

Ethno-medicines of Aka tribe, West Kameng District, Arunachal Pradesh (India)

ABSTRACT : Ethno-medicines play crucial role in health services of tribal society. Its documentation is very important in present context of *higher side effects of synthetic drugs; while traditional or indigenous herbal therapy is time tested with little side-effects*. It is more relevant in case of Arunachal Pradesh where various tribes have rich *traditional* knowledge passed down orally through generations. This communication brings ethno-medicines *practised* by Aka tribe of Arunachal Pradesh. A total of 18 plant species and their uses in curing ailments is reported in this study.

Key words: Traditional Knowledge, Eastern Himalaya, Biodiversity, Ethnic diversity

According to the World Health Organization (WHO), more than 3.5 billion people in the developing world and about 80% of the world's population rely on traditional modalities of medicinal plants as components of their healthcare¹. In India the ethno-botanical studies are reported from many areas especially those belonging to tribal communities²⁻³. Various tribes of northeast India have been using medicinal plants from time immemorial for the treatment of various types of diseases⁴. With 26 major tribes and more than 110 sub-tribes, Arunachal Pradesh (Eastern Himalaya) is the treasure trove of ethnic diversity as well as traditional knowledge of ethnic medicines. The physico-climatic condition of the state ranges from tropical plains along the foothills in south to alpine grasslands towards the north. This wide range of physico-climatic condition accompanied by adequate monsoon rain engenders varieties of flora to grow abundantly. The state falls under Eastern Himalayan Biodiversity Hotspot with more than 500 species of plants of medicinal and pharmacological significance⁵. Owing to relative isolation for centuries and close interaction with forest, the indigenous tribal communities in mountainous Arunachal Pradesh have sound knowledge of using forest resources to meet various requirements which are time tested. Glimpses of the use of plant species as ethno-medicine by the tribes of Arunachal Pradesh has been found in the works on Hill Miris, Apatanis and Khamptis⁶⁻⁸. Arunachal Pradesh, the 12th mega diversity region of the world, may also be considered as one of the major ethno-botanical hotspot with 63.66% tribal

population and 81.25% forest coverage⁹⁻¹¹. Review of literature reveals that many tribal areas and tribal communities in the Eastern Himalayan region of India are either under explored or unexplored with regard to their floral wealth used in curing diseases⁸. Whether this factor (endowment of ethno-medicinal plants) as industrial input could bring about a drastic economic change of the Arunachal economy, can be an area of exploration and research¹².

These tribes with rich tradition and knowledge of ethno-medicine have no script of their own with exception of Khamptis and Monpas. Due to this, the ethno-botanical skills of different tribal communities are transferred orally thereby becoming vulnerable to loss as cultural systems are dynamic and fragile when in contact with dominant cultures¹³. Due to gradual penetration of the modern health services into rural areas the traditional knowledge is ignored, and is now merely a repository of traditional healers. Further, the medicinal plants used in health care are gradually becoming extinct due to developmental activities, population explosion and other anthropogenic reasons. There is need to reverse this trend through documentation and attempts at domestication of wild medicinal plants¹⁴. In the absence of documentation, many of this wealth of knowledge wealth and bio-cultural diversity are disappearing.

In view of this, the present work envisages to survey the traditional ethno-medicinal knowledge of the Aka tribe of Arunachal Pradesh with an objective to document the same. Ethno pharmaceutical survey brings out suggestion as to which raw plant materials may be tapped and for this they get clues from rural or tribal people¹⁵. Akas are a small tribal group inhabiting the Himalayan region of Arunachal Pradesh. They belong to Mongoloid stock with well built body structure and displaying distinct tradition, dress, dialect, etc. They are settled in 38 villages under Jamiri, Bhalukpong, Thrizino and Rechukrang circles of West and East Kameng districts of Arunachal Pradesh with a total population of 5027 as per own survey conducted in 2008 (Figure 1, map of the area of study). The study area is bounded between 27° 0' N to 27° 30' N latitudes and 92° 30' E to 92° 55' E longitudes. Traditional shifting cultivation (jhum) is practiced as a means of sustenance supplemented by fishing, hunting and food-gathering.

