

Indigenous healing practices and ethnomedicinal plants used against Jaundice by some Naga tribes in Nagaland, India

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Abstract

The present study deals with the ethnomedicinal plants and traditional healing practices used for the treatment of jaundice by the four Naga tribes namely *Angami*, *Lotha*, *Sumi* and *Zeliang* inhabiting in *Kohima*, *Wokha*, *Zunheboto* and *Peren* districts of Nagaland state. Overall 35 healers from the four tribes were interviewed using modified semi-structured questionnaires during the ethno-medico- botanical survey conducted during 2011 – 2014. Among the 18 Angiospermic plants recorded, *Ananas comosus* (Linnaeus) Merrill, *Averrhoa carambola* Linnaeus, *Saccharum officinarum* Linnaeus and *Syzygium cumini* (Linnaeus) Skeels are found used by all the four tribes with similar crude drug preparation. Each tribe used a minimum of 10 species with maximum 15 species by the *Angami* healers. The *Angami*, *Lotha* and *Zeliang* share more than 50 percent species and follow almost similar practices in the treatment. The details of the plant used and healing practices with comparison among the four tribes have been presented.

Key words: Ethnomedicinal plant, Jaundice, Angami, Lotha, Sumi, Zeliang, Herbal healers, Nagaland

INTRODUCTION

Since time immemorial human being have been using plants for their food, medicine, fibers, shelter, etc. Tribal communities throughout the world still efficiently use the herbal medicines for curing various health ailments. As per the estimation of World Health Organization (WHO 2008) about 80% of the world's population depends on traditional medicine for their primary health care needs. Traditional health care practices have been commonly followed in different parts of the world including India. The traditional system of medicine is well known in the country and is more prevalent in rural areas. Documentation of various medicinal plants wealth of the country have been made by various authors (Kirtikar & Basu 1935; Caius 1937; Ahluwalia 1952; Deb 1968; Jain *et al.* 1973; Jain 1975). The northeastern states inhabited by more than 130 major tribal communities harbor rich diversity of medicinal plants of both pharmaceutical and ethnomedicinal values. Uses of 1,350 species of plants for ethnomedicinal purposes have already been recorded from the region (Dutta & Dutta 2005). The tribal communities with rich traditional knowledge system still depend on plants for their health care and this relationship has evolved through generations with experience and practices (Lalramnghinglova & Jha 2000). Many tribal regions and tribal communities are yet to be explored with regard to their ethnobotanical aspect (Rethy *et al.* 2010).

Nagaland, a tribal state, inhabited by different Naga tribes along with their rich traditions and culture. Among the various tribes the *Angami*, *Lotha*, *Sumi* and *Zeliang* tribes inhabit Kohima, Wokha, Zunheboto and Peren districts of Nagaland respectively. The traditional healing practices are confined mostly to the local medicine-men (*Kobi-raj*). However, the knowledge can be obtained through close contact and convincing them for a good purpose. These practices have been passed on orally to near and dear ones through generations (Deorani & Sharma 2007). Nagaland, being a tribal state offers a good scope for the study of medicinal plants used for various diseases. A few notable ethnomedicinal works have been carried out from the state those document the medicinal plants used by various tribes in Nagaland (Jamir & Rao 1990; Lanusunep & Jamir 2010; Jamir *et al.* 2010; Imchen & Jamir 2011). However, there is enough scope of understanding the herbal healing practices adopted by the various communities for healing specific diseases to explore the uses of the Indigenous Knowledge Systems for mankind. Diseases like malaria, jaundice, gastrointestinal disorders, diabetes, hypertension and cholera are prevailing in Nagaland. Among these diseases, jaundice is the most common of all liver disorders. The prevalence of jaundice in Nagaland is very high with 6972 cases per 100000 populations, whereas the all India average of 1225 cases per 100000 (NFHS 1999). In this regard, an attempt has been made to study comparative ethnomedicinal plants used for curing jaundice by *Angami*, *Lotha*, *Sumi* and *Zeliang* tribes inhabiting Kohima, Wokha, Zunheboto and Peren districts of Nagaland respectively.

