbet* (L) Smith, *Ageratum conyzoides*, *Pouzolzia viminea*, *Ixora* spp. and *Oroxylum indicum* Vent. among the Adi tribes (Figure 5). The leaves are mostly used parts for the preparation of ethno-medicines followed by fruits and roots (Figure 4). However, in some cases the whole parts of plant, hearth (inner core) and barks are used while preparing and applying the ethno-medicines. In case of herbal formulation majority of the plants are grinded to produce the ethno-medicines followed by boiling / steaming, raw consumption and extraction of juice (Figure 3). Some of the plants are used by mixing with other plants. Out of the 26 plant species ethno-medicines of 22 plant species are administered for internal use and only 4 plant species are administered for external use. The informant consensus analysis has been carried out to test the reliability of ethnobotanical data as revealed by the practitioners. The informant consensus about the usages of ethnomedicinal plants among the Adi people ranges from 0.55 to 0.73 (Table 1). Normally, the value of informant consensus ranges between 0 to 1 and the higher the value towards 1 there is higher agreement on the use of plant taxa and the vice versa. The highest F<sub>IC</sub> was found in the general health disorder (0.73) followed by gastrointestinal disorder (0.69) and dermatological disorder (0.55). The higher value of F<sub>IC</sub> is indicative of the importance of ethnomedicinal plants and their continued usages in the Adi society.

The common sicknesses found in the study area are cold, cough, bronchitis, diarrhoea, dysentery, gastritis, headache, backache, cuts, wounds, etc. They applied different techniques and method to get cure off these diseases. Since last few decades, the use of ethnomedicinal plants has gradually reduced due to the increase of modern medical facilities in the area. But, in spite of this, people still prefer to use ethnomedicinal plants available in the surrounding forests. The ethnomedicinal plants used by the Adi tribes have been mentioned by different researchers as *Clerodendrum colebrookianum* Walp., *Solanum spirale* Roxb., *Spilanthes paniculata* Wall., *Zanthoxylum hamiltonianum*, *Zanthorylum rhetsa*, *Musa sapiatum*, *Solanum khasianum*, *Traoia invokrata*, *Ageratum conyzoides*, *Ficus* spp., etc<sup>1, 21</sup>. Plants like *Zingiber officinale* Roxb., *Alstonia scholaris* and *Solanum nigrum* L. have been reported to be used in diseases like stomach disorder, eye conjunctivitis and hypertension in Beed and Nanded districts of Marathwada<sup>22</sup>. However, in the present study the same plant species has been found to be used for other diseases like

stomachache, snake bite, skin diseases, digestion and liver problem.

## CONCLUSION

In the absence of health care system, the local people are dependent on the medicinal herbs extracted from the forest. Ethnomedicinal plants represent a significant contribution to human health and one of the important ways in which people directly reap the benefits provided by biodiversity<sup>23, 24</sup>. They usually treat the diseases like malaria, jaundice, fracture, cough, fever, stomach pain and disorder, dysentery, diarrhea, ringworm, skin sore and many other minor diseases prevalent in the area. While treating such diseases they have to search out for medicines collected from forest resources like plants and animals. Number of ethnomedicinal plants used for curing different kinds of diseases has been recorded for further understanding of such plants. Different parts of plants are used to cure various ailments such as stomach ache, head ache, joint/fractures, jaundice, dysentery/diarrhea, eye infection, skin sore, snake bite, etc. The traditional healing practices are mostly done by few practitioners of the village who have specialized knowledge in ethnomedicines. In spite of increasing influence of modern medical system, the use of local medicinal plants helps in providing medicines to the poor people. Some people who have no medical access and poor economic conditions directly or indirectly depend on the traditional methods of curing different diseases. For example, the ethnomedicines of bones are still considered as one of the best medicines. Instead of replacing the bones through modern techniques the medicinal plants allow joining of fractured bones in natural way.

