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ETHNO ANTIDIABETIC PLANTS OF ASSAM

Pratul Chandra Sarmah

Dept. Of Botany, Dhing college, Nagaon (Assam) Pin-782123 email ID:pratulsarmah123@gmail.com

ABSTRACT : Assam is situated in the North Eastern part of India with laxurient floral and cultural diversity.The state is located at the foot hill of Eastern Himalaya, a biodiversity hot spot. Assam comprises of 27 districts. About 12.82% population of Assam are tribal. The tribal population of Assam can be broadly divided into Hill tribes and Plain tribes. The principal migrants have been the Austro-Astatics, the Dravidians, the Tebito-Burmans, the Mongoloids and the Aryans. Most of ethnic tribes of this region have their own herbal health care systems based on their original holistic culture. In this project work an attempt has been made during the year 2010 and 2011 to short out the anti diabetic plants used by the different tribes of Assam to deal with this deadly disease.

Key words: Diabetic, Ethnotribes, Antidiabetic plants, Assam

INTRODUCTION

History of herbal medicine is as old as human civilization. There are so many records of traditional therapeutic system of India,Europe,China and Africa. But the problem is that , the informations of these traditional medicine are in the possession of ethnic tribes scattered all over the world. Biodiversity in nature is the huge stone house of traditional medicine. Uncovering of facts about this hidden treasure is a major challenge to present day biologists, where lies the future prospect of our health care system.

Ayurveda is the ancient plant product based medicinal system of India practiced since last thousand of years. It gives a lot of valuable informations about diseases and their herbal remedial measures. With the use of sophisticated moderninstruments, the plant based ethno pharmaceutical study becomes a common field of innovative research . In a report of Pulok K. Mukharjee (2005) of Jadavpur University, Kolkata; the global herbal product market is worth USD 142 billion and is growing at the rate of about 9-15% annually. The annual turnover of Indian herbal medicinal industry is about Rs. 2,300 crores. India has about 25,000 effective plant based formulations used in folk medicine.

There an approximate 320,000 medicinal plant sps. in the world. Herbal medicine is used by more than 50%of the world population. Use of traditional medicine is most common in Africa, Asia and Latin America. In India 65% of population have used traditional medicine.India has rich diversity of medicinal plants. 90% of herbal row materials are used in Ayurvedic, Siddha, Unini and Homeopathy medicine and those mainly collected from wild state.

Assam is a land of rich biodiversity with varied sociocultural elements. Here Hindu, Christian,Sikh,Buddhist,Muslim are living together for centuries with large number of ethnic groups. Of the total population of Assam 12.82% is tribal. Tribal population of Assam can be broadly divided into hill tribals and plain tribals.Among the hill tribes of Assam,Chakma,Dimasa,Garu,Hazong,Kuki,Karbi, Maan,Mizo,Hmar,Naga etc. are notable our. The major plain tribes of A ssam are Rabha,Mising,Deori,Tiwa,Sonowal,Mech,Bodo etc. Presently Assam has about 16 scheduled castes and 23 scheduled tribes. With the increasing interest to life and culture of tribal people,people have given much interest to ethnomedicinal study.

Diabetes is a condition associated with high level of sugar in blood is a serious disease claiming thousands of lives every year particularly in commercialized societies. Indian history of diabetes is sufficient old and is mentioned in 2500 years old .Indian medical text. Ayurvedic authorities Sushruta and Charaka had described it as Madhumeha disease.It was Greek physician Aretaeus of first century A.D. who first used the term 'Diabetes'. In 1889 a French physician Apollinaire proved that removal of dogs pancreas caused diabetes. In 1901 American pathologists Eugene Opie proved that failour of the pancreatic islet cells caused diabetis. Banting and Charles in 1921 have made an epoch making discovery i.e. "Insulin" in pancreatic extract have the potentially to reduce the blood sugar of diabetic dogs. Absence or insufficient production of insulin causes diabetes. The symptom of diabetes are increase urine out put,thrustand hunger as well as fatigue etc.

