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Alok Yadav

Forest Research Centre for Eco-Rehabilitation, Allahabad, Uttar Pradesh

Praveen Kuamr Verma

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

Tara Chand

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

Hari Ram Bora

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

Correspondence**Alok Yadav**

Forest Research Centre for Eco-Rehabilitation, Allahabad, Uttar Pradesh

Ethno-medicinal knowledge of *Clerodendrum L.* among different tribes of Nambor reserve forest, Assam, India

Alok Yadav, Praveen Kuamr Verma, Tara Chand, and Hari Ram Bora

Abstract

In view of the significant diversity of the genus *Clerodendrum* in Assam and its potential use in indigenous medicine systems, a total of 60 respondents from different tribal communities of Nambor Reserve Forest, Assam including Adivasi, Bodo, Karbi, Mishing and Shan were interviewed in 6 villages to put together the various uses and applications.

Keywords: *Clerodendrum*, ethno-medicinal, tribes, Nambor reserve forest, Assam

Introduction

Assam, covered by a chain of hills and two main rivers the 'Barak' and the 'Brahmaputra', is a treasure house of medicinal plants, which have been used as a major source of therapeutic agents for treatment of various ailments from a long time by local people particularly the tribal societies. Resource availability and prevailing socio-economic as well as socio-cultural condition of the people play vital role in the maintenance of the primary health care system in the rural area. The region has been shaped and nurtured by many tribal and non-tribal social formations inhabiting in different parts. The amazing wisdom and knowledge of the indigenous tribes have generated the curiosity among researchers and scientist to gather the ethno-botanical and socio-cultural information of this region since long. According to WHO, herbal medicines serve the health needs of about 80% of the world's population, especially for millions of people in the rural areas of developing countries. Most of the medicinal plants are extensively collected from nature by different tribals of the fringe forest area for their livelihood^[1, 2]

The genus *Clerodendrum* (Verbenaceae; Gr.: Kleros = chances or density, Dendron = tree) is pan-tropical in distribution with few species extending into the temperate regions. It contains about 600 species of annual to perennial herbs, shrubs, woody vines and small trees^[3, 5]. It was first described by Linnaeus^[6], based on the type species *Clerodendrum infortunatum* L. from India. Adanson^[7] changed the Latinized form *Clerodendrum* into Greek form *Clerodendron*^[8]. Moldenke^[3] re-adopted Linnaeus original Latinized form, and the same has been followed by most taxonomists.

In India, the genus comprises several species distributed from foothills of Himalayas to coastal areas of Kanyakumari in various agro-ecological zones. The genus *Clerodendrum* represents 18 species and 2 varieties in North eastern part of India^[9]. In Assam, the genus is growing luxuriantly from Barak valley to Brahmaputra plains, distributed evenly from roadside waste lands to the core of different forest types. Kanjilal *et al.*^[10] reported 10 species from Assam viz. *Clerodendrum griffithianum* C.B. Clarke, *C. infortunatum* Gaertn (now *C. infortunatum* L.), *C. colebrookianum* Walp. (Now *C. glandulosum* Lindl.), *C. bracteatum* Wall, *C. serratum* Spreng. *C. venosum* Wall, *C. squamatum* Vahl. [Now *C. japonicum* (Thunb.) Sweet.], *C. nutans* Wall. [Now *C. wallichii* Merr.], *C. siphonanthus* Br. Vern. [Now *C. indicum* (L.) Kuntze.] And *C. hastatum* Lindl. Baruah and Boissya^[11] reported some more species from Assam viz. *C. divaricatum* Jack, *C. hastatum*, *C. philippinum* [now *C. chinense* (Osbeck) Mabb.], *C. speciosum* Teijsm. & Binn. Ex Wigman, *C. thomsoniae* Balf. f., *C. viscosum* and *C. wallichii* Merr. (Now *C. laevifolium* Blume).

Due importance has been given to genus *Clerodendrum* in the indigenous system of medicine of Chinese, Indian, Japanese, Korean and Thai for various diseases such as syphilis, typhoid, cancer, jaundice and hypertension. The important metabolites reported from the genus are phenolics, steroids, di- and triterpenes, flavonoids, volatile oils, etc.^[12]. The leaves of *C. glabrum* E. May have been used as insect repellent^[13]. Khan and Khan^[14] studied the antibacterial potential in foliar extracts of *C. inerme* (L.) Gaertn. [Now *Volkameria inermis* L.]

against some human pathogenic bacteria. Manoharan *et al.* [15] reported the use of *Clerodendrum* spp. species against various ailments, including cancer. Sajem and Gosai [16] reported the use of *C. serratum* (L.) Moonb. Against asthma in the Jantia tribes of North Cachar hills district of Assam. Das *et al.* [17] found that Barman and H'mar community of Cachar, Assam used the *Clerodendrum colebrookianum* Walp. In various medical treatments. Das *et al.* [18] reported the use of *C. viscosum* Vent. Leaves as antiperiodic, vermifuge, and pain killer. The tribals of Nellore (Andhra Pradesh) use *C. philippinum* Schauer [now *C. chinense* (Osbeck) Mabb.] to relieves all types of skin diseases [19] (Neelima *et al.*, 2011). Vijayamirtharaj *et al.* (2011) [20] reported the use of *C. phlomidis* L.f. in several diseases including tumors. Jadeja *et al.* (2011) [21] reported use of aqueous leaf extract of *C. glandulosum* Lindl. For curing diabetes, obesity and hypertension in Northeast India.