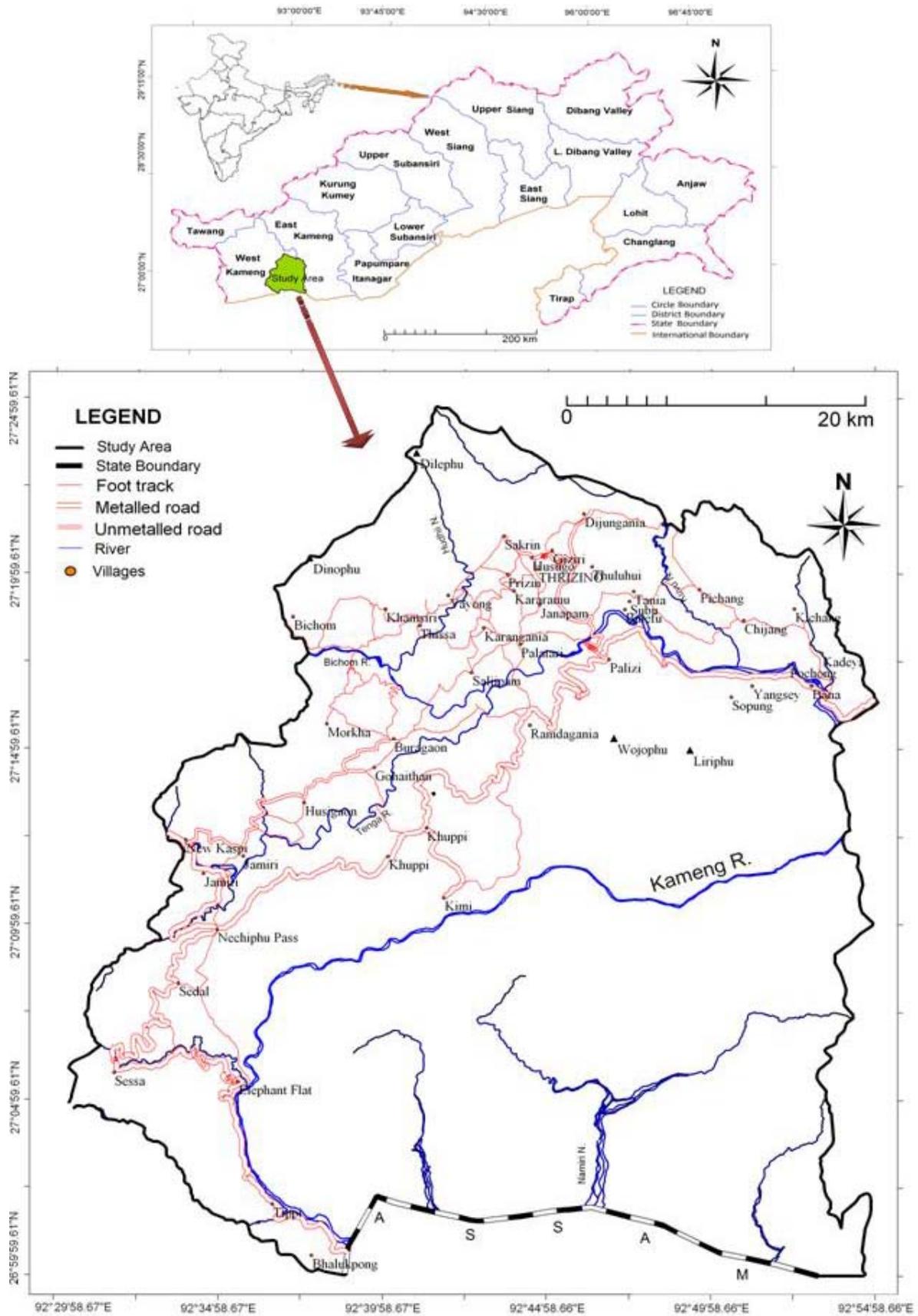


Figure 1: Map showing Aka area in Arunachal Pradesh

Materials and Methods : An ethnobotanical survey was conducted in 38 villages of Aka tribe in West Kameng District, Arunachal Pradesh, during the year 2008 to 2009. The respondents comprised of aged men and women. Interview was mainly confined to getting information and knowing the facts about the techniques and methods of preparing ethno-medicinal plants that are generally used for various ailments. The field method of Jain and Rao⁶ was followed during the ethnobotanical survey. Specimens were collected and systematically piled up in papers for making herbarium for further taxonomic identification. Photographs of the specimens were also taken in the field study. Species identifications were done with the help of taxonomy books and other available literatures with guidance of taxonomists from Department of Botany, Rajiv Gandhi University, Itanagar. Following information were collected for each of the identified plants:

1. Botanical Name (Family)
2. Local Name
3. Therapeutic indication
4. Parts used
5. Method of preparation

Results and Discussion : During the field work 18

plants used in healing practice by the Aka tribe were surveyed. Out of these, 17 were identified but 1 sample could not be identified (Table 1). These ethno-medicinal plants belonging to 12 families are distributed in 15 genera. The various ailments for which these plants are used include skin problems, cough and fever, gastro-intestinal stomach problems, jaundice, eye infection, labour pain and in orthopaedic conditions. The plant parts like leaves, stems, barks, fruits, roots, latex, juice, *etc.* are taken in different amounts for treatment of different diseases (Figure 2). Some plant species are used for the remedies of more than one ailment (Figure 3). Maximum numbers of species were recorded for stomach problem *i.e.* 3 plants for diarrhoea (2 identified and 1 unidentified), 2 for dysentery and 1 for indigestion. It is followed by skin problems - 3 for fire and hot water burns, 1 for boil and 2 for cuts. There are 3 plant species for jaundice and 1 each for cough and fever, labour pain, orthopaedic ailments, gastro-intestinal and eye infection. Largest numbers of remedies *i.e.* 4 remedies from 7 species were used for stomach problems followed by 3 remedies from 6 species for skin problems.

Ethno-medicine is a part and parcel of daily life of the Aka tribe. People do not rush to modern sophisticated hospitals for common diseases like cough and fever,

