

Indigenous Knowledge System and Traditional Medicinal Practitioner

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Abstract

Knowledge is widely recognized as the key resource for development. The basic component of any country's knowledge system is its Indigenous Knowledge (IK). Over millennia, indigenous peoples have developed and sustained extremely practical systems of knowledge and behavior. Indigenous knowledge is not just confined to indigenous peoples, but all communities have developed their own body of knowledge over generations. The Tagin tribe is an indigenous group of people living at upper Subansiri district of Arunachal Pradesh. A study on practice of Traditional Medicine (TM) was carried out among these people based on the secondary literature collected from different libraries tribal research centers of India. The result documented 10 medicinal plants used by the Traditional Medicinal Practitioner (TMS) of Tagin tribe for use in traditional medicine. Fresh leaves, fruits, bark and stems are reported be used in TM for treatment of ailments like diarrhoea, jaundice, wound healing, fever, etc.

Keywords: Indigenous Knowledge; Traditional Medicinal Practitioner; Traditional Medicine; Indigenous Peoples

Introduction

Over the ages, indigenous peoples have developed innumerable technologies and arts. They have devised ways to farm deserts without irrigation and produce abundance from the rain forest without destroying the delicate balance that maintains the ecosystem: they have learned how to navigate vast distances in the Pacific using their knowledge of currents and the feel of intermittent waves that bounce off distant islands: they have explored the medicinal properties of plants: and they have acquired an understanding of the basic ecology of flora and fauna. If this knowledge had to be duplicated from scratch, it would beggar the scientific resources of the West. Much of

this expertise and wisdom has already disappeared, and if neglected, most of the remainder could be gone within the next generation.

Knowledge is widely recognized as the key resource for development. The basic component of any country's knowledge system is its Indigenous Knowledge (IK). IK is also referred as traditional or local knowledge and encompasses the skills, experiences and insights of people, applied to maintain or improve their livelihood. Indigenous peoples consists of some 5000 diverse and distinct groups, represent about 4 percent of world's population, about one third of world's 900 million extremely poor rural people, and live in more than 70 countries and 70 per cent of them live in Asia [1].

Over millennia, indigenous peoples have developed and sustained extremely practical systems of knowledge and behavior. For a host of political and historical reasons, indigenous peoples tend to suffer from neglect and discrimination: many do not have legal right to live on the lands they depend on for survival, or use the resources they have managed sustainably for thousands of years; pushed onto least fertile and most fragile lands, harsh environments, they find it difficult to grow enough food to eat; earn a living; receive education; receive medical care; living far from centers of commerce and power; find it hard to influence the policies, laws and institutions that would improve their circumstances and shape their futures. Any effort to eradicate poverty must address the special needs of these minority ethnic groups [2].

Interestingly, there is no standard definition of indigenous knowledge. However, there is a general understanding of what it means. Some people define indigenous knowledge as the local knowledge that is unique to a given culture or society. Some have defined it simply as “local knowledge”, while others have expressed it as “folk knowledge”, “information base for a society”, “traditional wisdom” or, when it applies to the physical environment, as “traditional ecological knowledge”.

Regardless of the definition, there is a consensus that various communities, cultures and societies have indigenous knowledge systems. We can define it as the “knowledge acquired over generations by communities as they interact with their environment”. It mainly refers to a system of understanding one’s environment in the broadest sense.

Indigenous knowledge is the basis for local-level decision making in agriculture, health care, food preparation, education, natural resource management, and a host of other activities in communities.

Primarily traditional knowledge differs from modern knowledge in the manner of creation i.e. traditional knowledge is normally empirically validated therefore it is said that Modern Knowledge has been validated in laboratory of brick and mortar whereas traditional knowledge has been validated in the laboratory of life.