The practice of rituals and festivals also depend on sacred plants to appease the deities. Such old age practices have led to the preservation of natural resources to a greater extent in the past. But due to influx of modernization the ethnic belief systems associated with the nature are fading away. The loss of belief system on nature is causing relentless exploitation of nature. Hence, the indigenous knowledge system needs to be encouraged through active participation of local people, Government and Non-governmental agencies. Such an effort can ensure the availability of plant resources for a longer period of time. The active participation of local people in eco-friendly utilization of resources can conserve the natural vegetation from immediate depletion. The preservation of such practices and plant species is the gateway towards developing efficacious remedies for treating diseases. Due to lack of knowledge and interest among the younger generations, some of the traditional medical knowledge has been lost during the past decades with the demise of local practitioners. There is a need of immediate conservation of the ethnomedicinal knowledge of tribal people. The preservation of these plant species along with the traditional knowledge is an indispensable obligation for sustaining traditional medicine as a medicinal and cultural resource<sup>25</sup>. Therefore, the contribution of plant species in the traditional health care through ethnomedicinal plants plays a befitting role in the survival and existence of the tribal people.

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## REFERENCES

- Mibang T, Choudhuri SK, editors. Ethnomedicines of the tribes of Arunachal Pradesh. New Delhi (India): Himalayan Publishers; 2003.
- Krippner S: Models of Ethnomedicinal Healing. Paper Presented at the Ethnomedicine Conferences, Munich, Germany. April 26–27 and October 11–12, 2003.
- Setzer MC, Werka JS, Irvine AK, Jackes BR, Setzer WN. Biological activity of rainforest plant extracts from far north Queensland, Australia. In: Williams LAD, editors. Biologically Active Natural Products for the 21<sup>st</sup> Century. Trivandrum, India: Research Signpost; 2006. p. 21–46.
- Lowe H, Payne-Jackson A, Beckstrom-Sternberg SM, Duke JA, editors. Jamaica's (2000) Ethnomedicine: Its potential in the healthcare system. University of the West Indies, Kingston, Jamaica: Canoe Press; 2000.
- Nimachow G, Taga T, Tug H, Dai O. Linkages between Bio-Resources and Human Livelihood: A Case Study of Adi Tribes of Mirem Village. The Initiation 2008; 1:183-197.
- Moshi MJ, Otieno DF, Weisheit A. Ethnomedicine of the Kagera Region, north western Tanzania. Part 3: Plants used in traditional medicine in Kikuku village, Muleba District. J Ethnobiol Ethnomedicine 2012; 8:14 doi:10.1186/1746-4269-8-14.
- Ngupok R. Phytogeographic survey and conservation of natural vegetation: A study of Adi tribes of Lower Dibang Valley. Unpublished M. Phil dissertation, 2010; Rajiv Gandhi University, Doimukh, Arunachal Pradesh.
