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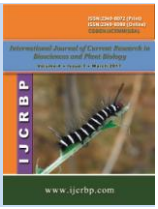

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Wild Edible and Medicinal Plants Used by Apatani Community of Lower Subansiri District, Arunachal Pradesh, India

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Abstract

Arunachal Pradesh, a part of North East India known for its rich plant diversity and cultural diversity. It has been recognized as the 25th biodiversity hotspot in the world. It is also among the 200 globally important ecoregion. The Lower Subansiri district of the state is well known for the unique tradition of wet rice cultivation. The district is dominated by the Apatani tribe. The use of plants in the form of medicine and other purposes is time immemorial especially the tribal people who are intimately connected with plant resources. The present study deals with some highly used wild edible and medicinal plant species including herbs, shrubs, climber and trees by the Apatani tribe of Lower Subansiri district, Arunachal Pradesh, which have been least explored in this region. Total 41 wild edibles and medicinal plant species have been recorded belonging to 33 families used by the Apatani community.

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Keywords

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Indigenous knowledge
Lower Subansiri District
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Wild edible plants

Introduction

Arunachal Pradesh, the land of dawn lit mountains, lying in the eastern most tip of northeast India is uniquely situated in the transition zone between the Himalayan and Indo-Burmese regions (26°28' - 29°30' N and 91° 30'- 97°30' E) covering an area of 83,743 km^2. The people are predominantly tribal, with schedule tribes forming 65% of the population. There are 26 major tribes and more than 120 sub tribes, each with a specific geographic distribution and distinct linguistic, cultural and social identity. Most of the population is engaged in agriculture.

Apatani community is one of the major indigenous communities of Arunachal Pradesh and known for its rich traditional and indigenous knowledge of natural resources management and conservation. They are predominantly found on Lower Subansiri district of Arunachal Pradesh covering an area of 1,317 Sq.km (Anonymous, 1992). The district is bounded on the North by China and Upper Subansiri District, on the South by Papum Pare District and Assam, on the East by West Siang and some part of Upper Subansiri and, on the West by East Kameng District of Arunachal Pradesh. On her Northeast, lies the Tirap District of Arunachal Pradesh.

The study area is luxuriant in terms of edible and medicinal plants, used by the local people. But still this wealth is not fully explored and lots of species has to be identified and documented. Keeping in view the fact the present work was carried out in this area.

Materials and methods

Study site

The Lower Subansiri District covers approximately an area of 10,135 Sq.km. The topography of the District is mostly mountainous terrain, where the Hill Ranges varies approximately from 1000 to 1600 meters above sea level. The district headquarter is located at Ziro a small town at about 1564 meters above sea level (Fig. 1). The forests of the district are biodiversity rich with wide varieties of wild edible and medical plants in forms of herbs, shrubs, climbers and trees. The study was conducted in Ziro by randomly selected four village's viz. Lampia, Hari, Siro and Yazali of the Lower Subansiri district during the year 2013-2014.