Types of Indigenous Knowledge

Indigenous knowledge is more than just technologies and practices. It can be grouped as follows:

- Information (trees and plants that grow well together; indicator plants-plants that show soil salinity or known as flower at the beginning of rains)

- Practices and technologies (seed treatment and storage methods; bone-setting methods; disease treatments)
- Beliefs play a fundamental role in people’s livelihood and in maintaining their health and environment (holy forests are protected for religious reasons and maintain a vital watershed; religious festivals can be an important source of food for people who otherwise have little to eat)
- Tools (equipment for planting and harvesting; cooking pots and implements)
- Materials (house construction materials; materials for basketry and other craft industries)
- Experimentation (farmers’ integration of new tree species into existing farming systems; healers’ tests of new plant medicines)
- Biological resources (animal breeds, local crop and tree species)
- Human resources (specialists such as healers and blacksmiths; local organizations such as kinship group, councils of elders, or groups that share and exchange labour)
- Education (traditional instruction methods; apprenticeships; learning through observation)
- Communication (stories and messages carved on palm leaves; folk media).

Special Features of Indigenous Knowledge

Some of the features relevant to Indigenous Traditional Knowledge are:

- Locally appropriate and specifically adapted as per the requirement of local conditions.
- Restraint in resources exploitation needed for immediate survival.
- Having diversified production system without overexploitation of a single resource.
- Symbolizes the respect towards nature.
- Flexible for new interventions and integration of green technological advances.
- Inspires the social responsibilities.

Area and People

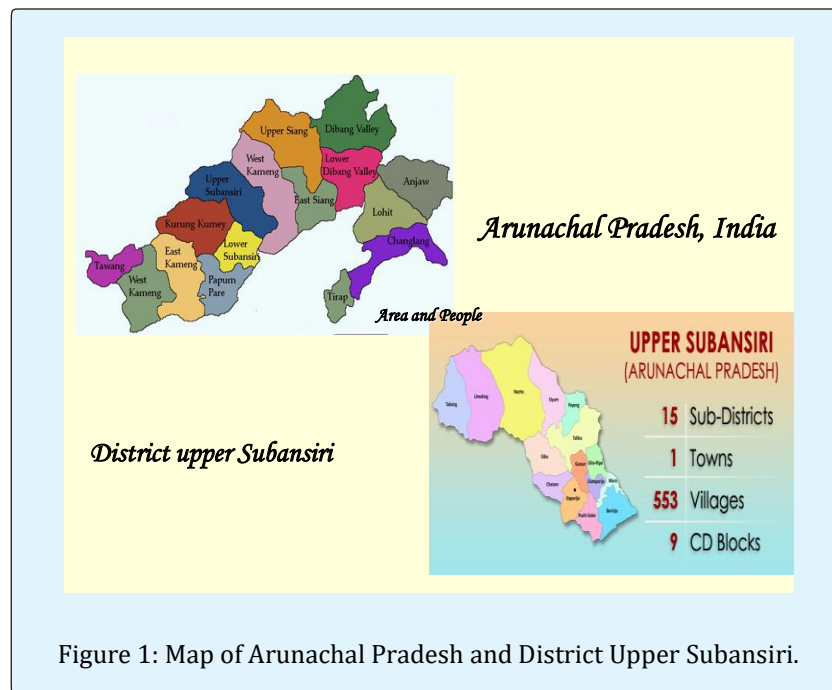
Arunachal Pradesh is one of the North eastern provinces of India bordering Tibet, Bhutan, China and Myanmar. It is situated on the Great Eastern Himalayan Mountain range and recognized as one of the Mega Biodiversity hot spots of the world [3]. More than 25 different group of tribal population are living in this hill state from time immemorial. Each of the tribes has a unique tradition of culture and lifestyle occupying different geographical regions [4].

Tagin is one of such indigenous group of people inhabited in the bank of Subansiri river of Arunachal Pradesh. Tagin, which refers to as a member of larger designation of Tani tribes are concentrated in Daparijo of upper Subansiri district and also found sparsely distributed in adjoining West Siang district of Arunachal Pradesh. The Upper Subansiri district provides shelters to some other tribes like Hill Miri and Gallo. The district lies in the central part of the state in between 28.5 degree and 28.25 degree latitude and 93.15° and 94.20° longitudes covering a geographical area of 7,032 Sq km. The area consists of chains of rugged hills and mountains, the altitude of which varies from 1,524-2,835 m. The high mountain region of the northern boundary of the district is extremely cold and large tracts remain covered with snows almost throughout the year. The plain areas in foothills are intersected by innumerable fast flowing rivers and water courses and covered by dense forests. Dense forest area of the district harnesses the rich bio resource of both flora and fauna.