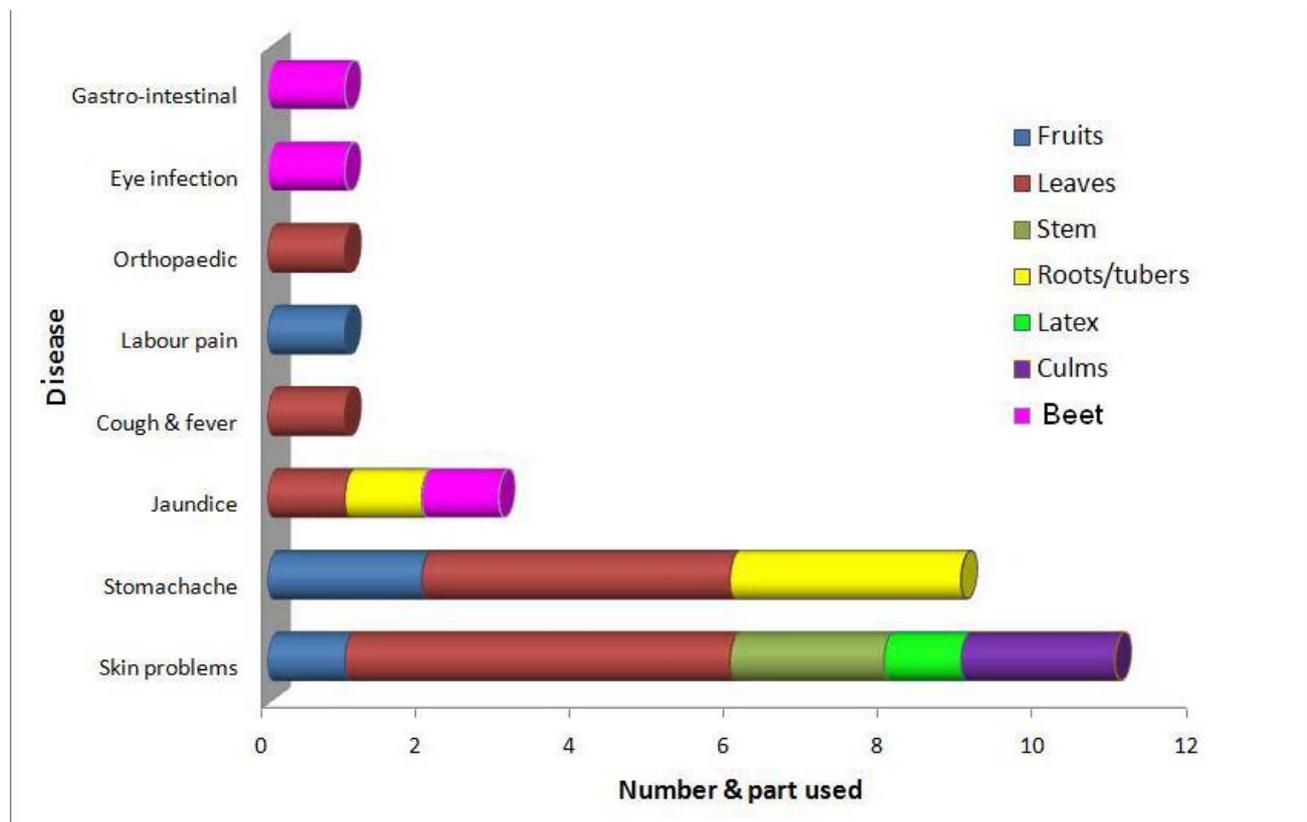


Figure 2: Diseases, numbers and parts of plant used.

