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Alok Yadav

Forest Research Centre for Eco-Rehabilitation, Prayagraj, Uttar Pradesh, India

Praveen Kumar Verma

Forest Research Institute, P. O. New Forest, Dehradun, Uttarakhand, India

Hari Ram Bora

Forest Research Centre for Bamboo and Rattan, Aizawl, Mizoram, India

Socio-economic impact of medicinal plants on the forest fringe communities of Nambor reserve forest, Assam

Alok Yadav, Praveen Kumar Verma and Hari Ram Bora

Abstract

The present status of medicinal plants in forests is a matter of deep concern as they are gradually declining and disappearing. Many indigenous communities all over the world depended on medicinal plants available in their surrounding forest for their day to day needs. These forests in general act as repositories for their traditional medicines.

Socio-economic study was conducted in the fringe villages of Nambor Reserve Forest of Assam to collect information on medicinal uses of plants in their surrounding forest through questionnaire. Information from different tribes was collected on the local uses of plants for medicinal use. Market survey was also done and information of medicinal plants pertaining to rate, availability and source of medicinal plants in local markets were collected.

Keywords: Medicinal plants, forest fringe, socio-economic survey, Nambor reserve forest

Introduction

India is a versatile reservoir of medicinal plants in the world. Medicinal plants have been used as a major source of therapeutic agents by man from a long time. Resource availability and prevailing socio-economic and socio-cultural condition of the people play vital role in the maintenance of the primary health care system in the rural area. Medicinal plants of forest have been invariably utilized by the humanity for cure of various ailments. Most of these plants are extensively collected from nature and indiscriminately exploiting for commercial purpose, resulting in depletion of natural resources and becoming rare and endangered [1-4].

The forests in north eastern region of India is the main source of fuel-wood, NTFPs, medicinal plants, food sources, and other day to day requirements for forest-based communities. Problem becomes more pathetic in forest fringe areas where there is neither enough land fit for cultivation nor industries to provide employment [5-7].

Forest fringe communities of north eastern states also, by and large depend on the renewable natural resources that are available in the forests for their livelihoods. Nambor Reserve of Assam is one of the rich biodiversity forests that cover district of Golaghat and Karbi Anglong. Champion and Seth (1964) had classified this forest type as Assam valley tropical semi evergreen forest (2B/C1). Population density of plants and their variations are unique. Some tribes like Shan, Aiton, Khamyang, Bodo and Karbi are inhabited surrounding the villages are utilizing the forest resources to fulfill their food fuel, fodder and medicine demand. Adequate modern health care facilities are yet to reach in this region, so they have to depend upon herbal medicines. The village medicine men have a good knowledge about the diagnosis and treatment of several ailments. They possess considerable knowledge about curative applications of locally available plants and preparation of medicinal recipes out of them. The practice of indigenous medicinal knowledge is still a matter of cultural heritage of the area. People are making maximum use of the plant species for meeting their day to day house hold demands [8-11].

Materials and Methods

Extensive survey was conducted during the period 2009-2011. The information was collected from Karbi, Adivasi, Bodo, Mishing, Shan etc. tribes' inhabitant in fringe villages near Nambor Reserve Forest of Assam through semi structured interview regarding the use of different medicinal plants, source, common name and their methods of application [12].

Corresponding Author:

Alok Yadav

Forest Research Centre for Eco-Rehabilitation, Prayagraj, Uttar Pradesh, India

Socio-economic survey: Socio-economic data were collected from fringe villages with the help of household survey on the household characteristics (gender, age and occupation of all household members) economic activities such as land-holdings, role of forest in their livelihood, alternative sources of income, medicinal plants used by them and conservation awareness. On an average 25-50% of the households of selected fringe villages were surveyed depending upon the household size ^[13-17].

Market survey: Information pertaining to the availability and rates of medicinal plants were collected through local markets

survey

Results

Socio-economic information pertaining to medicinal plant was collected during the study. Total 131 households were surveyed in the fringe villages of Nambor Reserve Forest of Golaghat (i.e. Tengani, Oaguri, Alisica, Huing pothar, Kocharrhualla and Morpholuni) and Karbi-Anglong district (Pungsdang, Koliapati, Shilonijan and Lethari etc.). The result shows that people are still using many plants from the forest for medicinal purpose as well as other. List of medicinal plants along with their uses is showed below:

