

Medicinal plants of Subankhata Reserve Forest under Dhansiri forest division, Manas Biosphere Reserve in Assam, India

S. Paul, N. Devi and G. C. Sarma

Department of Botany, Gauhati University, Guwahati-781014, Assam, India.

E-mail: santalaceae09@gmail.com

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Abstract

Subankhata Reserve Forest is located in between N 26° 08' 97" 26' 17" and E 91° 38' 96" to 91° 49' 90" E under Dhansiri Forest division of the Manas Biosphere Reserve. The vegetation of the area is mainly Moist Deciduous forest with small patches of grassland. But importantly there are still small patches of Evergreen Forests exist along the Indo- Bhutan boarder. Moreover, the Subankhata Reserve Forest is rich with its valuable plant resources. Among these some plants have medicinal values, some produce edible fruits, and while some of them are oil and timber yielding plants with great economic prospects. Still, some of these species are rare and endemic. But the valuable green asset of this forest is now threatened due to over exploitation of forest resources by forest mafias and encroachment for agricultural and human settlements by economically poor people in the forest lands. Therefore, authors feel that the medicinal plants of this area need to be surveyed, conserved and to protect them in their natural habitat.

The present paper highlights on the description and uses of certain species of medicinally important plants along with their botanical and local names occurring in Subankhata Reserve Forest.

Key words: Medicinal plants, Subankhata Reserve Forest, Manas Biosphere reserve.

INTRODUCTION

The basic needs of human life such as food, shelter and clothing, human being discovered the utilization of natural resources to their uses in daily life. So, villagers collect forest resources for their survival and for the treatment of their various diseases. The villagers in the forest fringe areas have been using many plant species for their ethnic traditional medicinal practices. Therefore, investigation on the naturally occurring medicinal plants in all the biodiversity rich areas is very much essential. Moreover, the naturally occurring drug molecules are in great demand as those may work effectively against evolving microorganisms and for their lack of side effects. Further, as the health care cost continues to rise speedily; the attraction of low cost remedies has stimulated consumers to re-visit the potential of alternatives (Bouldin *et al* 1999). The medicinal plants have been used by Hakims and vaidyas and in folklore medicines since long and 80% of the human population living in rural areas depend mostly on Unani (Soomro *et al.*, 1997) and other traditional systems of medicine. Despite the increasing awareness on biological diversity, many regions remain disgracefully data-poor for wide variety of plant taxa. However the existing traditional knowledge based on plant and animal resource remains a positive indicator for researcher.

Biodiversity of the Manas Biosphere Reserve (MBR) is very rich. Manas is the only landscape in the world where pristine Terai grasslands are seen merging with Bhabar grasslands. Vegetation of the MBR is mainly consists of semi-evergreen forests (along the foothills of Himalayas), mixed moist deciduous forest, grasslands and small wet lands towards south. In some areas there are evergreen forest patches along the Indo-Bhutan boarder (Das *et al* 2009). Subankhata Reserve Forest (SRF) is one of the important forests under MBR located in the Baksa District of Bodoland Territorial Council (BTC) extending from N 26° 08' 97" to E 91° 38' 96" with a Northern Indo-Bhutan border. The vegetation of the area is mainly moist deciduous forest with small patches of grassland. But importantly there is small patches of Evergreen Forest exists along the Indo- Bhutan Border (Das *et al* 2009). This area is a house for rare, endangered and threatened plants and wide

diverse flora that includes a large number of medicinal plants. The villages in the area are belonging to different communities such as the Bodo, Rabha, Assamese, Nepali, Bengali, and tribes of Bhutan (Das *et al* 2009). Different tribal communities are dependent upon this biosphere reserve as their livelihood practice.

A good number of valuable accounts have been contributed on the studies of medicinal plants during the last two decades from the North – East region of India (Bhattacharjee *et al* 1980; Baruah & Sharma 1984; Gogoi & Boissya 1984; Borthakur 1976, 1981a, 1981b; Borthakur & Goswami 1995; Bora 1999; Gurung 2002; Jamir *et al* 2008.). Present paper deals with the occurrence of medicinal plants in the SRF those are generally used in the treatment of several diseases like jaundice and other common ailments.

MATERIALS AND METHODS

Extensive field survey was carried on different parts of the Subankhata Reserve Forest (SRF) Manas Biosphere Reserve (MBR) during the years 2009 – 2011. Voucher specimens were prepared following the methods of Jain & Rao (1977). Collected plant specimens were identified by matching with the specimens at the herbarium of the Department of Botany, Gauhati University and ASSAM herbarium. Finally identification of the voucher specimens was confirmed by consulting literature including *Flora of British India* (1862 – 1883) and *Flora of Assam* (1934 – 1940). The name changes were verified with the help of Bennet's *Name changes in Flowering plants of India and adjacent regions* (1987) and *Index Kewensis* 2.0, 1997. Medicinal uses of the collected plant specimens were collected from *bez/ oja* or traditional hillers who have knowledge on medicinal uses. Ethnobotanical information on traditional plants was catalogued through structured questionnaires in consultations with traditional healers.