STUDY AREA

Nagaland lies between 25°06'N to 27°04' N latitude and 93°20' E to 95°15'15'E longitude and covers a total area of 16,579 sq km having total population of 19,80,602 (Census 2011). On the eastern part, the state shares international boundary with Myanmar. It is bordered by Manipur in the south and Arunachal Pradesh in the north, while the western and the north western sides is bordered by Assam. Nagaland is an important part of Indo-Myanmar biodiversity hotspot and is one of the renowned 25th global biodiversity region (Myers *et al.* 2000) and is located within IUCN recognized Indo-Burma Biodiversity Hotspot. The state harbors rich biodiversity and ethnic diversity inhabited by 16 major tribes. Out of the eleven districts of Nagaland, four districts i.e., *Kohima*, *Wokha*, *Zunheboto* and *Peren* districts were selected for the present work, which are dominantly inhabited by *Angami*, *Lotha*, *Sumi* and *Zeliang* tribes respectively (Fig. 1).

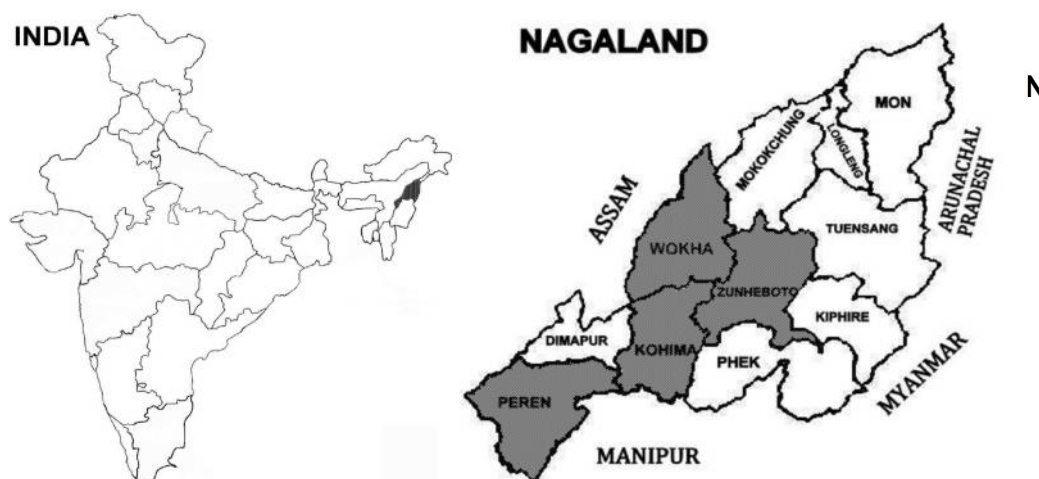


Figure 1: Study areas (shaded) in Nagaland

METHODOLOGY

Extensive field survey was conducted in different villages of the four districts namely Kohima, Wokha, Zunheboto and Peren during 2011 – 2014. During the field survey, informal meeting was held with the village chief, village elders and aged knowledgeable persons. Information on ethnomedicinal plants used for jaundice was collected from 35 local medicine-men (*Kobiraj*/ healers) from 32 villages using semi-structured questionnaires following standard methodology (Jain 1987; Martin 1995). The detailed healing practices adopted by each of the medicine men were recorded. All the plants were collected with the help of the healers. Herbarium specimens were prepared following Jain & Rao (1977). The collected specimens were identified using different literatures (Haridasan 1985-1986; Kanjilal *et al.* 1991; Singh 2000; Deorani & Sharma 2007) and comparing with the authenticated specimens at ASSAM. The Vouchers specimens were deposited in the herbarium of Department of Forestry, NERIST, Arunachal Pradesh.

RESULTS AND DISCUSSION

The present study revealed that jaundice is still a common health problem in the state and the treatment is mostly carried out through herbal remedies. This treatment is mostly practiced by experienced herbal healers. The 35 herbal practitioners identified from the four tribes were found aged between 40 and 80 years, majority of them are above 60 having over 40 years of experience. The detail demographic profile of the healers is presented in Table-1. Four healers, one each from the tribes are professional medicine men and have their own health care centers where they used to prepare the formulation and prescribe medicines to the patients. Although, the healers are with little formal education, mostly up to primary level they are recognized as efficient practitioner. However, nine healers are with graduate degrees. Except one all the healers are male.