The Tagin people are of Mongoloid origin, who

migrated from Tibet in different times and settled in their present home land of Subansiri valley [5,6]. As early as 1971, about 20,000 claimed to be of Tagin ethnicity [7]. People living in this area lead a rural life and dependent mostly on the forest resources available in their surroundings.

The Tagin tribe of Arunachal Pradesh has been practicing the use of medicinal plants available in local forests for curing common illness. Utilization of this traditional knowledge of medicinal plants is not only useful for conservation of cultural traditions and biodiversity but also for community healthcare and drug development [8]. Therefore, documentation of this traditional knowledge is inevitable to throw light into the field of herbal research and to improve socioeconomic development of the people. The work is based secondary resources available related to the indigenous knowledge on medicinal plants and methods of treatment against common ailments prevails among the Tagin tribe of Arunachal Pradesh. Figure 1.



Material and Method

The present study was based on the secondary literature on Tagin tribe collected from different libraries tribal research centers of India. In this review work researcher collect information on the traditional

medicinal plant and practice, especially Ethnomedicinal information. Important given even on information on Traditional Medicine (TM) preparation, application and associated social belief prevailed among the Tagin Traditional Medicine Practitioners

Results and Discussion

The Tagin ethnicity comprises of 39,000 individuals scattered in different pockets of upper Subansiri and adjacent districts [9]. The study among the Tagin people revealed practice of an age old tradition of herbal medicine for cure and prevention of diseases/ ailments. A total of 10 medicinal plants used for TM preparation were recorded amongst the Tagin people. All the medicinal plants recorded are used in human healthcare as well as for animal disease.

Freshly collected leaves are the major components of their TM preparation. While some of this indigenous preparation is used for topical application for wound healing, burn injuries, skin diseases etc, others are used for oral administration for health problems like stomach disorder, diarrhea, joints pain, blood clotting, fever, tonsillitis, blood pressures, gastritis and jaundice (Table 1). Tagin peoples of Arunachal Pradesh still conserved their indigenous knowledge on traditional medicine and its practice.

Plant Name	Local Name	Part Used	Uses
<i>Ageratum conyzoides</i> L.	Eh gaar	Fresh leaves	Wounds healing, Blood clotting
<i>Bryophyllum calycinum</i> Salisb	Eh yadap	Fresh leaves	Jaundice Gastritis
<i>Clerodendrum serratum</i> (L) Moonb	Tapin	Fresh tender leaves	Blood pressure
<i>Embelia ribes</i> Burm. (f)	Onior	Fresh, fruits	Diarrhoea
<i>Ficus hispida</i> (Blanco)	Cheyum	Sap of stem	Burn injury
<i>Gynocardia odorata</i> (R. Br.)	Tiku	Leaves	Tooth decay
<i>Pederia foetida</i> L	Uppe tire	Leaves	Gastritis
<i>Piper longum</i> L.	Satu rikki	Leaves, stem	Joints pain, arthritis
<i>Piper nigrum</i> L.	Rari	leaves, fruits.	Fever, tonsillitis
<i>Tinospora cordifolia</i> (Miers) eae	Sayen kiji	Leaves	Scabies/others kin disease

Table 1: List of plants used by Tagin tribe for preparation of Traditional Medicine.

The different parts of these plants are used as a medicine. The use of above ground plant parts is higher than the below ground plant parts. Of the above ground plant parts, leaf is used in the majority of the cases followed by roots, fruit, Stem, seed, rhizome, bark, flower,

berries, shoots and branches, buds, dried leaves, dried plants, flower buds, flower pulp, pods, tubers, young seedlings, young shoots less than 1% respectively and about 16% from whole plant (Table 2).