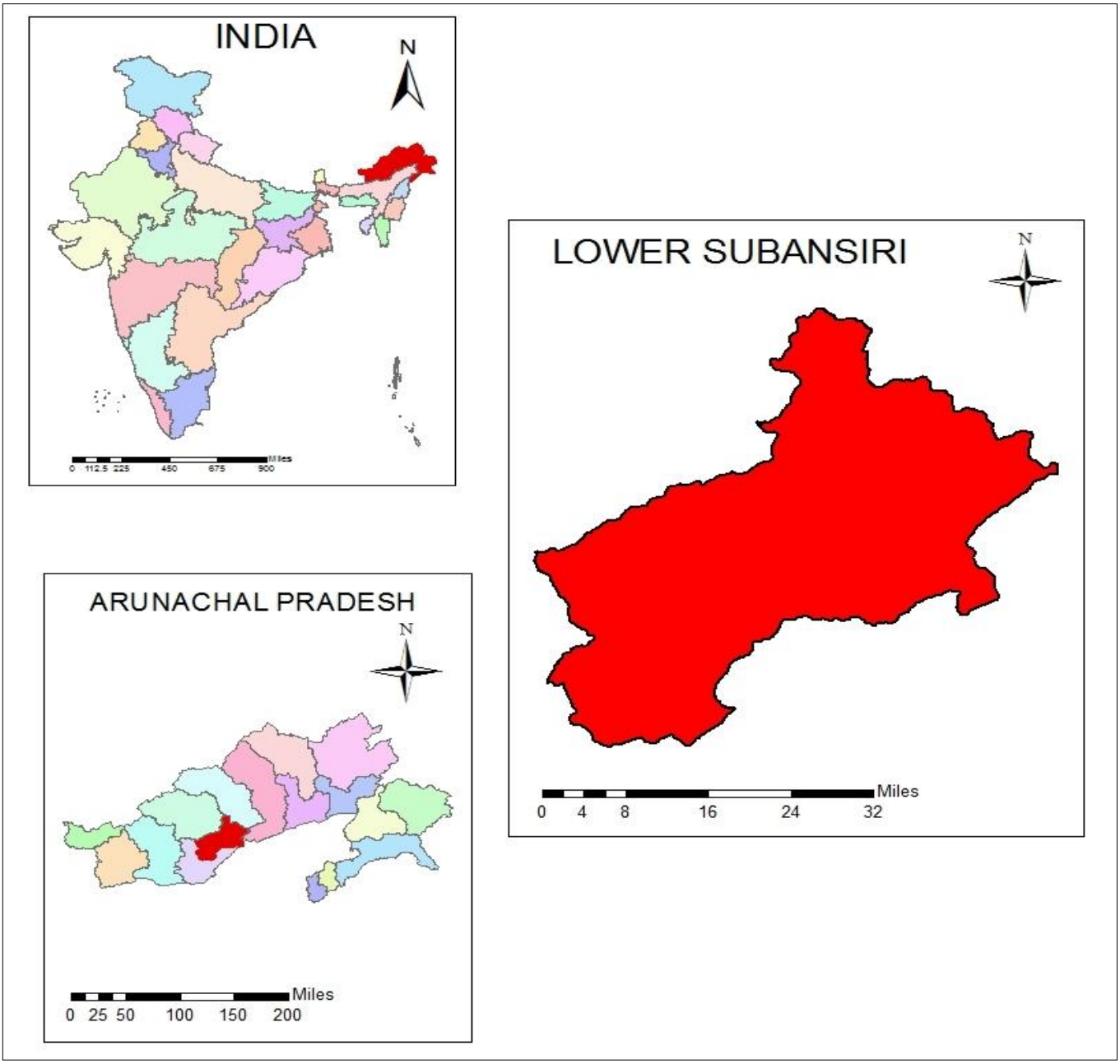

Fig. 1: Location map of the study area.

Data collection

The data were collected through the informal interview and discussion with the local people particularly with traditional healers from each village. Among the village experts, one knowledgeable person was hired to survey and collect the plant species from wild habitats. Information on the local names, life forms, part(s) used and indigenous uses was gathered.

Identification of plant species

Identification of species was carried out with the help of taxonomic literature (Wu et al., 2003-2010; Hooker, 1872-1897; Hooker, 1888), Haridasan (19850), Kanjilal et al. (1934-40), Botanist and authentic herbarium specimens of Botanical Survey of India (ARUN), and SFRI (APFH), Itanagar, Arunachal Pradesh. The standard methodology of Jain and Rao (1978) and Jain (1991) had been followed during the herbarium preparation.

Results and discussion

Total 41 species of wild edible and medicinal plants (15 herbs, 3 shrubs, 5 climbers, 17 trees) belonging to 33 families have been recorded from the study site. Among all species 6 species represents both wild edible and medicinal (Tables 1 and 2; Figs. 3 and 4).

Considering the richness of the species, the family Combretaceae and Verbenaceae (4 species each) was the richest, followed by, Apiaceae, Clusiaceae, Euphorbiaceae, Lauraceae, Poaceae, Rubiaceae, Saururaceae and Zingiberaceae (2 species each). The rest of the families were represented by only single species (Tables 1 and 2; Fig. 2). The dominant genera were *Terminalia* (4 species), followed by *Clerodendrum*, *Euphorbia*, *Garcinia*, *Houttuynia* (2 species each) (Tables 1 and 2).