Table 1. Demographic profile of the healers (total number 35)

Characteristic		Frequency
Gender	Male	34
	Female	1
Education	Illiterate	1
	Middle school	13
	Matriculate	12
	Graduate	8
	Post Graduate	1
Religion	Christianity	35
Ethnicity	Naga tribe	
	Angami	10
	Lotha	10
	Sumi	7
	Zeliang	8
Years of experience as healer	Between 1–10 years	8
	Between 11–20 years	10
	Between 21–30 years	8
	Between 31–40 years	5
	Between 41–50 years	4
Age groups of healers	40-50 years	12
	51-60 years	10
	61-70 years	8
	71-80 years	5

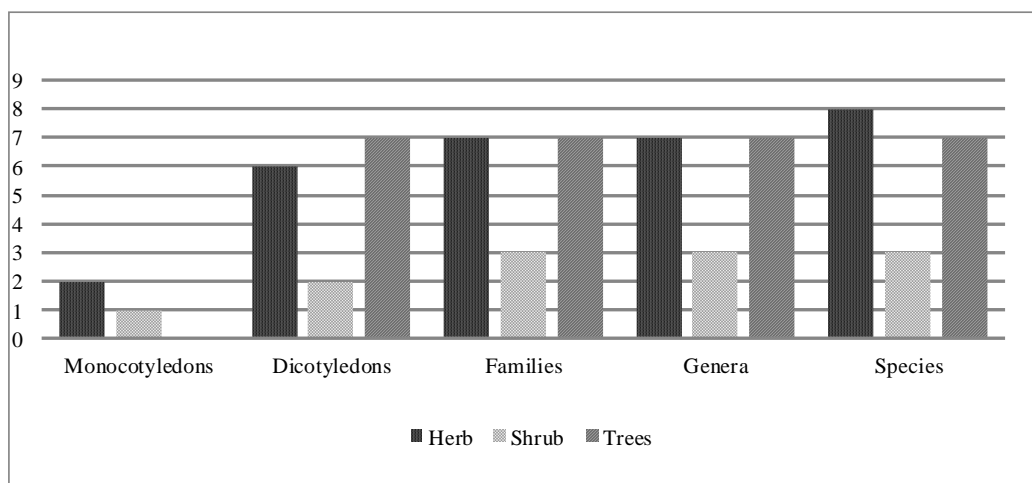
Table 2: Ethnomedicinal plants used for healing jaundice by the four tribes of Nagaland [Abbreviations used: A – Angami; L – Lotha; S – Sumi; Z – Zeliang].

Botanical name [Family]; Voucher specimen	Tribal vernacular name	Parts used	Crude drug type	Habit ; occurrence
<i>Aegle marmelos</i> (Linnaeus) Correa [Rutaceae]; PK - 44 [Plate 1, D]	Belchi (Z)	Leaves	Raw crushed extract	Tree; wild
<i>Aloe vera</i> (Linnaeus) N.L. Burman [Xanthorrhoeaceae]; PK - 57	Aloe (A, L, S)	Succulent stems	Raw crushed pulp	Herb; cultivated
<i>Ananas comosus</i> (Linnaeus) Merrill [Bromeliaceae]; PK - 13 [Plate 1, A]	Kihunyü (A), Anaras (L), Angaraz (S), Poramchi (Z).	Leave, fruits	Decoction & raw	Herb; cultivated
<i>Averrhoa carambola</i> Linnaeus [Averrhoaceae]; PK - 10 [Plate 1, F]	Charkona (A), Tsutsutsungthi (L), Charcona (S), Charcona (Z).	Leaves, fruits	Decoction & raw	Tree; cultivated
<i>Cajanus cajan</i> (Linnaeus) Millspaugh [Leguminosae]; PK - 17	Rhüjo (A), Chiopi (Z)	Leaves, pods	Decoction & raw	Shrub; cultivated
<i>Carica papaya</i> Linnaeus [Caricaceae]; PK - 09 [Plate 1, L]	Kopita (A), Omita (L), Hepobomchi/ Kubita chi (Z)	Fruits	Boiled & Raw	Tree; cultivated
<i>Juglans regia</i> Linnaeus [Juglandaceae]; PK - 27	Pfhiü(A) Ghakuthi(S), Tegeichi(Z)	Seed kernel	Raw, crushed paste	Tree; wild
<i>Mangifera indica</i> Linnaeus [Anacardiaceae]; PK - 33 [Plate 1, I]	Merosi (A), Aamchi (Z)	Bark	Decoction	Tree; wild & cultivated
<i>Mentha spicata</i> Linnaeus [Lamiaceae]; PK - 30 [Plate 1, G]	Meyinha (A), Rarakhum (L), Parimkenambe (Z)	Leaves	Raw, crushed extract	Herb; cultivated
<i>Mimosa pudica</i> Linnaeus [Leguminosae]; PK - 58 [Plate 1, J]	Keringanha (A), Kuzholibo (S), Yikralimo (L)	Roots, leaves	Decoction	Herb; wild
<i>Molineria capitulata</i> (Loureiro) Herbert [Hypoxidaceae]; PK - 64 [Plate 1, B]	Chage (A), Yephaniye (S)	Rhizomes	Decoction & crushed extract	Herb; wild
<i>Mussaenda roxburghii</i> Hooker f. [Rubiaceae]; PK - 60	Seirhuobie (A), Worosüthan (L)	Leaves, calyx lobe, bark, roots	Crushed extract & raw paste	Shrub; wild, rare
<i>Phyllanthus acidus</i> (Linnaeus) Skeels [Phyllanthaceae]; PK - 63 [Plate 1, C]	Cheketi (L), Kholithi (S)	Fruits, leaves	Decoction	Tree; cultivated
<i>Phyllanthus urinaria</i> Linnaeus [Phyllanthaceae]; PK - 22	Bhu-amla (A), Ratalou (Z)	Whole plant	Raw crushed paste & decoction	Herb; wild
<i>Saccharum officinarum</i> Linnaeus [Poaceae]; PK - 37 [Plate 1, K]	Ke (A), Shungpenchii (L), Akhoyi (S), Tamtau (Z)	Stem juice	Raw crushed extract	Shrub; cultivated
<i>Sonchus wightianus</i> Linnaeus [Asteraceae]; PK - 59 [Plate 1, E]	Nhana (A), Epong ero (L)	Whole plant	Crushed pulp & decoction	Herb; wild
<i>Syzygium cumini</i> (Linnaeus) Skeels [Myrtaceae]; PK - 49 [Plate 1, H]	Emshe (A), Shilongthi (L), Jamun (S), Thing-bang daimai (Z)	Bark, fruits	Pounded extract & decoction	Tree; wild
<i>Zingiber officinale</i> Roscoe [Zingiberaceae]; PK - 41	Osung (L), Aku-u (S), Hebei (Z)	Rhizomes	Raw crushed extract	Herb; cultivated

