



## NORTH EASTERN ETHNO-MEDICINAL PLANTS USED BY TRIBALS & TRADITIONALS IN DIABETES - A REVIEW

G.C. Nanda

Assistant Director and In-charge (Scientist –IV), National Veterinary Ayurveda Research Institute & Hospital, Indira Nagar, Sec. 25, INS 106, Lucknow, Uttar Pradesh, India.

### ABSTRACT

In the 21st century *Diabetes mellitus* is one of the most challenging health problems. It is one of the important multifactors of commonest metabolic disorders in men and women. Recent epidemiological studies reveal that approximately 246 million of people suffer from diabetes mellitus. By 2025 this figures could be expected to be 380 millions. Its incidence has been estimated to be around 15% of Indian population i.e. 70 million. As per diabetic concerned, WHO has projected India as the leading country in the world and it is epidemic in many developing and newly industrialized nations. It is a major global health problem with diverse causative factors often associated with multiple devastating innervating complications, increasing disability and reducing life expectancy. The information available in the classics of Ayurveda, show that *Diabetes mellitus* as a disease was very well known to the propounders of Ayurveda. It is amazing to note that the entire knowledge of disease diathesis, prognosis and treatment of diabetes mellitus vis-a-vis *Prameha/Madhumeha* was equally advanced since antiquity in the classics of Ayurveda. Hence the scientific community and traditional practitioners of all over the world including Ayurveda are in the search of new treatment modalities for better management of *Diabetes mellitus*. Medicinal plants reveal that plants have enormous therapeutic capabilities for the management of *Diabetes mellitus*. The present papers deals with medicinal plants with ant diabetic potency which is less known to us and are being used by the traditional healers of North-eastern states. These plants information's have been documented meticulously and have been presented here for further research in the field.

**KEYWORDS:** Antidiabetic, North-eastern, Ethnobotany, *Prameha/Madhumeha*.

### INTRODUCTION

North East India being a part of Eastern Himalaya as in one of the hot spot areas of various medicinal plant diversities the varied topography and climate has made the region a home for different medicinal plants that occur in their respective habitat. Traditional practitioners are still in practice of inherited ideas of disease curing techniques with their biological resources.

Practice of ethno medicine is an important vehicle for understanding indigenous societies and their relationships with nature. Accordingly to World Health Organization as many as 80% of world's population depends today on traditional medicine for their primary health care needs.<sup>1</sup>

North eastern region of India comprising 8 states harbour more than 180 major tribal communities and hundreds of medicinal plants are being used by them since generations for various ailments. Inhabited by a number of tribes of various ethnic groups each with unique cultural heritage, it is believed that these ethnic groups are also rich with medicinal plant lore<sup>2</sup>. The habitual in remote forest areas from generation to generations depend upon plants for their primary health care and are doing so they preserve this rich lore of medicinal plants. In *Veda* there is a *Sloka* in relation as: Gopala stapasah Vyadha jechanye Vanacharinah Ausadhinam param prapti kaschid veditum Arhasi) "(Charak) Means, the persons who regularly travel in forests are best knower's of medicinal plants.<sup>3</sup>

The tribal's have a symbiotic relationship with the forest as they derive their very basic need for survival from themselves (leaves, fruits, nuts, tubers, etc) fodder for their livestock, fuel for cooking, fibers for clothing, timber, rope, bar, bamboo and grasses for housing and farming, medical herbs for healthcare and diverse goods like gums, resins, waxes and silkworm cocoons for their economic benefit. In turn they protect the forest, conserve its biodiversity and also enrich its fertility through their various cultural activities, beliefs and practices.

The tribal's are aborigines and the surviving remnants of the primitive human societies of India. They prefer to live in their natural abodes – hill and forest, river banks and lakes and practice their traditional culture within their self-sustained ecosystem. Their traditional beliefs and practices have helped to preserve wild flora and fauna in their pristine glory, representing a great ecological heritage for modern civilization. Living close to nature, the tribal's have acquired unique knowledge about the sustainable use of wild flora and fauna but they never commercialize forest products and never exploit it to its limits.

However, with the wake of material development, they are forced to leave their natural homelands and change their constructive and conservative traditional lifestyle to a destructive dependence on forest. Identifying

themselves as a part of the natural ecosystem is becoming difficult for them in recent years.

Besides these traditional practices, most of the tribals believe in nature worship, which have helped preserved several virgin forests in pristine form called sacred groves (the forests of god and goddesses).