Fruits of 15 species, combination of different parts of 9 species, leaves of 7 species, whole plant of 3 species, young shoot of 3 species, bark of 2 species, rhizome of 2 species, stem of 2 species, flower of 1 species, root of 1 species, tuber of 1 species, and whole shoot of 1 species have been used for various purposes (Tables 1 and 2; Fig. 5).

These species are used as edible and to cure various diseases/ailments. For example Fruits of *Terminalia bellirica* are used for Diarrhea, piles and dropsy; leaves of *Cinnammom tamala* are used for Cough, headache and dizziness; boiled leaves of *Plantago erosa* are used to get relief from constipation; rhizome of *Acorus calamus* is used for cut, wounds and skin diseases; stem of *Berberis aristata* is used for cold, fever and malaria; rhizome of *Costus speciosus* is used for cough catarrhal, catarrhal fever, dyspepsia, skin diseases and worm infections (Tables 1 and 2).

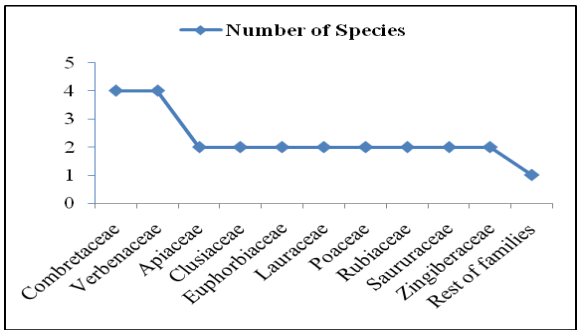

Fig. 2: Distribution of species among families.

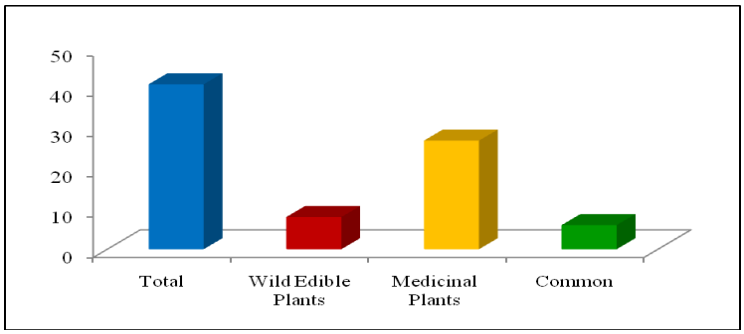

Fig. 3: Species richness of wild edibles and medicinal plants.

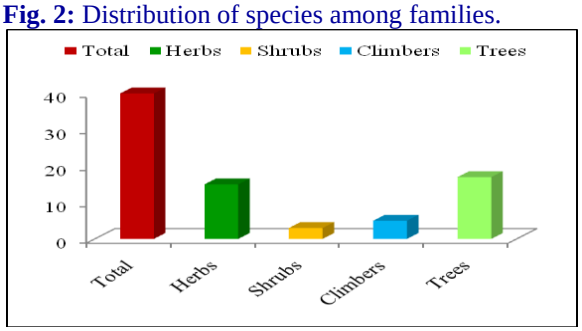

Fig. 4: Distribution of life forms among the species.

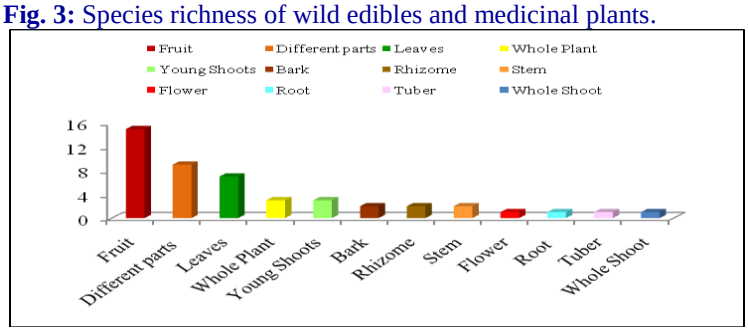

Fig. 5: Distribution of parts used among species.

Table 1. Wild Edible Plants of the study area.