Table 3: Similarity matrix of number of species used by the four tribes in the treatment of Jaundice

	Angami	Lotha	Sumi	Zeliang
Angami	15	10	8	10
Lotha		12	8	7
Sumi			10	6
Zeliang				12

The study of the healing practices revealed the ethnomedicinal uses of 18 Angiospermic plants representing 17 genera from 16 families for healing jaundice by the four tribes in Nagaland. Among these 15 species are Dicotyledonous and 3 are Monocotyledonous plants. All the species used in the treatments are presented along with family, voucher number, vernacular names, part (s) used and status of occurrence in Table-2. The Fabaceae and Phyllanthaceae were represented by two species each while the remaining 14 families with single species each. The 18 ethnomedicinal plants comprises of 8 species of herbs, 3 species of shrubs and 7 species of trees (Fig. 2). Among the different parts used in the preparation of crude drug, leaves are the most frequently used (33.33 %) followed by fruits and seeds (20.83 %) and barks (12.50 %). The use frequency of stem, roots and rhizome is comparative

**Figure 2:** Taxonomic diversity of plant species used in healing Jaundice by Naga tribes

very low (Table-2 & Fig. 3). The observation of crude drug types used by the healers revealed that among the five different forms, decoction is the most frequently used one and prescribed by 13 healers while boil and pounded extract are also used in minimum cases and accounted only in 3 healers each (Fig. 4). The boiled form of medicines is found prescribed only by Lotha and Sumi, indicating the low preference of boiled and cooked plants against jaundice. When pounded extract is used, it is mostly mixed with honey and milk. Among all



PLATE – I: Plants used against Jundice by Naga tribes in Nagaland. Figures A – L:
A. *Ananas comosus* (Linnaeus) Merrill; **B.** *Molineria capitulata* (Loureiro) Herbert ; **C.** *Phyllanthus acidus* (Linnaeus) Skeel; **D.** *Aegle marmelos* (Linnaeus) Correa; **E.** *Sonchus wightianus* Linnaeus; **F.** *Averrhoa carambola* Linnaeus; **G.** *Mentha spicata* Linnaeus; **H.** *Syzygium cumini* (Linnaeus) Skeels; **I.** *Mangifera indica* Linnaeus; **J.** *Mimosa pudica* Linnaeus; **K.** *Saccharum officinarum* Linnaeus; **L.** *Carica papaya* Linnaeus