- Doley B, Gajurel PR, Rethy P, Singh B, Buragohain R, Potsangbam S. Lesser known Ethno medicinal Plants Used by the Nyishi community of Papum Pare District, Arunachal Pradesh. Jour Biol Sci Res 2010; 1:34-36.
- Tag H, Das AK. Ethnobotanical notes on Hill Miri Tribe of Arunachal Pradesh. Indian Jour Trad Knowledge 2004; 3:80-85.
- Sen P, Dollo M, Choudhury MD, Choudhury D. Documentation of traditional herbal knowledge of Khamptis of Arunachal Pradesh. Indian Jour Trad Knowledge 2009; 7:438-442.
- Kala CP. Ethnomedicinal botany of Apatani in the Eastern Himalayan region of India. J Ethnobiol Ethnomedicine 2005; 1: 11 doi:10.1186/1746-4269-1-11.
- Nimachow G, Rawat JS, Arunachalam A, Dai O. Ethno-medicines of Aka tribe, West Kameng District, Arunachal Pradesh (India). Sci Cult 2011; 77(3-4):149–155.
- Dutta R, Bhattacharjya KB. An indigenous community fishing practice of Tirap district, Arunachal Pradesh. Indian Jour Trad Knowledge 2008; 7:624-626.
- Goswami P, Soki D, Jaishi A, Das M, Sarma HN. Traditional healthcare practices among the Tagin tribe of Arunachal Pradesh. Indian Jour Trad Knowledge 2009; 8:127-130.
- Hamilton A. Medicinal plants, conservation and livelihoods. Biodivers Conserv 2004; 13:1477-1517.
- Marshall S. The gift of healing: health problems and their treatments. Chisasibi, Quebec: The Cree Board of Health and Social Services of James Bay; 2006.
- Welsh R, Turner NJ. Looking after our elders: Healthcare and well-being of the elderly from the perspective of Gwich'in and other First Nations of Canada. In: Cherniack EP, Bronx MD, editors. Alternative medicine and the elderly. New York: Springer-Verlag; 2003. p. 287-300.
- Choudhery HJ. Materials for the Flora of Arunachal Pradesh. Kolkata: Botanical Survey of India; 1996.
- Trotter R, Logan M. Informant consensus: a new approach for identifying potentially effective medicinal plants. In: Etkin NL, editors. Plants in indigenous medicine and diet: biobehavioural approaches. Bedford hills, New York: Redgrave Publishers; 1986. p. 91-112.
- Heinrich M. Ethnobotany and its role in drug development. Phytother Res 2000; 14:479-488.
- Srivastava RC, Singh RK, Apatani Community and Mukherjee TK. Learning on Biocultural Knowledge of Apatani tribe of Arunachal Pradesh for Sustainable Livelihood. Indian Jour Trad Knowledge 2010; 9(3):432-442.
- Farnsworth NR, Soejarto DD. Global importance of medicinal plants. In: Akerele O, Heywood V, Syngé H, Editors. The Conservation of Medicinal Plants. Cambridge: Cambridge University Press; 1991. p. 25-51.
- Bannister K. Prophet river ethnobotany: A report on traditional plant knowledge and contemporary concerns of the Prophet River First Nation. British Columbia: Prophet River First Nation; 2006.
- Kachare SV, Surywanshi SR Raut KS. Ethnomedicinal plants of Beed and Nanded district from Marathwada. International Jour Curr Res 2010; 5:014-016.



