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 healthcare. In India the ethno-botanical studies are reported from many areas especially those belonging to tribal communities. Various tribes of northeast India have been using medicinal plants from time immemorial for the treatment of various types of diseases. 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 significance. 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 Khamptis. 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 coverage. 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 diseases. 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 research.

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 cultures. 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 plants. 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 people. 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. 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 Rao 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,
<table>
<thead>
<tr>
<th>Specimen No.</th>
<th>Botanical Name/Family</th>
<th>Local Name</th>
<th>Therapeutic Parts used</th>
<th>Preparation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AKA/01</td>
<td>Ageratum conyzoides Linn./Asteraceae</td>
<td>Pasong</td>
<td>Cuts</td>
<td>Leaves</td>
</tr>
<tr>
<td>AKA/02</td>
<td>Artemisia nilagirica (Clarke) pamp./Asteraceae</td>
<td>Syowum</td>
<td>Cough and fever</td>
<td>Leaves</td>
</tr>
<tr>
<td>AKA/03</td>
<td>Begonia sp./Begoniaceae</td>
<td>Pelowo</td>
<td>Boil</td>
<td>Tender leaves</td>
</tr>
<tr>
<td>AKA/04</td>
<td>Centella asiatica Linn./Apiaceae</td>
<td>Syowbo</td>
<td>Jaundice</td>
<td>Leaves and roots</td>
</tr>
<tr>
<td>AKA/05</td>
<td>Centella sp. Linn./Apiaceae</td>
<td>Sim Syowbo</td>
<td>Jaundice and indigestion</td>
<td>Leaves and roots</td>
</tr>
<tr>
<td>AKA/06</td>
<td>Clerodendrom colebrookianum Walp./Lamiaceae</td>
<td>Droloin</td>
<td>Diarrhoea</td>
<td>Leaves</td>
</tr>
<tr>
<td>AKA/07</td>
<td>Costus specious (Koenig) Smith/Zingiberaceae</td>
<td>Rumo-sandanugo</td>
<td>Jaundice, gastric and eye infection</td>
<td>Beet</td>
</tr>
<tr>
<td>AKA/08</td>
<td>Curcuma sp. Linn./Zingiberaceae</td>
<td>Kiistradu</td>
<td>Stomachache</td>
<td>Rhizome</td>
</tr>
<tr>
<td>AKA/09</td>
<td>Dendrocalamus hamiltonii / Poaceae</td>
<td>Si-emmyo</td>
<td>Cuts</td>
<td>Culm</td>
</tr>
<tr>
<td>AKA/10</td>
<td>Discorea sp./Dioscoreaceae</td>
<td>Nyemumsi</td>
<td>Dysentery</td>
<td>Tuber</td>
</tr>
<tr>
<td>AKA/11</td>
<td>Macaranga denticulata (Blame) Muell. Arg./Euphorbiaceae</td>
<td>Liidzin</td>
<td>Fire and Hot Water burns</td>
<td>Latex</td>
</tr>
<tr>
<td>AKA/12</td>
<td>Paederia foetida Linn./Rubiaceae</td>
<td>Adraluhumbe</td>
<td>Fire and Hot Water burns</td>
<td>Leaves and stems</td>
</tr>
<tr>
<td>AKA/13</td>
<td>Rhus javanica Linn./Anacardiaceae</td>
<td>Subyutro</td>
<td>Dysentery</td>
<td>Fruits</td>
</tr>
<tr>
<td>AKA/14</td>
<td>Ricinus communis Linn./Euphorbiaceae</td>
<td>Migyim Jyoksu</td>
<td>Orthopaedic</td>
<td>Leaves</td>
</tr>
<tr>
<td>AKA/15</td>
<td>Trichosanthes tricuspis/ Cucurbitaceae</td>
<td>Pampawo</td>
<td>Fire and Hot Water burns</td>
<td>Fruit and stem juice</td>
</tr>
</tbody>
</table>
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 diarrhea. 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\textsuperscript{16,7} while Clerodendron is known for its property to control blood pressure as ascertained on rats\textsuperscript{17} and also used for curing skin diseases, cough and dysentery\textsuperscript{18}. 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 tricuspis 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 purification\textsuperscript{8}. Begonia sp. is used by Aka traditional practitioners for boil or furuncle while Zanthoxyllum 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 nature\textsuperscript{19-21} and used for wound healing, skin diseases, pain reliever, burns, and rheumatism and wound healing\textsuperscript{22} and also for fishing. Artemisia nilarigica is used by Akas for cough and fever treatments. It is anti-microbial and anti-fungal\textsuperscript{23,24} used for cough, headache, sores, skin diseases, burns, cuts, wounds and inflammations\textsuperscript{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 asiaticoside\textsuperscript{26-28} and whole plant is found useful to treat inflammatory infections, surgical lesions, damaged skin, slow-healing wounds, leg ulcers, etc.\textsuperscript{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\textsuperscript{31,32}. Its rhizome paste is used against insect bites in East Malaysia\textsuperscript{33}, leaves to treat rheumatism and arthritis in Vietnamese folk medicines\textsuperscript{34} and for healing asthma and cough by Apatanis\textsuperscript{8}. Ricinus communis is used for orthopaedic disorders in the study area. It is reported to be anti-inflammatory and anti-bacterial\textsuperscript{35,36} and traditionally used to treat wounds, pain, rheumatism and bacterial infection\textsuperscript{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

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<tr>
<td>AKA/16</td>
<td>Zanthoxylum piperatum (L.) DC./ Rutaceae</td>
<td>Siina</td>
<td>Fruits</td>
<td>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.</td>
</tr>
<tr>
<td>AKA/17</td>
<td>Zanthoxylum rhetsa DC./ Rutaceae</td>
<td>Pyetrii</td>
<td>Fruits and tender leaves</td>
<td>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.</td>
</tr>
<tr>
<td>AKA/18</td>
<td>Unidentified</td>
<td>Mechme</td>
<td>Leaves</td>
<td>2 – 3 leaves are consumed with water for at least 3 days.</td>
</tr>
</tbody>
</table>
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.

Acknowledgements

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and OYI DAI3

Figure 3: Plants used in curing more than one ailment: (a) Paederia foetida Linn., (b) Ricinus communis 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 specious (Koenig) Smith, (i) Artemisia nilagirica (Clarke) pamp., (j) Unidentified, local name Mechme.
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