There are mainly two types of diabetes i.e. Diabetes type I and Diabetes type II. Diabetes type I is insulin dependent diabetes Mellitus or Juva diabetes and is accounts for 10%of total diabetics of the world. Insulin injection is the only remedial measure of this type of diabetes. Diabetes II is noon insulin dependent Mellitus and is accounts for 90%of the world diabetic patients numbering of about 150 million Sufficient development have been made in the field of diabetes treatment .Since the discovery of insulin Several synthetic oral hypoglycemic drugs(OHDs) are available in market. But these synthetic drugs are not sufficient to treat this deadly disease, particularly typeII.Most of these synthetic drugs have some serious side effects. In this respect our traditional herbal therapeutic system can act as an alternative to synthetic drugs.Generally these phytochemicals have less side effect. Many of them are helpful in preventing the secondary complications of diabetes. Cost effectiveness is another plus point of herbal treatment . Some of these traditionally used phytochemicals are found practically helpful in regenerating beta cells responsible forsecretion of insulin in animal body. More than 600 plants are reported to use traditionally for diabetic treatment all over the world. But only few of them are studied scientifically to measure their authenticity. So, this project has been taken in the year 2010 in an area like Assam with rich ethnic heritage as a positive step towards the development of traditional health care system.

METHOD AND MATERIALS:

The informations about ethno antidiabetic plants are gathered mainly from the personal interview of local baidyas. Generally baidyas are not willing to share their knowledge with outsiders and that makes the information gathering processes a troublesome and time taking one. The library collections and research publications of Gauhati and Tezpur Universities are also used as secondary sources of information. Sufficient fields and survey works are made for collection of plant materials from specific sites in specific flowering seasons. The major tribes from where the informations are collected are:

i) Karbi (Mikir) and Dimasa of Karbi Anglong districts.

ii) Tiwa and Kachari of Nagaon and Morigaon districts.

iii) Rabha,Hazang,Deori,Garu,Boro of lower Assam districts.

iv) Kachari,Motok,Mishings of Upper Assam districts.

v) Chorei, Reangs and Hmar of Barak Valley (South Assam).

A small herbarium is maintained for the storage of $Hgcl_2$ treated medicinal plant species. Identifications of plants are confirmed through eminent taxonomists of Gauhati University and BSI, Shillong. The informations regarding plant types, mode of application, local name, plant part used etc. are noted carefully in tabular form. Finally a list is prepared showing most of ethno antidiabetic plants of Assam.

RESULTS AND DISCUSSION

Assam is not only rich in biodiversity but also rich in its cultural heritage. It is a land of multiculture with large number of ethnic tribes. These tribes have their own traditional health care systems. They have used some particular crude plant extracts to treat diabetic patients. Plant parts used for diabetic treatment are also different in regards to plant types. In the present study it is found that the different tribes of Assam have used 105 types of plant species belonging to 51 families to treat diabetic patient. The family wise distribution of these recorded antidiabetic plants are as follows:

I. Moraceae and caesalpiniaceae have eight plant sps. Each.
II. Papilionaceae, Apocyanaceae and Euphorbiaceae have six plant sps.each.
III. Apiaceae and Rutaceae have four plant sps. Each.
IV. Poaceae have three sps.
V. Musaceae, Acanthaceae, Lamiaceae, Araceae.

Bromeliaceae, Zingiberaceae, Mimosaceae, Liliaceae, Solanaceae, Menispermaceae, Annonaceae, Myrtaceae, Arecaceae, Verbenaceae, Combretaceae have two plant sps. each.

All the other 28 recorded families have only one number of ant diabetic plant each.

List of Ethno Antidiabetic Plants of Assam

S.No.	Scientific Name	Local Name	Family	Part used
1.	*AdhatodavasicaNees*	Bogabahok	Acanthaceae	Root
2.	*Aechmeafasciata*	Aechmea	Bromeliaceae	Whole plant
3.	*Aegle marmelos correa*	Bel	Rutaceae	Leaf
4.	*Albizzia procera Benth*	Koroi	Mimosaceae	Root,leaf,flower
5.	*Alocacia indica schott*	Mankachu	Araceae	Rhizome
6.	*Aloeveratournex.Linn*	Ghrita kumari	Liliaceae	Leaf
7.	*Ananascomosus (L) merr*	Matikathal	Bromeliaceae	Whole plant
8.	*Andrographis paniculata Nees*	Kalmegh	Acanthaceae	Whole plant
9.	*Annonareticulata Linn*	Aatlas	Annonaceae	Bark
10.	*Annonasquamosa Linn*	Manga	Annonaceae	Leaf
11.	*Antidesmaacidum Retz*	Nikhutenga	Euphorbiaceae	Leaf
12.	*Antocarpusheterophyllus Linn*	Kothal	Moraceae	Leaf
13.	*Areca catecheu Linn*	Tamul	Arecaceae	Nut
14.	*ArtocarpuslokoochaRoxb.*	Diwatenga	Moraceae	Bark
15.	*Averrhoacarambola Linn.*	Kardoi	Oxalidaceae	Bark
16.	*Bombox malabaricumDC*	Simolu	Bombacaceae	Root
17.	*Bougainvillea spectabiliswilld*	Bougainvellia	Nyctaginiaceae	Leaf
18.	*Caesalpinia crista Linn.*	Lataguti	Caesalpiniaceae	Seed
19.	*Cajanus cajan Mill*	Rahar	Papilionaceae	Leaf
20.	*Canna indica Linn*	Parijat	Cannaceae	Leaf,Stem
21.	*Cannabis sativa Linn*	Bhang	Cannabaceae	Leaf,stem,flower
22.	*Carricapapaya Linn*	Amita	Carricaceae	Seed
23.	*Casiaalata Linn.*	Khorpat	Caesalpiniaceae	Tender,leaf
24.	*Cassia angastifolia Linn*	Channa	Caesalpiniaceae	Leaf
25.	*Cassia fistula Linn.*	Sunaru	Caesalpinaceae	Flower,seed,stem,bark
26.	*Cassia occidentalis Linn.*	Bonoriadadol	Caesalpinaceae	Seed,stem
27.	*Cassia sophera Linn*	Bonmadelua	Caesalpinaceae	Seed,stem,bark