**Table:1 Informant consensus of medicinal plants of different ailment categories**

Illness category	Number of taxa (N <sub>t</sub> )	Number of use reports (N <sub>ur</sub> )	Informant's consensus index factor (F <sub>IC</sub> ) <sup>a</sup>
Dermatological disorder (Skin diseases, wound healing, cuts, bleeding, sore, wart, snake bites)	05	10	0.55
Gastrointestinal disorder (Diarrhea, gastritis, dysentery, stomachache, digestion, indigestion, flatulence)	14	44	0.69
General health (Toothache, liver problems, cough, fever, blood pressure, jaundice, malaria, vomiting, body pain, urinary problems)	15	53	0.73

<sup>a</sup>F<sub>IC</sub> = N<sub>ur</sub> - N<sub>t</sub> / (N<sub>ur</sub> - 1), providing a value between 0 and 1, where high value indicates a high rate of informant consensus

**Table:2 Ethnomedicinal plants and mode of use**

Botanical name / Voucher number	Family name	Local name / status of domestication	Habit	Parts used	Herbal formulation	Ailments treated
<i>Alstonia scholaris</i>	Apocynaceae	<i>Singar</i> , Wild	T	Whole parts especially bark and roots	Grinded and consumed (I)	Snake bite and skin diseases
<i>Coptis teeta</i> Wall.	Ranunculaceae	<i>Riingko</i> , Wild	Sh	Roots	Grinded and consumed with water (I)	Malaria, fever, jaundice, Stomachache
<i>Dendrocalamus strictus</i> Nees.	Poaceae	<i>Eng</i> , Wild	Sh	Soft hearth between bark and inner core	Juice (E)	Wound or cut
<i>Terminalia bellerica</i> Roxb.	Combretaceae	<i>Lokyo</i> , Wild	T	Leaves and fruits	Grinded and drink with water. Fruits are directly consumed (I)	Cold, cough, Fever
<i>Spilanthes paniculata</i> Wall.	Asteraceae	<i>Marsang</i> , Cult	H	Flower or fruits	Direct chewed (I)	Toothache
<i>Solanum spirale</i> Roxb.	Solanaceae	<i>Bangko Or Okobang</i> , Cult	Sh	Fruits and leaves	Boiled or directly eaten (I)	Stomachache and indigestion
<i>Campylandra aurantiaca</i> Wall	Liliaceae	<i>Dipo-Talo</i> , Wild	Sh	Whole parts	Grinded and consumed (I)	Indigestion
<i>Clerodendrum colebrookianum</i> Walp.	Verbenaceae	<i>Ongiin</i> , Wild	Sh	Leaves	Boiled or steamed (I)	Blood pressure
<i>Zanthoxylum hamiltonianum</i> Wall.	Rutaceae	<i>Ombe or Ombeng</i> , Wild	T	Roots and barks	Grinded and boiled with water (I)	Malaria
<i>Zanthoxylum rhetsa</i> DC	Rutaceae	<i>Onger</i> , Wild / Cult	T	Leaves	Boiled or steamed (I)	Jaundice, wart
<i>Zingiber zerumbet</i> (L) Smith	Zingiberaceae	<i>Kekiir</i> , Cult	Sh	Tubers including leaves	Grinding and mixed with boiled water (I)	Stomachache, vomiting, diarrhea, cough
<i>Paedaeria foetida</i>	Rubiaceae	<i>Bungka-Solut</i> , Wild	H	Leaves	Grinded by adding water (I)	Stomachache, gastric, indigestion
<i>Ageratum conyzoides</i>	Asteraceae	<i>Namying-ling</i> , Wild	H	Leaves	Grinded and applied on the wounds (E)	Blood flow
<i>Pouzolzia viminea</i>	Urticaceae	<i>Oyik or Yiktak</i> , Wild	Sh	Leaves and stems	Grinded into powder and paste (E)	Bleeding, sore
<i>Argyrea nervosa</i>	Convolvulaceae	<i>Riiko</i> , Wild	Sh	Leaves and stems	Grinded by adding water (I)	Malaria
<i>Oroxylum indicum</i> Vent.	Bignoniaceae	<i>Domiir-etkung</i> , Wild	T	Leaves	Grinded by adding water (I)	Jaundice
<i>Calamus inermis</i>	Arecaceae	<i>Geying</i> , Wild	T	Leave buds and soft core (pith)	Chewed raw (I)	Malaria
<i>Ficus</i> spp.	Moraceae	<i>Takuk</i> , Wild	T	Roots	Grinded and mixed with water (I)	Dysentery
<i>Musa balbisiana</i>	Musaceae	<i>Paksum</i> , Wild	Sh	Hearth (inner core)	Juice (I)	Blood dysentery, diarrhea
<i>Musa sapientum</i> L.	Musaceae	<i>Kolung</i> , Wild	Sh	Fruits	Boiled and raw (I)	Dysentery, urinary problems
<i>Solanum</i> spp.	Solanaceae	<i>Kopi</i> , Cult	Sh	Fruits	Sliced into pieces and mixed with chili, then applied (I)	Toothache
<i>Houttuynia cordata</i> Thunb	Saururaceae	<i>Roram</i> , Wild / Cult	H	Tender leaves	Warm leaves are packed in banana leaf for snuff or massage (E)	Stomachache

<i>Sonchus</i> spp.	Asteraceae	<i>Ogen</i> , Wild	H	Leaves	Boiled	Flatulence, body pain
<i>Solanum nigrum</i> L.	Solanaceae	<i>Okomamang</i> , Cult	Sh	Whole part	Raw or boiled (I)	Digestion, liver problem
<i>Dillenia indica</i>	Dilleniaceae	<i>Sompa</i> , Wild	T	Fruit	Raw or boiled (I)	Stomachache
<i>Ixora</i> spp.	Rubiaceae	<i>Namle-riiyong</i> , Wild	T	Leaves	Grinded and mixed with water (I)	Stomachache

Source: Data collected by Field Investigator, 2010  
 Habit: T: tree; Sh: shrub; H: herb; C: climber; Cult: cultivated.  
 Mode of administration: (I) internal use; (E) External use.