Nambor Forest is store house of a rich bio-diversity with species, some of which are endemic and linked to the far-flung branches of the Himalayas. One of the most primitive living land plants *Psilotum nudum* (L.) P. Beauv. Is found in the forest along with many other rare and endangered species [22]. Several species of *Clerodendrum* also grows in the vicinity of the forest. The fringe forest villages are inhabited by various tribes viz. Shan, Bodo, Mishing, Karbi etc. The Nambor forest which is situated at distant place from the facility of modern medicine compels the people to depend on the herbal drugs for their primary needs. Despite the progressive socio-economic development of the area the indigenous communities and tribals still follow their age-old life-styles. In recent times it has been observed that this

practice is losing its existence due to modernization of the society. In view of the significant diversity of the genus in the area and its potential use in indigenous medicine systems, the present study was conducted to put together the various uses and applications among different tribes inhabiting the forest areas of Nambor forest of Assam, who are mainly dependant on herbal drugs in spite of modern medicines.

Materials and Methods

Extensive survey was conducted during the period 2009–2010. The information was collected from Karbi, Adivasi, Bodo, Mishing, Shan tribes of Assam through semi structured interview regarding the use of different *Clerodendrum* spp. and their methods of application. Total 60 persons (20 traditional practitioners, 5 village heads, 10 women, 25 elderly persons) in 6 villages were interviewed along with the plant specimens. Most of the interviewees (45) were more than 50 years old, belonging to families which still practicing traditional medicines for their day-to-day needs. The people were briefed about the objective of the interview and only those who volunteered and released the information, were interviewed in detail. Data on each *Clerodendrum* species was collected on following aspects: (a) vernacular name, (b) plant parts used, (c) process of medicine preparation and (d) mode of application (Table-1). Information were also collected on use of different plant parts and their combination with other plants to treat any particular ailment.

Results

The results are summarised in the Table-1.

Table 1: Medico-ethanobotany of genus *Clerodendrum*

Species name	Tribe using the plant	Vernacular Name	Methods of Medicinal use	Plant parts used
<i>Clerodendrum infortunatum</i> L.	Adivasi	Bhete	Juice of young leaves are given to cure vomiting	Leaf
	Bodo	Mwkhwna	Root decoction is used in treatment of dysentery	Root
	Karbi	Phlek ik	Raw leaves are taken for curing diabetes and high blood pressure	Leaf
	Mishing	Dhopattita	Roots and leaves are used in combination with <i>Andrographis paniculata</i> against malarial fever.	Root & Leaf
	Shan	Dhopattita	Tender leaf extract are used in helminthic diseases.	Leaf
<i>C. serratum</i>	Adivasi	Nangol	Extract of leaves are used for curing dysentery	Leaf
	Bodo	Teuri-long	Leaf extract are used to cure seasonal fever	Leaf
	Karbi	Pheleng- riho	Baked fruits are used for dietary purposes (as chutney)	Fruit
	Mishing	Pumi-aye	Leaf juice used in seasonal fever	Leaf
	Shan	Bharnag	Decoction of leaves are given for treating fever. Root paste is used to cure rheumatism	Leaf and Root
<i>C. colebrookianum</i> Walp.	Adivasi	Kinchang	Leaf paste is massaged to cure rheumatism	Leaf
	Bodo	Lukhna biphang	Decoction of plant is given in malarial fever.	Whole Plant
	Karbi	Orematong	Decoction of roots, leaves and bark is used to cure Malarial	Whole plant
	Mishing	Pakom	Leaf decoction is used in blood pressure and diabetes.	Leaf
	Shan	Nephaphu	Leaves mixed with several vegetable	Leaf
<i>C. indicum</i> (L.) Kuntze	Adivasi	Brahmajasthi	Leaf juice is used in skin diseases like irritation, rash.	Leaf
	Bodo	Ikhlabir	Leave paste is used in stomach disorders	Leaf
	Mishing	Okarbilik	Extract of leaf is used in cure of eye infection	Leaf
	Karbi	Bapnem-ai	Cooked leaves used as vegetable	Leaf
	Shan	Akalbhi	Root paste mix with ginger juice cure asthma	Root
<i>C. divaricatum</i>	Bodo	Kajal	Extract of young hoot and leaves are used to cure nausea in babies	Leaf and Shoot
<i>C. bracteatum</i> Wall. ex Walp.	Bodo	Vate gakha	Leaf extract use for cure in diarrhoea	Leaf

Conclusion

The present study was conducted to reveal that different *Clerodendrum* species are widely used by tribal communities' inhabitant of the forest fringe of Nambor reserve forest. It was

found that most of the tribes mainly use leaves of different *Clerodendrum* species of various ailments but sometimes root, shoot, and fruits are also used by them. However Adivasi tribe uses only leaf of *Clerodendrum* species. During

the study it was observed that Karbi tribe uses *C. infortunatum* for very important diseases like high B.P and diabetes where as Mishing tribe uses the root and leaves of *C. infortunatum* for curing Malarial fever. During seasonal fever use of *C. serratum* leaf is very common among Shan, Mishing and Bodo tribes. Malarial infection is very common in the study area and Bodo and Karbi tribe use plant of

C. colebrookianum for its cure. It was observed that slight similarities exist between the local/ vernacular name of the species. The medicinal properties of the genus have great potentially to cure different diseases. Conservation and study of *Clerodendrum* plants at biochemical levels are called for to provide a significant contribution to pharmacology industry of the country.



Fig. 1. Interview in fringe villages, 2. Extraction from fringe forest, 3, 4. *Clerodendrum* in Local market 5. *Clerodendrum colebrookianum*, 6. *C. infortunatum* 7. *C. serratum*, 8. *C. indicum*

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