28	*Cassia tora Linn.*	Sarumadelua	Caesalpinaceae	Seed
29	*Centellaasiatica Linn.*	Bormanimuni	Apiaceae	Whole plant
30	*Ciceracida Linn.*	Holfoli	Euphorbiaceae	Leaf
31	*Cinnamomumtamalafr. Nus*	Tezput	Lauraceae	Stem,bark.root
32	*Citrus aurantifolia Linn*	Nemu	Rutaceae	Fruit
33	*Citrus aurantium Linn.*	Kamala	Rutaceae	Fruit
34	*Coccinia indica cogn*	Balipoka	Cucurbitaceae	Fruit, root
35	*Cocosnucifera Linn.*	Narikol	Arecaceae	Fruit,flower
36	*Colocasiaesculenta(L) Scholl*	Kolakachu	Araceae	Roots
37	*CordiadichotomaFrost.f.*	Bhutadrum	Bonagiraceae	Leaf,fruit.
38	*Coriandrumsativum Linn.*	Dhania	Apiaceae	Leaf
39	*Curcuma domesticaval*	Halodhi	Zingiberaceae	Leaf,rhizome
40	*Curcuma aromatic Salisb*	BonoriaHalodhi	Zingibenaceae	Rhizome
41	*CynodondactylonPers*	Dubori	Poaceae	Whole plant
42	*Daucascarota Linn*	Gajor	Apiaceae	Root
43	*Dilleniaindica Li*nn.	Aautenga	Dilleniaceae	Fleshy perianth
44	*Dioscoreaalata Linn.*	Kath alu	Diosconeaceae	Rhizome
45	*Eleusine coracana*	Ragi	Poacear	Stem base
46	*EnhydrafluctuansLour*	Haleshi	Asteraceae	Stem
47	*Erythairinaindica Linn*	Moder	Papilionaceae	Root
48	*Eugenia jambolana Linn*	Kala Jamu	Myrtaceae	Fruit,Bark,Seed.
49	*Euphorbia hirta Linn.*	Gakhirotibon	Euphorbiaceae	Whole plant
50	*Ficusbenghalensis Linn.*	Bot	Moraceae	Stem,bark
51	*FicusglomerataRoxb.*	Jangyadimoru	Moraceae	Leaf,fruit
52	*Ficus heterophylla Linn*	Dimoru	Moracea	Seed
53	*Ficusreligiosa Linn.*	Ahot	Moraceae	Root,root bark
54	*GarciniapadunculataRoxb.*	Borthekera	Clusiaceae	Fruit
55	*Gloriosasuperba Linn.*	Gloriosa	Liliaceae	Whole plant
56	*Glycine max Merr*	Soyabeen	Papilionaceae	Seed
57	*GmelinaarboreaRoxb.*	Gomari	Verbenaceae	Leaf,fruit
58	*GrewiaabutelifoliaJuss*	Petuk	Tiliaceae	Fruit
59	*Heliotropiumindicum Linn.*	Hatisur	Heliotropiaceae	Aerial part
60	*HolopteliaintegrifoliaPlanch*	Holoptelia	Ulmaceae	Bark
61	*Holorrhenaantidysenterica wall*	Kutaz	Apocyanaceae	Bark,fruit
62	*HydrocotylerolundifoliaRoxb*	Soru manimuni	Apiaceae	Whole plant
63	*Hydroleazeylanicavahl.*	Indranil	Hydrophyllaceae	Leaf,twig
64	*Ichnocarpus frutescent R. Bn.*	Syamalota	Apocyanaceae	Root
65	*ImperatacylindricaBeauv*	Ulukher	Poaceae	Root
66	*Ipomoea aquatic Forsk*	Kalmou	Convolvulaceae	Leaf,twig
67	*Jatrophacurcus Linn.*	Bongaliara	Euphorbiaceae	Leaf,twig
68	*Litseaglutinosa(lour) CB Robins*	Haluca	Lauraceae	Leaf
69	*Madhuka indica Gmel*	Mohua	Sapotaceae	Bark,Seed
70	*Mangifera indica Linn*	Aam	Anacardiaceae	Fruit
71	*Meliaazadirachta Linn*	Mohaneem	Meliaceae	Leaf
72	*Mimosa pudica Linn.*	Nilazibon	Mimosaceae	Whole plant
73	*Moringaoleifera Linn*	Sogina	Moringaceae	Bark,flower,leaf
74	*Mormordica charantia Linn*	Tita Karela	Cucarbitaceae	Leaf,fruit
75	*Morusindica Linn*	Nuni	Moraceae	Tender leaf
76	*Mucunapruriens DC.*	Bandarkakura	Papillionaceae	Root
77	*Murrayakoeningii Sprang*	Narasingha	Rutaceae	Leaf
78	*Musa paradisiacal Linn.*	Kashkol	Musaceae	Flower,fruit
78	*Musa sapientum Linn.*	Monohorkol	Musacaceae	Inflorescences