TABLE 1. Ethno-medicinal plants used by the Aka tribe

Specimen No.	Botanical Name/Family	Local Name	Therapeutic	Parts used Indication	Preparation
AKA/01	<i>Ageratum conyzoides</i> Linn./ Asteraceae	Pasong	Cuts	Leaves	Paste is prepared from leaves by hand squeezing method and applied to fresh cuts for clotting of blood and anti-microbial action.
AKA/02	<i>Artemisia nilagirica</i> (Clarke) pamp./ Asteraceae	Syowum	Cough and fever	Leaves	Fresh leaves are squeezed and consumed with luke warm water; in mild condition it is squeezed and inhaled directly.
AKA/03	<i>Begonia sp.</i> / <i>Begoniaceae</i>	Pelowo	Boil	Tender leaves	Tender leaves are steamed and taken for quick recovery and lessening of pain and also used as blood purifier.
AKA/04	<i>Centella asiatica</i> Linn./ Apiaceae	Syowbo	Jaundice	Leaves and roots	Raw roots and leaves are taken along with routine food during jaundice for improving appetite.
AKA/05	<i>Centella sp.</i> Linn./ <i>Apiaceae</i>	Sim Syowbo	Jaundice and indigestion	Leaves and roots	Whole part of the plant is taken in raw form during jaundice and indigestion for improving appetite and increasing roughage.
AKA/06	<i>Clerodendrom colebrookianum</i> Walp./ <i>Lamiaceae</i>	Drolain	Diarrhoea	Leaves	The tender leaves are steamed and consumed during diarrhoea and other indigestions.
AKA/07	<i>Costus speciosus</i> (Koenig) Smith/ <i>Zingiberaceae</i>	Rumo-sanadugo	Jaundice, gastric and eye infection	Beet	The juicy beet is chewed just like sugarcane during jaundice and gastric. 1 – 2 drops of the extracted juice from the stem is applied during eye infections twice a day for immediate relief and recovery.
AKA/08	<i>Curcuma sp.</i> Linn./ <i>Zingiberaceae</i>	Kiistradu	Stomachache	Rhizome	5 gm of clean rhizome are consumed twice a day for at least 3 days in severe stomach pain
AKA/09	<i>Dendrocalamus hamiltoni</i> / <i>Poaceae</i>	Si-emnyo	Cuts	Culm	With the help of <i>dao</i> / peeler the culm is peeled and powdery peel is directly applied to fresh cut and injury for clotting of blood.
AKA/10	<i>Discorea sp.</i> / <i>Dioscoreaceae</i>	Nyemumsi	Dysentery	Tuber	Cooked yam (both boil and burn) is consumed for curing dysentery. It is also applied to domestic animals for the same purpose.
AKA/11	<i>Macaranga denticulata</i> (Blume) Muell. Arg./ <i>Euphorbiaceae</i>	Liidzin	Fire and Hot Water burns	Latex	Fresh resin is collected from the plant in bamboo tube and applied to the burns (anti-inflammatory) SOS.
AKA/12	<i>Paederia foetida</i> Linn./ <i>Rubiaceae</i>	Adraluhumbe	Fire and Hot Water burns	Leaves and stems	10 gm of fresh leaves and stems are crushed in mortar and pestle, sieved with fine cloth and the juice is applied to the burns thrice a day.