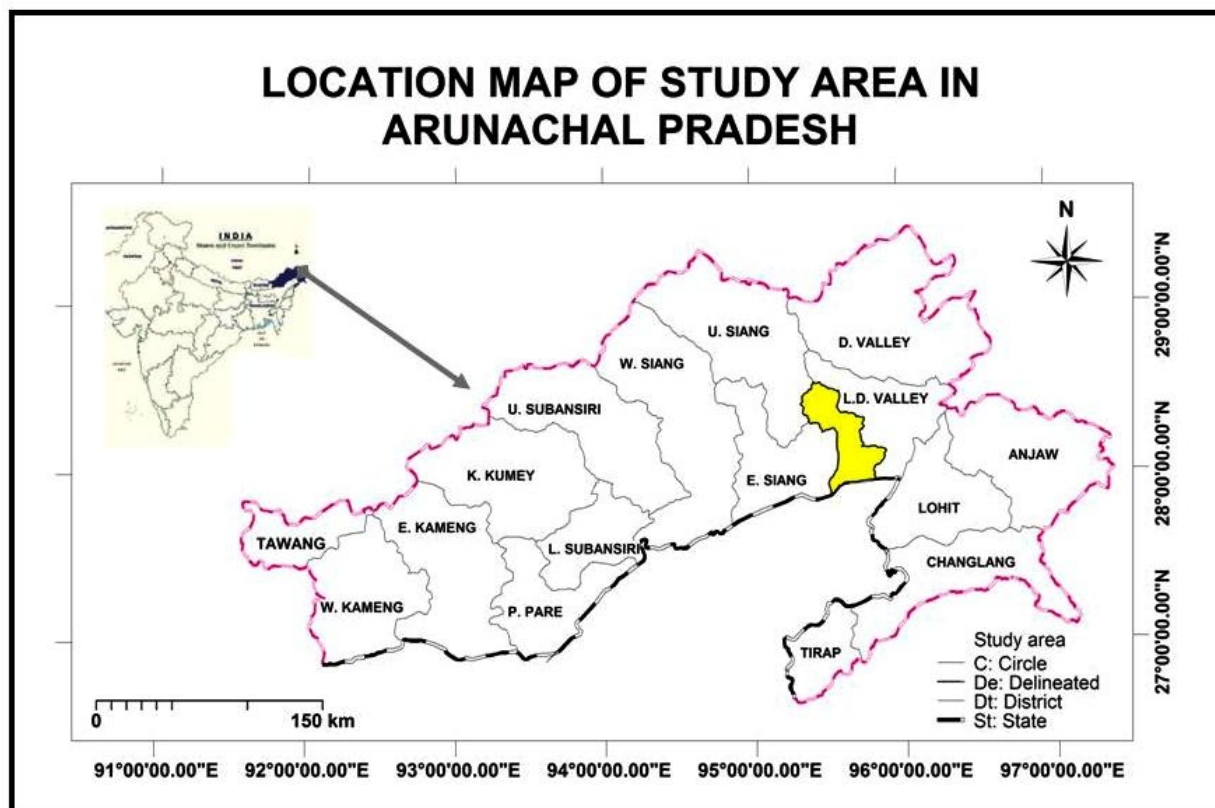


Figure 1 Location map of Lower Dibang Valley district in Arunachal Pradesh (India)

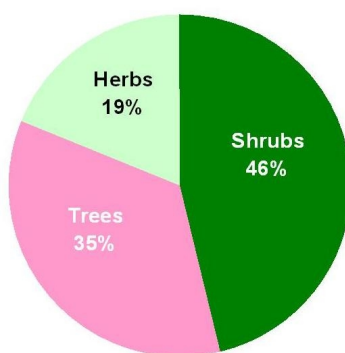


Figure 2 Life forms of ethnomedicinal plants used by Adi tribes

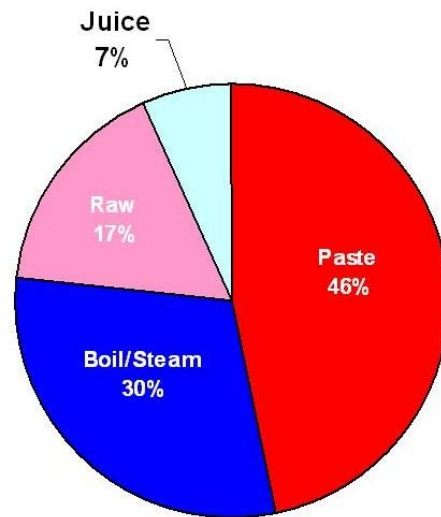


Figure 3 Herbal formulation of various medicinal plants practiced by the Adi practitioners