Scientific Name of the Plant	Local Name of Plant	Ethno-Medicinal Uses	Plant Parts Used
<i>Ageratum conyzoides</i>	Pashpaya	Wound healing, antihelmintic	Leaf, stem
<i>Alstonia scholaris</i>	Tayasangne	Treatment of ulcer, swelling, latex is given during abdominal pain after delivery	Leaves, root, bark, latex
<i>Artemisia nilagirica</i>	Tipintarin	In headache and stomach pain, used as vegetable, to get relief from asthma	Leaves
<i>Cassia alata</i>	Kra-pat	Leaf juice is applied in eczema and itching	Leaves and roots
<i>Centella asiatica</i>	Barang	Fresh plant juice with honey is given in stomach ulcer, leprosy	Whole plant
<i>Clerodendron glandulosum</i>	Pattoi	For treatment of high blood pressure and bowel troubles, obesity	Fruits and leaves
<i>Colocasia esculenta</i>	Yaksar	Fever and cough, petiole juice is used as styptic and stimulant	Leaves, stem and rhizome
<i>Curcuma longa</i>	Longobom	Used in bone fracture, anti tumour, in cardiovascular disease, anti bacterial	Leave, rhizome

<i>Dillenia indica</i>	Ahutenga	Fruit decoction is applied to scalp for curing dandruff wound healing bone fracture, anti diarrhoea	Fruit pulp and leaves
<i>Moringaoleife ra</i>	Sajana	In liver disorder, water purification etc	Pods, leaves
<i>Musa sapientum</i>	Nyorokopa	Boiled unripe fruits are given during dysentery, diabetes, in anaemia	Fruits and leaves
<i>Piper bette</i>	Ritikrhinik	Leaf after rubbing with mustard oil and warming over burning charcoal is applied to belly during stomach ache of children	Leaf
<i>Solanum khasianum</i>	Thitbya-ke	Root decoction is used to treat malaria, antifertility property, anti-inflammatory	Seeds, berries and roots
<i>Spilanthus acmella</i>	Mershang	Antimalarial, antipyretic, analgesic, flowers are chewed during toothache	Flower bud, stem, roots, leaves
<i>Swertia chirayita</i>	Chirata	Plant decoction is taken in fever, anti- hepatitis B	Whole plant
<i>Terminalia myriocarpa</i>	Hilika	Bark extract is given in chest pain and as cardiac stimulant	Fruit, leaves, bark
<i>Zanthoxylum armatum</i>	Honyur	Seed and bark are used as tonic during fever and cholera, stomach disorder	Fruit, seed, bark
<i>Zingiber officinale</i>	Kekir	Stomach pain, carminative, stimulant, rhizome juice mixed with honey is used for cough	Rhizome
<i>Tacca integrifolia</i>	Tagoon	skin disease, leprosy, wound healing, stomach pain, dysentery	Rhizomes, tubers
<i>Solanum nigrum</i>	Byako	Vomiting, diarrhoea, also used to cure tuberculosis, reduce mild abdominal pain	Berries, leaves, shoots
<i>Erigeron bonariensis</i>	Daglentao	Vapour of leaves is inhaled in sinus problem	Leaves
<i>Chromolaena odorata</i>	Telimbabo	Wound healing, skin diseases, diuretic, analgesic, anti-microbial, relieve pain	Roots and leaves
<i>Artemisia indica</i>	Laglin	For skin allergy, believe to be effective in breast cancer	Leaves, young seedling
<i>Cyclosorus parasiticus</i>	Rukdik	Gout and rheumatism, anthelmintic, antifungal and antibacterial	Leaves, rhizome
<i>Piper longum</i>	Saturikki	Treat joints pain, gout, paralysis, improve immune and digestive system, arthritis	Leaves, stem
<i>Gerbera piloselloide</i>	Pangnesir	Treat cold, fever, acute conjunctivitis, rheumatic pain	Leaves and rhizomes
<i>Oxyspora paniculata</i>	Porkijale	Treatment of various liver disorder, stomachic, antidote against snake poisoning	Leaves, whole plant
<i>Perilla ocymoide</i>	Namdung	Locally used as spices or as a curry, in treatment of asthma, also used for nausea, sunstroke, reduce muscle spasms	Seeds, leaves
<i>Plantago erosa</i>	Donihanakang	Constipation, improves digestion, astringent, demulcent, diuretic, expectorant, anti-inflammatory	Seeds, leaves
<i>Rubia manjith Roxb.</i>	Tamin	Used to cure headache, cough, cold, locally used as a textile dye	Roots, fruits and leaves
<i>Ricinus communis</i>	Miggim	Orthopaedic, intestinal worms, in piles, glandular tumours	Whole plant
<i>Scoparia dulcis</i>	Mithipatti	Jaundice, diabetes, anti-oxidant, diuretic, analgesic, anti-inflammatory	Roots, leaves, all parts
<i>Embelia ribes</i>	Onior	Anti-diarrhoea, also used against intestinal worm infection	Leaves and fruits
<i>Clerodendrum serratum</i>	Bortapipik	Diabetes, obesity, hypertension, locally it is also used as a vegetable	Whole plants
<i>Gynocardia odorata</i>	Teeksin	In treatment of leprosy, toothache, lupus, scrofula and many skin diseases	Seeds and fruit
<i>Hedychium coccineum</i>	Uii-telli	Cure asthma and indigestion, anti microbial, also used for local ornamental purposes	Whole plant