RESULTS

From the survey, a total of 15 species are identified as medicinal plants used by the local people. These species are enumerated alphabetically in tabular form, each followed by local names in Assamese, Bodo and Rabha, their habit and medicinal uses (Table 1).

Table 1: Traditional uses of medicinal plants of Subankhata Reserve Forest in Assam
[Abbreviations used: A = Assamese; B = Bodo; R = Rabha]

Species Name [Family]; Voucher specimen	Vernacular name	Habit	Medicinal uses
<i>Aristolochia bracteolata</i> Retzius [Aristolochiaceae]; G.C.Sarma-354; dated 05.04.2009	Gondati (A)	Climber	Leaf extract used in lung diseases, inflammation, dysentery, gastric and snake bites; rhizome extract used as anthelmintic, purgative, mosquito repellent, antidote, and insecticide; one cup of leaf and root extract taken orally for 7 days against syphilis, gonorrhea also used externally
<i>Aristolochia cathartii</i> Hooker f. [Aristolochiaceae]; N. Devi-485; dated 23.10.2009.		Climber	Two spoon-full of rhizome extract used in stomach pain for 3 days; people of some tribes use leaf paste to promote flow of urine; warm extract of rhizome, stem & root extract also used as insect repellent
<i>Aristolochia indica</i> Linnaeus [Aristolochiaceae]; G.C. Sarma -415; dated 05.07.2009	Iswarimul, Arkamul (A)	Climber	Leaf and root paste applied in stomachache and as an antidote for poisonous snake bite and insect stings; leaf decoction used internally to relieve pain during menses; fresh or shade-dried

Species Name [Family]; Voucher specimen	Vernacular name	Habit	Medicinal uses
			leaves crushed with <i>Piper nigrum</i> fruits and made into pills, - two pills taken twice daily against snake and scorpion bites; also used as diuretic, anti-inflammatory, abortifacient and mild sedative; as an emmenagogue and a good cardiac tonic
<i>Careya arborea</i> Roxburgh [Barringtoniaceae]; <i>Santa Paul</i> -594; date: 12.11.2010	<i>Pani-amra</i> (A)	Large deciduous tree	Bark and fruits astringent; with honey given in cough and cold (Bodo); bark and fruits also used as demulcent
<i>Dioscorea alata</i> Linnaeus [Dioscoreaceae]; <i>Santa Paul</i> -321; dated 12.5.2011	<i>Kathalu</i> (A)	Climber	Boiled tuber taken orally twice daily for 15 days to cure piles and gonorrhoea; it also taken orally to treat piles and leprosy; tuber used in poultry feeds to improve production of eggs & meat
<i>Dioscorea pentaphylla</i> Linnaeus [Dioscoreaceae]; <i>Santa Paul</i> -781; date 06.09.2011	<i>Pachpatitia kathalu</i> (a)	Climber	Leaf paste mixed with mustard oil is rubbed on effected part to treat rheumatism
<i>Leea asiatica</i> (Linnaeus) Ridsdale [Leeaceae]; <i>Santa Paul</i> -632; dated 22.05.2011	<i>Kukura thengia</i> , <i>Ou-lota</i> , <i>Ahoi</i> (A); <i>Akra biphang</i> (B); <i>Akraphang</i> (R)	Gregarious under-shrub	Tuberous roots used as remedy for guinea worms and ring worms and in rheumatic pain, bruises; leaves used in wounds (Bodo); root used as antidote to snake bite (Bhutia); flowers used as antiseptic in cuts and wounds (Rabha)
<i>Mucuna pruriens</i> (Linnaeus) DC. [Fabaceae]; <i>Santa Paul</i> -496; dated 28.07.2010	<i>Bandor-kekua</i> (A); <i>Mokhra gerlla</i> (B); <i>Tinpatia lewa</i> (R)	Climber	Roots decoction mixed with honey given in cholera; roots diuretic and cleans kidney, crushed paste as ointment for elephantiasis; root also used in jaundice of children (Rabha); dried seeds used to expel intestinal worms (Bhutia)
<i>Naravelia zeylanica</i> DC. [Ranunculaceae]; <i>G.C. Sarma</i> -875; dated 07.03.2011		Climber	Use to heal wounds as antifungal and antibacterial agent; leaf paste applied to old wounds and it recovers within a 2-3 days
<i>Osbeckia nepalensis</i> Hooker [Melastomataceae]; <i>Santa Paul</i> -529; dated 28.07.2010	<i>Boga-phutukola</i> (A)	Shrub	Flowers applied to sore in the mouth of children and in asthmatic trouble (Bodo)
<i>Oroxylum indicum</i> (Linnaeus) Ventenat [Bignoniaceae]; <i>Santa Paul</i> -351; dated 16.09.2010	<i>Bhat-ghila</i> (A); <i>Kharong</i> (B); <i>Dingdinga</i> (R)	Small deciduous tree	Stem & fruits used in jaundice and malaria; bark decoction with honey given in stomach trouble (Bodo & Rabha); root bark is astringent & tonic; young fruits carminative and stomachic; flower used as vegetable
<i>Phlogacanthus thyrsiflorus</i> (Roxburgh) Nees [Acanthaceae]; <i>N. Devi</i> -453; dated 22.05.2011	<i>Tita-phool</i> (A); <i>Barshikha bibar gija</i> (B)	shrub	Leaves and flowers used in worm trouble, cough, asthma, bronchitis (Bodo & Rabha); stem bark used in stomachache and dysentery (Rabha); dry flowers cooked with other leafy vegetables to control worms
<i>Stephania japonica</i> (Thunberg) Miers [Menispermaceae]; <i>Santa Paul</i> -290; dated 15.06.2010	<i>Tubuki-lota</i> (A)	Climber	Leaf paste used in septic inflammation and boils; root & stem decoction also used in diabetes (Baro); rhizome paste used in urinary and gastric troubles