Table 1: Medicinal plants of socio-economic importance

Species	Family	Vernacular name	Medicinal use	Part use	Source
<i>Alstonia scholaris</i> (L.) R. Br.	Apocynaceae	Chotiayana	fever, diarrhoea	B, L	W
<i>Amorphophallus campanulatus</i> Decne.	Araceae	Ul Kachu	Piles, Dysentery	Corm	W
<i>Catunaregam spinosa</i> (Thunb.) Tirveng.	Apocynaceae	Kot kora	Fever	B, Fr	W
<i>Centella asiatica</i> (L.) Urb.	Apiaceae	Mani muni	Dysentery and indigestion	L	HG
<i>Cyanthillium cinereum</i> (L.) H. Rob.	Asteraceae	Ban jeera	Leucoderma	Seed	W
<i>Garcinia pedunculata</i> Roxb. ex Buch-Ham.	Clusiaceae	Thekra	Stomach trouble	Fr	W
<i>Holarrhena pubescens</i> Wall. ex G. Don.	Apocynaceae	Kutoz	Dysentery and Diarrhoea	B, S	W
<i>Homalomena aromatica</i> (Spreng.) Schott	Araceae	Sugandhi kachu	Joint pain	Petiole	W
<i>Lasia spinosa</i> (L.) Thwaite	Araceae	Sengmori	Sore throat and piles	L, R	W
<i>Mangifera sylvatica</i> Roxb.	Anacardiaceae	Bon Am	Dysentery	Fr	W
<i>Merremia umbellata</i> (L.) Hallier f.	Convolvulaceae	Kolia lata	Back Pain	L	W
<i>Mesua ferrea</i> L.	Clusiaceae	Nahar	Coughs, eczema, dysentery	Fr, L	W
<i>Mikania micrantha</i> Kunth	Asteraceae	Japani lata	Insect/ Scorpion bite	L	W, HG,
<i>Oroxylum indicum</i> (L.) Kurz	Bignoniaceae	Bhat gila	Intestinal worm	FL	W/ HG
<i>Phlogocanthus thyrsoiflorus</i> Nees	Acanthaceae	Tita phool	Intestinal digestion	FL, L	HG
<i>Terminalia chebula</i> Retz.	Combretaceae	Silikha	Gastric	Fr	W, HG
<i>Terminalia citrina</i> Roxb. ex Fleming	Combretaceae	Silakha	Diarrhoea and dysentery.	Fr, B	W
<i>Terminalia citrina</i> Roxb. ex Fleming	Combretaceae	Silakha	Diarrhoea and dysentery.	Fr, B	W

*W=Wild; HG=Homegardens; FL= Flower; L=Leaf; Fr =Fruit; R= Root; B= Bark

Market survey

Market price of medicinal plants and their parts like leaf, fruit, flower etc. have been collected from five local markets situated in the fringe areas of the reserve i.e. Koilamati, Bukajan, Silonijan, Borpathar and Tengani. Information regarding the source & availability of plant/plant materials

along with their local names were collected through market surveys. Result shows that the costs of plants which are collected from the interior parts of the forests are costlier than the collection made from fallow land /disturbed forest. A brief result of market survey is given below:

Table 2: List of medicinal plants along with their market prices, source and part used

S. No.	Species	Market price	Common name	Source	Part used
1	<i>Alocasia macrorrhizos</i> (L.) G. Don	Rs.15/ to 20/-per kg	Henchala	W	Corm & Tender Leaf
2	<i>Amorphophallus bulbifer</i> (Roxb.) Blume	Rs. 5/- per bundle & Rs.10/- Per Kg	Ol-kachu	FL/W	Tender shoots & Corm
3	<i>Baccaurea sapida</i> (Roxb.) Müll. Arg.	Rs. 5-6/- per kg	Lateku	W/HG	Fruit
4	<i>Bambusa balcooa</i> Roxb.	Rs. 10-12/- per piece	Bhalokka	W	Shoot
5	<i>Bryophyllum pinnatum</i> (Lam.) Oken	Rs.2-3/- per bundle	Doopor tenga	HG	Tender Shoot
6	<i>Canarium resiniferum</i> Bruce ex King	Rs. 10-12/ kg	Dhuna	W	Resin
7	<i>Centella asiatica</i> (L.) Urb.	Rs. 4-5/-per bundle	Bor manimooni	HG, FL	Whole Plant
8	<i>Chenopodium album</i> L.	Rs. 2-4/-per bundle	Jil-mil sak	CL	Tender shoots
9	<i>Cinnamomum tamala</i> (Buch.-Ham.) T.Nees & Eberm.	Rs. 3-5/- per bundle	Tejpat	HG,W	Leafy shoot
10	<i>Clerodendrum glandulosum</i> Lindl.	Rs.3-4/- per bundle	Nephafu	, HG	Leaf
11	<i>Cheilocostus speciosus</i> (J.König) C.Specht	Rs.5-7/-per Kg	Jamlakhuti	W/DW, FL	Rhizome
12	<i>Dillenia indica</i> L.	Rs. 2-3/- fruit	O Tenga	W, DW	Fruit
13	<i>Dioscorea alata</i> L.	Rs.10-15/- per kg	Ruichin	W	Tuber
14	<i>Dioscorea esculenta</i> (Lour.) Burkill	Rs.10-15/- per kg	Ruipheng selu	W	Tuber
15	<i>Diplazium esculentum</i> (Retz.) Sw.	Rs.2-4/-per bundle	Dhekia	FL	Tender leaf
16	<i>Elaeocarpus sphaericus</i> K. Schum	Rs. 15-20/- Kg	Rudraksha	W	Ripened fruit/ seed
17	<i>Phyllanthus emblica</i> L.	Rs. 5-10/- per kg	Amlakhi	DW, HG	Fruit
18	<i>Garcinia cowa</i> Roxb. ex Choisy	Rs.10-12/- per Kg	Kuji thekera	W/HG	Fruit
19	<i>Gnetum gnemon</i> L.	Rs 3-4/ per 100 gm	Bhaji guti	W	Tender leaf
20	<i>Houttuynia cordata</i> Thunb.	Rs.3-5/-per bundle	Mochondari	HG, FL	Whole Plant
21	<i>Hydrocotyle sibthorpioides</i> Colenso	Rs.5/-per bundle	Chong amok	FL	Leaves
22	<i>Lasia spinosa</i> (L.) Thwaite	Rs.5-8/per bundle	Henru ehong/Chusot	W	Leaves
23	<i>Leucas aspera</i> (Willd.) Link	Rs.3-5/- per bundle	Chanrong aan	FL	Tender Shoot
24	<i>Merremia umbellata</i> (L.) Hallier f.	Rs.2-3/- per bundle	Kolia lota	HG / DW	Tender Shoot
25	<i>Moringa oleifera</i> Lam.	Rs.15/- per Kg (Fruits), Rs 5/-per Kg Bundle leaves	Sajina	HG	Fruit, Leaf