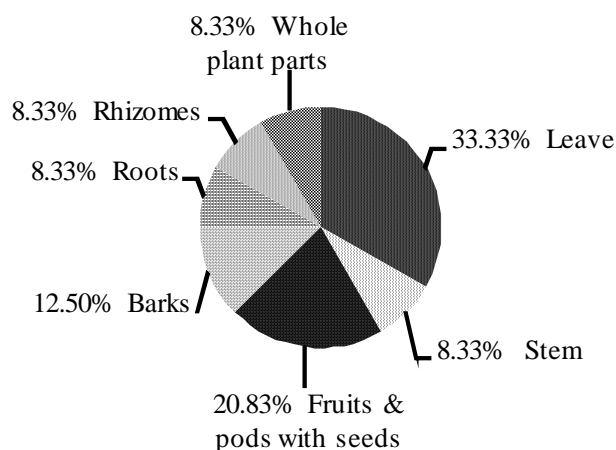


Figure 3: Percentage (%) of plant parts used in healing Jaundice by Naga tribes

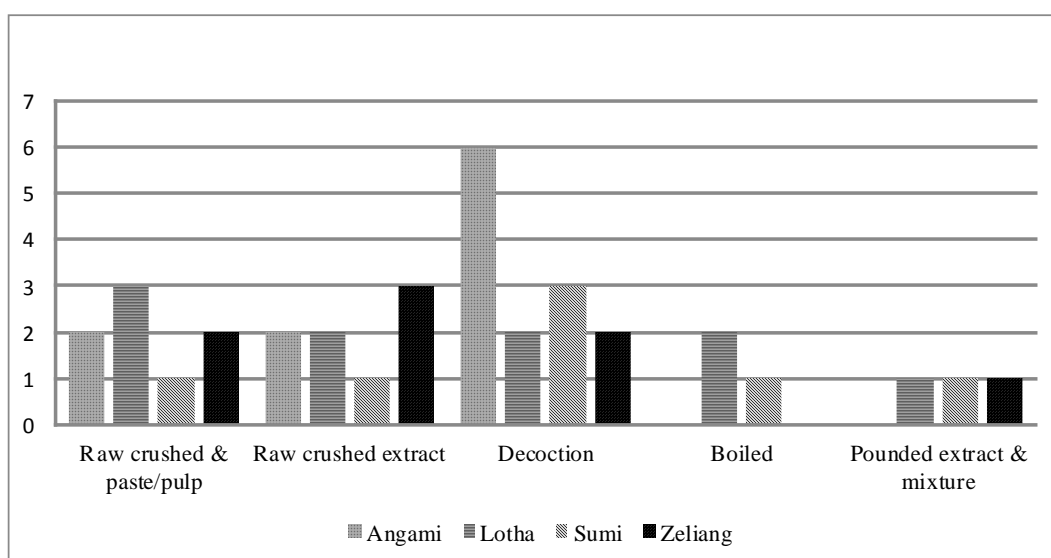


Figure 4: Graph representing crude drug types used in healing Jaundice by Naga tribes.

the species, *Ananas comosus*, *Averrhoa carambola*, *Saccharum officinarum* and *Syzygium cumini* are the four common species used by all the four tribes in healing jaundice (Table- 2). *Averrhoa carambola* is a potent source of primary and secondary polyphenolic antioxidants (Shui & Leong 2004) and its fruit extracts also possess antimicrobial activities (Sripanidkulchai *et al.* 2002). It is one of the commonly used species in traditional treatment of liver problems, jaundice and kidney stone (Simi & Abhik 2011; Baruah *et al.* 2013). Likewise, *Saccharum officinarum* is also a most preferred species in traditional medicine for jaundice (Gogoi *et al.* 2013). The use of *Aegle marmelos*, *Momordica charantia*, *Ananas comosus* and *Cajanus cajan* for treating jaundice have also been documented by several workers like Naikade & Meshram (2014), Annalakshmi *et al.* (2012) and Bora *et al.* (2012). *Ananas comosus* is also known for the treatment of tuberculosis by other Naga tribes (Lokho 2012; Panmei *et al.* 2014). Majority of the species are found among the various cultivated plants. The use of cultivated and food plants in healing different diseases is a common practice in the Naga tribe (Singh *et al.* 2015). The comparative study among the healers of the four

tribe reveals that each tribe uses minimum of 10 species and any two tribes share at least 6 species showing the similarities and indicating some homogeneity in ethnomedicinal knowledge (Table- 3). The maximum similarity of species used was observed in between *Angami* and *Lotha* as well as *Angami* and *Zeliang* (10 species for each). However the uses of *Aegle marmelos* in healing jaundice is only known to *Zeliang* tribe.

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