Species Name [Family]; Voucher specimen	Vernacular name	Habit	Medicinal uses
<i>Wrightia arborea</i> Dennstedt [Apocynaceae]; <i>Santa Paul-545</i> ; dated 29.07.2010	Dudh-khoroi (A); Thou-khuri (B); Kholosing (R)	Small deciduous tree	Bark juice used in menstrual disorder and renal troubles (Bodo, Bhutia), as antidote in scorpion sting (Rabha), substitute of <i>Holarrhena pubescens</i> (Buchanon Hamilton) Wallich ex G. Don
<i>Zingiber zerumbet</i> (Linnaeus) Roscoe ex Smith [Zingiberaceae]; <i>Santa Paul-535</i> ; dated 28.07.2010	Jamlakhuti, Debi-tokan (A); Burithokhon (B); Kokrek (R)	Tall herb	Paste of rhizome applied in stomach trouble of cattle; one cup of decoction of rhizome for taken daily in jaundice and urinary trouble and in intestinal worm trouble

DISCUSSION

During the survey 15 species of medicinal plants were recorded, which were used in the treatment of various diseases by local people of the study area. Out of these 2 species are monocotyledonous and other 13 were dicotyledonous covering 12 families. Among these, 7 species are climbers, 4 shrubs, 3 trees and the remaining one is herb. It has been observed that the genus *Aristolochia* Linnaeus have highest number of three species in the list.

These 15 species are used against different 27 ailments like lung disease, dysentery, gastric, snake bite, jaundice, stomach pain, flow of urine, cough, etc. Various parts of the plants used in different diseases, like roots (6 diseases), rhizomes (9 diseases), bulb (2 diseases), tuber (5 diseases), leaves (18 diseases), stem (5 diseases), bark (10 diseases), flower (8 diseases), fruits (7 diseases), and dried seeds (1 disease). The herbal medicines are administrated either orally or in the form of paste. Bodo people used maximum number of plants followed by Assamese and Rhaba.

However, it is noticed that due to population explosion, gradual urbanization and also forest encroachment for agricultural and human settlement in the forest land especially in the buffer zone by the socio-economically poor people, lead to the gradual deforestation and ultimately extinction of many medicinally important plants. During last 10 – 12 years, the forest has been degraded as a consequence of heavy tree felling, collection of fire wood, thatch and fodder, medicinal plants and poaching of wildlife by the forest mafias, unstable political situations and poor socio-economic condition of the people.

CONCLUSION

Various agencies like BTC administration, NGOs, local people have taken initiative to create awareness among the local people for the conservation of forest resources. If the local people are made aware of the importance and marketing potentiality of medicinal plants and also train up them for organized cultivation and marketing, then it will definitely help not only in conservation but also for the upliftment of economic condition of the local poor people of this area.

From our observation it can be suggested that there is a scope for collection and documentation of these species for their medicinal utilization against various diseases. Therefore, the authors feel that it is an urgent need for conserving and protecting medicinally important plant resources of the forest.

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PLATE - I

Fig. 1. *Aristolochia bracteata*; **Fig. 2.** *Aristolochia cathcartii*; **Fig. 3.** *Aristolochia indica*; **Fig. 4.** *Careya arborea*; **Fig. 5.** *Osbeckia nepalensis*; **Fig. 6.** *Rauvolfia serpentina*; **Fig. 7.** *Leea asiatica*; **Fig. 8.** *Stephania japonica*; **Fig. 9.** *Wrethia arborea*; **Fig. 10.** *Zingiber zerumbet*; **Fig. 11.** *Dioscorea pentaphylla*; **Fig. 12.** *Naravelia zeylanica*

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