<i>Laggera pterodonta</i>	Dindo eh h	Antihelmintic, treatment in inflammation and swelling	Whole plant
<i>Phrynium capitatum</i>	Ekkam	Anti-diabetic, analgesic, antihyperglycemic, locally used as wrapping and packaging materials	Leaves
<i>Alnus nepalensi</i>	Taram sin	Disinfectant, diuretic, reduce swelling, prevent excessive sweating, also used for carpentry	Branches, bark, leaves
<i>Aconitum ferox</i>	Omli	Underground roots and tubers are used in arrow poisoning by local hunters	Roots and tubers
<i>Arisaema consanguineum</i>	Biram sing	Locally used for arrow poisoning for hunting	Rhizome
<i>Alpinia nigra</i>	Bugbii-talli	Analgesic, appetizer, antifungal, jaundice, gastric ulcer, diuretic, expectorant, antiinflammatory, flavouring agent, leaves are used in beer preparation	Rhizome, fruits and leaves
<i>Baliospermum calycinum</i>	Gilagal	Purgative, stimulant, antidote in snake bite, asthma, jaundice, gastric problem, gout and rheumatism, toothache	Whole plant
<i>Asplenium phyllitidis</i>	Patalak	Anti-oxidant, anti-microbial, locally used for decoration in local festival	Leaves, aerial parts of plant
<i>Bambusa tulde</i>	Eng	Bamboo shoot are consumed as integral part of diet,	Stem, shoots
<i>Bauhinia variegata</i>	Pacham	Asthma, ulcer, digestive problem, anti oxidant, locally also used as spies	Flowers, leaves, root and buds
<i>Callicarpa arborea</i>	Tato, yahorin	Insect repellent, skin diseases, scorpion sting, also used in toothache	Branch, bark and leaves
<i>Carica papaya</i>	Omiir	Anti-malarial, treatment of cuts, rashes, burns, stings, digestive problem, improve hearing capacity and improve lactation.	Whole plant
<i>Chenopodium album</i>	Taye	Locally used in preparing local wine and also eat as a vegetable	Leaves, seed, young shoots
<i>Chromolaena odoratum</i>	Telimbabo	Wound healing, relieve pain, anti-gonorrhoeal, diuretic, skin disease	Leaf and root
<i>Citrus medica</i>	Jipin	Treatment of scurvy, intestinal ailments, antidote, anti cancer, weak eyesight, vomiting, skin diseases, haemorrhoids	Leaves and fruit
<i>Crassocephalum crepidioides</i>	Hogegain	Anti malarial, analgesic, epileptic, wound bleeding, headache	Whole plant
<i>Drymaria diandra</i>	Kadokairo	Anti-HIV, anti-tumours, malnutrition in infants, anti-malarial, edema, rheumatism	Whole plant
<i>Debregeasia longifolia</i>	Jirepole	Anti-tumours, rheumatism, juice is applied to the areas of the skin affected by scabies	Fruits, leaves
<i>Elensine coracana</i>	Tami	Cough, cold, congestion, antimicrobial, antiinflammatory, food preservative	Whole plant
<i>Eryngium foetidum</i>	Hariyo	Anti-epileptic, headache, scorpion sting, antidiabetic, antibacterial, analgesic, fever, arthritis	Leaves, seed
<i>Fagopyrum esculantum</i>	Amintatek	To control high blood pressure, anti-diabetic, pain relief, anti-oxidant	Whole plant

Table 2: Some of Important Plants used by the Indigenous people in the traditional healthcare Practices in Arunachal Pradesh, India.