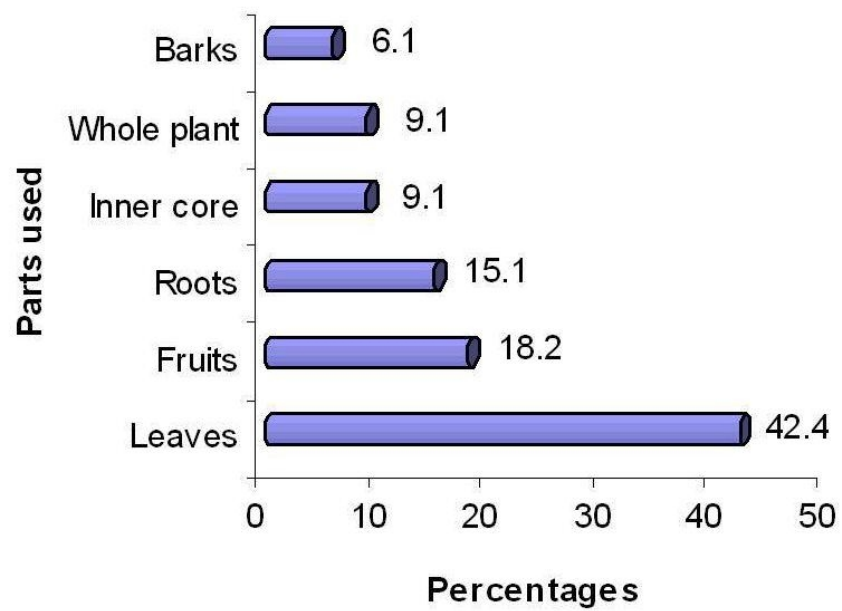
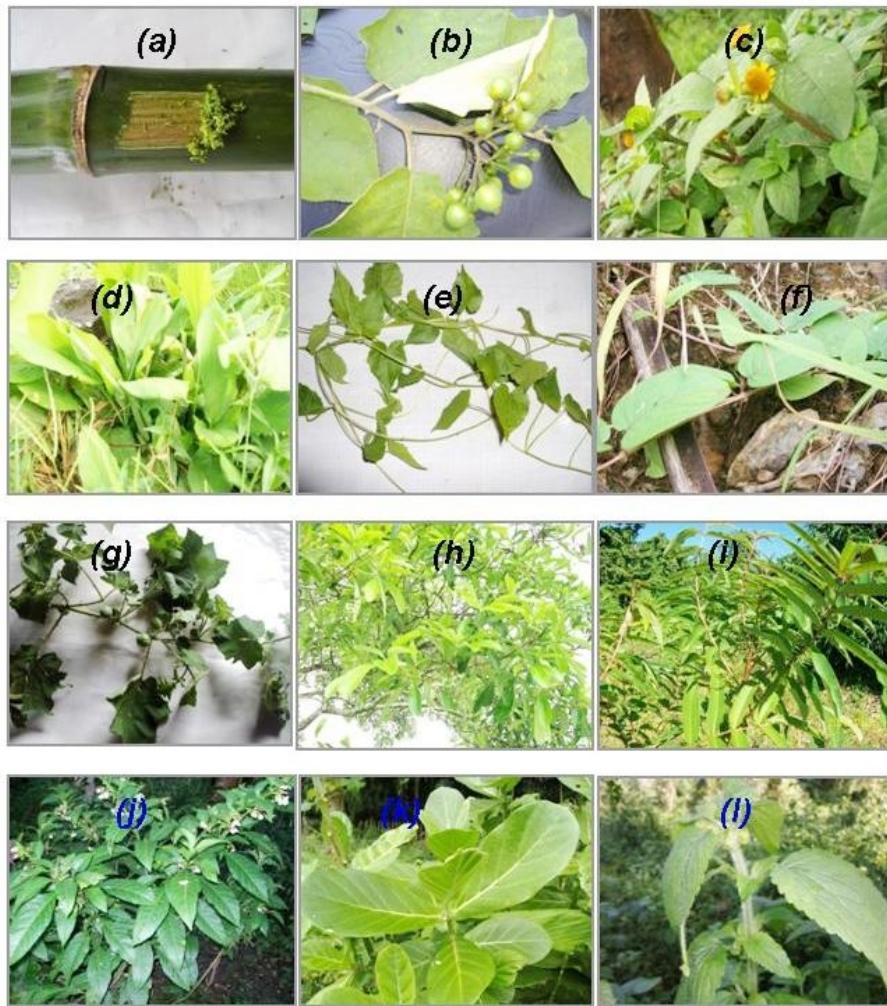


Figure 4 various parts of plants used in the preparation of ethnomedicines



(a) *Bambusa tulda* Roxb. (b) *Solanum torvum* (c) *Spilanthes paniculata* (d) *Curcuma montana* (e) *Micania micrantha* (f) *Paedaeria foetida* (g) *Solanum* spp. (h) *Alstonia scholaris* (i) *Zanthoxylum rhetsa* DC (j) *Solanum spirale* (k) *Calotropis gigantean* (l) *Ageratum conyzoides*

Figure 5 Photographs of some important ethnomedicinal plants used by Adi tribes