S.N.	Species	Life form	Family	Local/Trade name	Part used	Uses
1.	*Cephalostachyum capitatum* Munro	Shrub	Poaceae	Yaiing Byapu	Young Shoots	Young Shoots eaten as vegetables
2.	*Clerodendrum colebrookianum* Walp.	Shrub	Verbenaceae	Pato	Leaves, Seed, Flower, Young Shoot	Leaves are taken as vegetables
3.	*Euphorbia hirta* L.	Herb	Euphorbiaceae	Yakap-talap	Tender Plant, Latex	Vegetables
4.	*Garcinia pedunculata* Roxb. Ex Buch.-Ham.	Tree	Clusiaceae	Mibia San	Fruit	Fruits are edible
5.	*Houttuynia cordata* Thunb.	Herb	Saururaceae	Amuli, Hanya	Leaves, Rhizome, Whole Plant, Shoots	Whole plant edible
6.	*Hydrocotyle sibthorpioides* L.	Herb	Araliaceae	Manni Ao, Ajone, Manimuni	Leaves	Leaves are taken as vegetables
7.	*Michelia champaca* L.	Tree	Magnoliaceae	Salyo	Whole Fruit	Seeds are taken for stomach ache and as an appetizer
8.	*Myrica esculenta* Buch.-Ham. ex D. Don	Tree	Myricaceae	Baching	Fleshy part of the Fruit	Fruits are edible
9.	*Phyllostachys bambusoides* Siebold & Zucc.	Herb	Poaceae	Bije Byapu	Young Shoots	Young Shoots eaten as vegetables
10.	*Plantago erosa* Wall.	Herb	Plantaginaceae	Nidomarto	Leaves	Boiled leaves are taken to get relief from constipation
11.	*Solanum indicum* L.	Herb	Solanaceae	Bake	Fruit	Fruits are eaten
12.	*Spondias axillaris* Roxb	Tree	Anacardiaceae	Biiling	Fleshy part of the Fruit	Fruits are edible
13.	*Terminalia bellirica* (Gaertn.) Roxb.	Tree	Combretaceae	Bhumura	Fleshy part of the Fruit	Fruits are edible
14.	*Terminalia chebula* Retz.	Tree	Combretaceae	Samper	Fleshy part of the Fruit	Fruits are edible

Table 2. Medicinal plants of the study area.

S.N.	Species	Life form	Family	Local/Trade Name	Parts used	Uses
1.	*Achyranthes aspera* L.	Herb	Amaranthaceae	Devil Horsewhip	Whole plant	Skin injuries and wound healing
2.	*Acorus calamus* L.	Herb	Acoraceae	Bach	Rhizome	Cut, wounds, skin diseases
3.	*Alpinia nigra* (Gaertner) B. L. Burtt	Herb	Zingiberaceae	Tara	Root	Dyspepsia
4.	*Andrographis paniculata* (Burm.f.) Nees	Herb	Acanthaceae	Kalmegh	Whole shoot	Intestinal worms, skin diseases
5.	*Argeria nervosa* (Burm.f.) Bojer	Climber	Convolvulaceae	Elephant Creeper	Leaves	Eczema, chronic ulcers and skin disease
6.	*Berberis aristata* DC.	Shrub	Berberidaceae	Chitrak, Indian Berry	Stem	Cold, fever, malaria
7.	*Callicarpa arborea* Roxb.	Tree	Lamiaceae	Yoh Sen	Bark	Fiver, gastric and headache
8.	*Canarium strictum* Roxb.	Tree	Burseraceae	Dhuna, Sulum Sen	Resin, bark	Rheumatic pain and skin diseases
9.	*Centella asiatica* (L.) Urb.	Herb	Apiaceae	Gotula, Manimuni	Leaves/Shoot	Constipation, gastritis, blood purification
10.	*Cinammom tamala* (Buch.-Ham.) T.Nees & C.H.Eberm.	Tree	Lauraceae	Tejpatta	Leaves	Cough headache and dizziness
11.	*Clerodendrum colebrookianum* Walp.	Shrub	Verbanaceae	Poto Sen	Leaves	Hypertension, cough, asthma skin diseases and dysentery
12.	*Costus speciosus* (J.Koenig) Sm.	Herb	Costaceae	Jom Lakhuti	Rhizome	Cough, fever, dyspepsia, skin diseases and worm infections
13.	*Dioscore aalata* L.	Climber	Dioscoreaceae	Kathalu	Tuber	Anthelminthic, leprosy and piles
14.	*Drymaria cordata* (L.) Willd. ex Schult.	Herb	Caryophyllaceae	-	Leaves	Diarrhea, cough, headache
15.	*Eclipta alba (*L.) Hassk.	Herb	Asteraceae	Tosum Dumpi	Whole plant	Hepatic, spleen enlargement and skin diseases
16.	*Euphorbia hirta* L.	Herb	Euphorbiaceae	Snake Weed	Whole plant	Dysentery