The method of preparation was mostly a paste or juice form followed by decoction and raw and vegetable, or sometime eaten raw. Doses were mainly taken twice a day and the dosage depends on the age and physical appearance of the individual and children's are given less than adults which approximate to 100-150 ml twice daily depending on the type of illness and treatment [10].

The present review study showed high diversity of plant used by the ethnic communities of Arunachal Pradesh in treating different types of ailments. This can be an indication of the significant role of phytotherapy based traditional medicine in meeting the basic healthcare needs of the people. The frequent use of herbaceous species among the tribal communities could

be a result of their relative abundance as compared to trees and shrubs as also witnessed by investigators of this study. The study area experiences tropical, sub-tropical and temperate humidity for most months of the year creating favorable condition for the growth of herbs.

Due to lack of adequate communication, remoteness of the villages and unavailability of modern health care facilities the local people use traditional medicine for their common ailments. This traditional knowledge system among the tribes is a complete system of theory and practice that have been evolved through ages of human experiences and independent of conventional biomedicine. Similar to the Tagin tribe, practice of herbal medicine among other tribes Arunachal Pradesh like Apatani, Adi, Monpas, etc. have been reported [11-14].

The Convention of Biological Diversity (CBD) has put much emphasis on conservation of this indigenous knowledge invariably in different parts of the world [15,16]. India has a great history of ancient medical systems such as Ayurveda and other similar repositories of knowledge, which represent valuable resource of medicinal plants [17]. The study shall help the indigenous Tagin people of Arunachal Pradesh in getting necessary attention from the world communities for conservation of these TM. Practice of herbal medicine for curing various ailments has been reported from other countries of the world.

Several such medicinal plant species has been reported to use for fertility control by the people of Trinidad and Tobago and Vietnam for treatment of ailments like influenza, cough, malaria, dysentery, and helminthes parasites [18,19]. Some of the plants used by Tagin people for TM preparation are also used by some other tribal population of Northeastern states as well as some other parts of India. The use of *Paedaria foetida* L. for stomach disorder by the Tagin people is also reported from the Apatani tribe of Arunachal Pradesh [20]. The leaves of *Ageratum conizoid* L. and *Bryophyllum calycinum* Salisb are used by the Jaintia tribes of north Cachar hills district of Assam for burn injury and wounds [21]. The medicinal value of *Piper nigrum* (L) was reported from the Madurai district of Tamil Nadu [22].

Similarly, the *Tinospora cordifolia* used for curing scabies by the Tagin tribe of Arunachal Pradesh is used for treating wound healing in Kancheepuram district of Tamil Nadu [23]. The linkage of use of similar plants by different group of people across India remains to be investigated. Whatever may be the reason, the information suggests that the epistemology of the TM

used by these tribal people needs to be reviewed by the epistemology of scientific knowledge. Use of *Embelia ribes* Burm by the Tagin people for stomach disorder has gained importance in research and development for curing skin diseases and leprosy [24]. Availability of a large number of medicinal plants made Arunachal Pradesh one of the global biodiversity hot spot. The documentation on the traditional medicine of the Tagin tribe of Arunachal Pradesh illustrates the wide range of application of the traditional knowledge of medicinal plants for wellbeing of the human society.

Many people of this region still depend upon herbal medicine for the treatment of some common diseases. Thorough biochemical investigation along with clinical trials of these locally available herbal TM may provide new leads for human health care system. In addition, it will pave the way in creating the mass awareness regarding the need for conservation and economic empowerment of the local tribal people and also the efficacy and safety of all the claimed medicinal plants need to be evaluated through pharmaco-chemical studies.

Suggestions

The suggested measures to extend protection to knowledge, innovations and practices in India are documentation of Indigenous knowledge, registration and innovation patent system, and development of a sui generis system

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