AKA/13	<i>Rhus javanica</i> Linn./ <i>Anacardiaceae</i>	Subyutro	Dysentery	Fruits	In mild condition raw fruits are consumed directly. But during severe dysentery the juice is extracted from the fruit by squeezing method and taken 3 – 4 glass a day.
AKA/14	<i>Ricinus cummunis</i> Linn./ <i>Euphorbiaceae</i>	Migyim jyoksu	Orthopaedic	Leaves	10 – 20 gm of fresh leaves are made into paste and applied to fractured bones and joint pains. 2 – 3 leaves are slightly heated in fire and tied with a rope over the fractured part and kept for a week.
AKA/15	<i>Trichosanthes tricuspis</i> / <i>Cucurbitaceae</i>	Pampawo	Fire and Hot Water burns	Fruit and stem juice	Peels of fruits and stems are ground in mortar and pestle and juice is applied to burns (anti-inflammatory & anti-microbial infections).

TABLE 1: contd.

Specimen No.	Botanical Name/Family	Local Name	Therapeutic	Parts used Indication	Preparation
AKA/16	<i>Zanthoxylum piperatum</i> (L.) DC./ Rutaceae	Siina	Labour pain	Fruits	Dry fruits are fried in hot plate and taken with warm fermented local made alcohol Tsii (rice beer) mostly during labour pain and after delivery.
AKA/17	<i>Zanthoxylum rhetsa</i> DC./ Rutaceae	Pyetrii	Diarrhoea	Fruits and tender leaves	Tender leaves are taken in raw form. Both fresh and dried fruits are crushed with small quantity of salt and consumed for quick relief from diarrhoea.
AKA/18	Unidentified	Mechme	Diarrhoea	Leaves	2 – 3 leaves are consumed with water for at least 3 days.

diarrhoea, dysentery, etc. They prefer the traditional healing method which they believe is handed down to them by their ancestors. The plants like *Zanthoxylum rhetsa*, *Clerodendron colebrookianum* and one unidentified plant species (Table 1) are used by Aka tribes to recover from diarrhoea. Leaves of these plants also form common vegetable of almost all tribal communities of Arunachal Pradesh. Reportedly, *Zanthoxylum rhetsa* is used as anti-inflammatory and fish poisoning^{16, 7} while *Clerodendron* is known for its property to control blood pressure as ascertained on rats¹⁷ and also used for curing skin diseases, cough and dysentery¹⁸. Aka herbalist use *Rhus javanica* and *Dioscorea* sp. to relieve dysentery. During jaundice and indigestion they use roots and leaves of *Centella* sp. They use *Paederia foetida*, *Macaranga denticulate* and *Trichosanthes tricuspidis* for fire and hot water burns. *Paederia foetida* is also reported to be used by Apatanis in gastric, diarrhoea and stomach disorder while *Centella* sp. for constipation, gastric, indigestion and blood purification⁸. *Begonia* sp. is used by Aka traditional practitioners for boil or furuncle while *Zanthoxylum piperatum* for labour pain.