Such patches of forest or parts of large forest have been left untouched by the local people and any inference to it is a taboo for them. The degree and any inference to it is a taboo for them. The degree of sanctity of sacred forest varies, in some forest, even dry foliage and branches and fallen fruits and seeds are not touched. The probably help in the renewal of forest soil fertility and thus in the regeneration process itself. In other sacred groves, the dead wood or fallen foliage may be picked up, but never the live tree branches. Even birds and animals residing in the groves are not disturbed. These groves are found all over India in tribal zones only.

As untouched and guarded these groves preserves some elusive species of plants and animals not known to modern world. Sacred groves also preserved several wild relatives of economically important plants in their natural state. Since many of these plants are on the extinction list, their survival in these sacred groves is of great ecological and economic significance for our own reserve a particular tree which they have preserved for time immemorial. Such beliefs and worships indirectly help in the conservation practices. The tribals also used several kinds of medicinal plants for combating diseases in this area.<sup>4</sup>

Due to their unique property the tribal people conserved important medicinal plants like *Sarpagandha* (snakeroot plant) *Senna*, *Asvagandha*, *Brahmi*, *Sanjiwani*, etc. Although well preserved until now, these plants have been subjected to heavy exploitation once modern medicine has found in them chemicals with significant biological actions. As a result, most of them are becoming endangered species and many are on the verge of extinction. Thus tribals, forests and conservation go side by side and they form a symbiotic relationship where in the absence of one component the other component cannot survive.

Ethno-medicine has got a tremendous role in the management of Diabetes with some specific areas

especially in developing countries. Diabetes is a complex and a multifarious group of disorders that disturbs the metabolism of carbohydrate, fat and protein. Diabetes is characterized by dangerously high level of serum glucose known as hyperglycemia or elevated blood glucose. There are two major types of diabetes diseases designated as Type-I & Type-II.

Type-I is Insulin dependent diabetes Mellitus (IDDM) or juvenile onset diabetes accounts for about 10% of diabetes. The only treatment of this type available is insulin injections. Type-II is Non insulin dependent diabetes Mellitus (NIDDM) occurs in 90% of all diabetes. The major chronic complications of Type-II diabetes mellitus include retinopathy, accelerated macro vascular disease, renal diseases; neuropathy etc. Type-II diabetes affects approximately 150 million people around the world.

There are many drawbacks related to each of these treatments mainly developing of resistance and adverse effects to lack of responsiveness in large segments of patient population. In this juncture, several medicinal plants have been brought to lab with ant diabetic results collected information form these tribal healers which are used by them for generations. A lot of projects starting form official, institutional & Individuals are continuing to explore these naturals form them on various ailments and still on process to find out exceptional. Similarly, it is also a first line documentation of the medicinal plants used for curing diabetes in Northeastern region out of which few of them are lesser known. We have tried just to identify with their parts used for treating diabetes though having some other uses also, because every plant has got multidimensional actions. However, the information's presented here having possible effects on diabetes especially Type-II.

#### Materials and Methods

Extensive survey has been made in several tribal dominated areas along with traditional healer of sub-urb areas of Guwahati, Assam and Meghalaya. The plants used for diabetic treatment were collected on interrogation and documented which were verified and identified with their botanical names.<sup>5</sup> The information so gathered were enumerated below:

#### Medicinal Plants with anti- diabetic effect

Sl. No.	Botanical Name	Family	Vernacular Name	Parts Used
1.	<i>Albizia procera</i> Roxb.	Mimosaceae	Koroi, White siris	Root, Bark, leaf, flower
2.	<i>Alocasia macrorrhizos</i> (L.) G. Don Syn. <i>Alocasia indica</i> (Roxb.) Schott.	Araceae	<i>Mankachu</i> , <i>Mankanda</i> , <i>Hastikarni</i>	Rhizome
3.	<i>Alstonia scholaris</i> (L.) R.Br.	Apocynaceae	<i>Satiana</i> , <i>Saptaparna</i>	Bark
4.	<i>Ananas comosus</i> Merr.,	Braveliaceae	<i>Ananash</i>	Whole Plant
5.	<i>Andrographis paniculata</i> (Burm.f.) Wall. Nees.	Acanthaceae	<i>Kalmegh</i>	Leaves
6.	<i>Annona squamosa</i> Linn.	Annonaceae	<i>Sitaphalam</i>	Leaves, bark
7.	<i>Areca catechu</i> Linn.	Arecaceae	<i>Supari</i> , <i>Tamul</i>	Nuts
8.	<i>Artocarpus heterophyllus</i> Lam. Syn. <i>Artocarpus integrifolius</i> L. f.	Moraceae	<i>kathal</i> , <i>Panas</i>	Leaves
9.	<i>Bombax ceiba</i> L. Syn. <i>Bombax malabaricum</i> DC	Bombacaceae	<i>Shimul</i> , <i>Salmali</i>	Flowers, stem & bark
10.	<i>Carica papaya</i> L	Caricaceae	<i>Amita</i> , <i>Erandakarkati</i>	Seeds & milky Juice
11.	<i>Cassia fistula</i> Linn.	Caesalpinaceae	<i>Aragvadha</i> , <i>Suvarnaka</i>	Flowers, seeds &