S.N.	Species	Life form	Family	Local/Trade Name	Parts used	Uses
17.	*Garcinia pedunculata* Roxb. ex Buch.-Ham.	Tree	Clusiaceae	Bortheakera	Fruit	Diarrhea and dysentery
18.	*Gmelina arborea* Roxb.	Tree	Lamiaceae	Gamari	Bark, fruit	Fever, asthma, tonic
19.	*Gynocardia odorata* R.Br.	Tree	Achariaceae	Baa, Chalm	Fruit	Leprosy and skin diseases
20.	*Houttuynia cordata* Thunb	Herb	Saururaceae	Mosondori	Leaves	Skin trouble, stomachache, cholera and dysentery, tonic
21.	*Illicium griffithii* Hook.f. & Thomson	Tree	Schisandraceae	Lyssi	Fruit	Stimulant and carminative
22.	*Litsea cubeba* (Lour.) Pers.	Tree	Lauraceae	Tayir Sen	Fruit	Hysteria, paralysis, dizziness
23.	*Lycopodium clavatum* L.	Herb	Lycopodiaceae	Launha	Young shoot	Gall Bladder
24.	*Oroxylum indicum* (L.) Kurz	Tree	Bignoniaceae	Bhatgila	Bark, flower	Dysentery, diarrhea and stomachache
25.	*Paederia foetidavar. Microcarpa* Kurz	Climber	Rubiaceae	Bhadai Lota	Leaves/Shoot	Headache and piles
26.	*Piper mullesua* Buch.-Ham. ex D.	Shrub	Piperaceae	Pipli	Fruit	Digestive, constipation
27.	*Rhododendron arboretum* Sm.	Tree	Ericaceae	Bruan	Flower	Cough, diarrhea and dysentery
28.	*Rubia manjith* Roxb. ex Fleming	Climber	Rubiaceae	Tamen	Stem	Diarrhea, dysentery
29.	*Syzigium cumini* L.	Tree	Myrtaceae	Jamun	Fruit	Antidiabetic, asthma and antipyretic
30.	*Taxus wallichiana* Zucc.	Tree	Taxaceae	Himalayan Yew	Bark	Stomachache
31.	*Terminalia bellirica* (Gaertn.) Roxb.	Tree	Combretaceae	Bohera, Beddas Nut	Fruit	Diarrhea, piles, dropsy
32.	*Terminalia chebula Retz.*	Tree	Combretaceae	Hilika, Harar	Fruit	Tonic, refreshing
33.	*Tinospora cordifolia* (Willd.) Miers	Climber	Menispermaceae	Amrit Lata	Stem, Root, Leaves	Fever and Dyspepsia

Conclusion

The results of the present study indicate that the area is rich in medicinal and wild edible plants. The local communities have maintaining the rich indigenous knowledge about the uses of plants for the medicinal and other purposes. This wealth needs immediate action for the conservation and management. Moreover, some medicinal plants have high market values. The national and international marketing potentiality of these species needs immediate assessment of wild edibles and medicinal plants in such biodiversity rich areas. The rare indigenous knowledge about the medical plants has to be preserved. It may be concluded that the present study has made an important contribution towards the documentation, conservation and management of wild edibles and medicinal plants of Lower Subansiri district in particular and Arunachal Himalayan Region in general.

Conflict of interest statement

Authors declare that they have no conflict of interest.

Acknowledgement

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