In Aka area, *Ageratum conyzoides* and *Dendocalamus hamiltonii* are applied to cuts and injury. It is reported to be anti-inflammatory, analgesic, anti-pyretic and anti-microbial in nature¹⁹⁻²¹ and used for wound healing, skin diseases, pain reliever, burns, and rheumatism and wound healing²² and also for fishing. *Artemisia nilagirica* is used by Akas for cough and fever treatments. It is anti-microbial and anti-fungal^{23, 24} used for cough, headache, sores, skin diseases, burns, cuts, wounds and inflammations^{25, 8}. Akas of West Kameng use *Centella asiatica*, *Centella* sp. and *Costus speciosus* for jaundice. *Centella asiatica* has anti-inflammatory, wound healing activity of asiaticoside²⁶⁻²⁸ and whole plant is found useful to treat inflammatory infections, surgical lesions, damaged skin, slow-healing wounds, leg ulcers, etc.,^{29, 30}.

Curcuma sp. is used by Aka healers during stomachache. Biologically it is reported to be anti-inflammatory and anti-asthmatic in ayurvedic medicines: it enhances the anti-microbial efficacy of essential oils^{31, 32}. Its rhizome paste is used against insect bites in East Malaysia³³, leaves to treat rheumatism and arthritis in Vietnamese folk medicines³⁴ and for healing asthma and cough by Apatanis⁸. *Ricinus communis* is used for orthopaedic disorders in the study area. It is reported to be anti-inflammatory and anti-bacterial^{35, 36} and traditionally used to treat wounds, pain, rheumatism and bacterial infection^{36, 37}.

It has also been noted during field survey that the knowledge of ethno-medicine in Aka area is mostly confined to old people though some common species are known to the younger people also. The old practitioners provide or apply appropriate amount of plant parts for curing different diseases. The plant parts are generally consumed in raw form and a few in cooked form. For topical use plants are squeezed and the juices are directly applied to the wounds, cuts and burnt skins. In some cases of skin problem fresh parts of the plant are ground into paste with the help of traditional mortar and pestle and applied to the infected part twice or thrice a day. The investigation shows that mostly fresh parts of plant were used except the dried fruits. The mixing of different plant species for preparation of medicine was not reported. These tribal people have evolved a distinct way of treating different ailments, which is still practised by the people.

Conclusion : The study shows that like other tribes of the state, Akas have high dependency on forest especially on the use of plants for curing ailments. Different parts of the plants are used mostly in raw form. However, study also indicates that this traditional knowledge is gradually vanishing. The new generation and juvenile groups have little knowledge of these plants and their uses. The ethno-medicinal knowledge is confined to the



Figure 3: Plants used in curing more than one ailment: (a) *Paederia foetida* Linn., (b) *Ricinus cummunis* Linn., (c) *Begonia sp.*, (d) *Curcuma sp.* Linn., (e) *Zanthoxylum piperatum* (L.) DC., (f) Aka healers in traditional attires (g) *Centella asiatica* Linn., (h) *Costus speciosus* (Koenig) Smith, (i) *Artemisia nilagirica* (Clarke) pamp., (j) Unidentified, local name *Mechme*.

elderly population and traditional healers only. The area is experiencing rapid development leading to depletion of forest resources and the impact of modernization is gradually turning people towards use of western allopathic and synthetic drugs. Contrarily, people have strong faith in traditional ethno-medicines. Against this backdrop, there is a need of sensitization of these reported ethno-medicines for conservation through larger community participation. More efforts for documenting the traditional knowledge of other tribes of the state are essential to unfurl the hitherto unknown, to outsiders, ethno-medicines.

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