				stem bark
12.	<i>Cassia occidentalis</i> L Syn. <i>Senna occidentalis</i> Roxb.	Caesalpinaceae	<i>Kalkashundu</i>	Leaves & seeds
13.	<i>Cassia tora</i> L.	Caesalpinaceae	<i>Panevar, Chakramarda</i>	Seeds
14.	<i>Centella asiatica</i> (L.) Urban Syn. <i>Hydrocotyle asiatica</i> L.	Apiaceae	<i>Thunkunj, Tholkuri, Mandukparni</i>	Whole plant
15.	<i>Dioscorea alata</i> Linn.	Dioscoreaceae	<i>Katalu, Chupri alu</i>	Rhizome
16.	<i>Dioscorea bulbifera</i> Linn.	Dioscoreaceae	<i>Kukul alu, Gachalu</i>	Leaves & twigs
17.	<i>Ficus hispida</i> L.f.	Moraceae	<i>Dumur</i>	Bark & fruits
18.	<i>Gloriosa superba</i> Linn.	Liliaceae	<i>Ulatchandal, Languli, Karihari</i>	Whole plant
19.	<i>Gmelina arborea</i> Roxb.	Verbenaceae	<i>Gamari</i>	Leaves, stem bark & fruits
20.	<i>Imomoea aquatica</i> Forsk.	Convolvulaceae	<i>Kalmausak</i>	Leaves and twigs
21.	<i>Kalanchoe pinnata</i> Pers.	Crassulaceae	<i>Patharkuchi</i>	Whole plant
22.	<i>Musa paradisiaca</i> L.	Musaceae	<i>Kol Bhimkol</i>	Leaves
23.	<i>Nyctanthes arbortristis</i> Linn.	Oleaceae	<i>Shewali</i>	Leaves
24.	<i>Tinospora cordifolia</i> (Wild) Hook f. & Thomas	Menispermaceae	<i>Amarlata, Siddhilata</i>	Leaves & Stem

## DISCUSSION

In the present study it was found that the traditional healers & tribes of North eastern states are using several types of medicinal plants out of which 24 types of plant species belonging to 20 families could be identified for diabetes patients i.e. Caesalpinaceae have 3 plant sps.; Moraceae 2 plant sps. and Acanthaceae, Annonaceae, Apiaceae, Apocynaceae, Araceae, Arecaceae, Bombacaceae, Braveliaceae, Caricaceae, Convolvulaceae, Crassulaceae, Dioscoreaceae, Dioscoreaceae, Liliaceae, Menispermaceae, Mimosaceae, Musaceae, Oleaceae & Verbenaceae have 1 plant sp. each family.

In the recent years there is a revival of interest in the traditional system of medicine where medicinal plants have become a major source of bio-dynamic compounds on therapeutic values. The traditional knowledge on medicinal plants is the main basis for bio-cultural and ecosystem conservation as well as selection of various species for further pharmacological, Phytochemical, toxicological and ecological studies. The indigenous know-how of the tribals needs to be studied closely and continuously to explore the hidden treasure to keep human being for a healthier tomorrow.

## CONCLUSION

North eastern states of India having rich diversity of herbal wealth which is traditionally used by local healers and tribals. There are so many plants with high medicinal values and the tribal people & local healers of that areas have sufficient knowledge on herbal medicines.

Now, by documentation scholars validate and share their experiences which will be helpful for further research to provide the remedial measures in different types of ailments in the population no doubt.

In the present paper, few informations have been gathered & further steps are being taken to revalidate as could be possible in future.

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### \*Address for correspondence

#### Dr. G.C. Nanda

Assistant Director and Incharge  
(Scientist -IV),  
National Veterinary Ayurveda  
Research Institute & Hospital, Indira  
Nagar, Sec. 25, INS 106, Lucknow,  
Uttar Pradesh-226016, India.  
Email: [vdgnanda@gmail.com](mailto:vdgnanda@gmail.com)  
Mob. No. 09415001345

Plants Photograph which are rare to found



*Alocasia macrorrhizos* (L.) G. Don



*Annona squamosa* Linn.



*Bombax ceiba* L.



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