26	<i>Murraya koenigii</i> (L.) Spreng.	Rs. 8-10 /-Bundle	Narasingho	HG	Leaf
27	<i>Musa balbisiana</i> Colla	Rs.1/ piece	Bhimkal	HG	Fruit
28	<i>Paederia foetida</i> L.	Rs.3-5/- per bundle	Bhedailota	W, DW, HG	Leaf
29	<i>Perilla frutescens</i> (L.) Britton.	Rs.2-5/-per bundle	Sokloti	HG	Leaf
30	<i>Phlogacanthus thyrsoiflorus</i> Nees	Rs.4-5/- per 100 gm	Ranga Tita phul	HG	Flower
31	<i>Phyllanthus niruri</i> L.	Rs. 4.5 /-100 gm	Ban-amlakhi	F	Whole plant
32	<i>Smilax zeylanica</i> L.	Rs. 2-3/ 100 gm	Hosti Karna Lata	W	Tender shoot/leaf
33	<i>Solanum indicum</i> Roxb.	Rs8-10/- per kg	Tita bhekuri	W/ DW	Fruit
34	<i>Solanum americanum</i> Mill.	Rs.3-5/-per bundle	Birkulitita	W/FL	Tender shoots
35	<i>Solanum torvum</i> Sw.	Rs.4-5/- per part	Hati bhekuri	W/FL	Fruits
36	<i>Syzygium cumini</i> (L.) Skeels	Rs.15-20/Kg	Jamun	W/DW	Fruit
37	<i>Terminalia chebula</i> Retz.	Rs.5-8/- per Kg	Hilikha	W, HG	Fruit
38	<i>Terminalia citrina</i> Roxb. ex Fleming	Rs.5-7/-per Kg	Hilikha	W	Fruit
39	<i>Zanthoxylum oxyphyllum</i> Edgew.	Rs.4-6/- per bundle	Mezenga	W	Tender leaf

*W=Wild; DW=Disturbed Wild; FL= Fallow land; CL=Cultivated Land



Fig 1: Glimpses of Socio-economic and market survey

Discussion

The forest fringe villages are dependent on the natural resources for their day to day needs. The increasing demand of the growing population has resulted into a severe pressure on the natural resources in the region. Information of medicinal plants was collected during the socio-economic and market survey. It was found that the herbs species *Lasia spinosa*, *Amorphophalus campanulatus*, *Phyllanthus niruri*, *Leucus aspera*, *Centella asiatica*, *Paederia foetidida*, *Smilax zeylanica*, *Houttuynia cordata* are used as vegetable as well as medicinal by the local people and have socio-cultural importance. Leaves of *Cinnamomum* spp, fruits of *Garcinia pedunculata*, *Dillenia indica*, *Termanalia chebula*, and resin of *Canarium resiniferum* are collected by the local communities from forest and thereafter it is sold in the local markets. The spp like *Gnetum gnemon*, *Homalomena aromatica*, *Cinnamomum* spp *Elaeocarpus sphaericus* are widely collected by the fringe communities which are very infrequent in the forest. Therefore, it is very important to develop strategy for conservation and sustainable utilization.

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