79	*NelumbonuciferaGaertn*	Podumful	Nelambaceae	Tender leaf
80	*Nictanthus arbor tristis Linn*	Sewali	Oleaceae	Leaf,flower
81	*Ocimumamericanum Linn.*	Kola tulosi	Lemiaceae	Peteole
82	*Osbeckianepalensis Hook*	Photkola(Boga)	Melastomaceae	Tender shoot
83	*Oxalis corniculata Linn*	Tangasi	Oxalidaceae	Whole plant
84	*Phyllanthusemblica Linn*	Amlakhi	Euphorbiaceae	Fruit
85	*Phyllanthus niruri Linn*	Bonamlokhi	Euphorbiaceae	Wholeplant
86	*Plumeriaacuminata A it*	Sun champa	Apocyanaceae	Bark
87	*PremnalatifoliaRoxb*	Agnimantha	Verbenaceae	Leaf, Bark
88	*Psidiumguyava Linn*	Madhuri	Myrtaceae	Fruit,leaf
89	*Saraca indica Linn*	Ashok	Caesalpiniaceae	Fruit
90	*SesbaniasesbanMerill*	Jayanti	Papilionaceae	Leaf, tender stem
91	*Solanumindicum Linn.*	Bhakuritita	Solanaceae	Fruit
92	*Solanum tuberosum Linn*	Alu	Solanaceae	tuber
93	*Spondias mangifera wild*	Amara	Anacardiaceae	Fruit
94	*SterculiavillosaRoxb.*	Udal	Starculiaceae	Root
95	*StreblusasperLour*	Sewra	Moraceae	Bark
96	*SwetiachiraytaRoxb.*	Cherota	Gentianaceae	Aerial plant
97	*Tabernaemontanadivericota(L) R.Br.*	Kothalphool	Apocyanaceae	Leaf
98	*Terminaliacatapa Linn.*	Badam(desi)	Combretaceae	Fruit,seed
99	*TerminaliachebutaRoxb.*	Selekha	Combretaceae	Fruit
100	*Thevetiaperuviana(pers) Merill*	Halodhiakorobi	Apocyanaceae	Bark
101	*TinosporacordifoliaMiers*	Sidhilota	Menispermaceae	Leaf,bark
102	*Tinospora crista Miers*	Saguni lata	Menispermaceae	Leaf,root
103	*Trigonellafoenumgraceum Linn*	Mithi	Papilionaceae	Seed
104	*Vincarosea Linn (cartharanthusreseus)*	Nayantora	Apocyanaceae	Leaf

In herbal traditional diabetic treatment different plant parts are used regarding plant types. The use of plant parts in ethno diabetic treatment from maximum to minimum can be arranged as:Leaf-----→ Fruit------→Bark-----→Root-----→Seed-----→Whole plant ------→Flower. Lack of definite authentic instruction regarding doses and use of some plant extract in different diseases is the two major problems have to face by ethno medicinal plant researches.

CONCLUSION

From this minor project work, it is known that, there are so many prospective antidiabetic plants in Assam .But till now no intensive scientific study has been made in this field . Particularly, from analytical point of view, the work already done is not sufficient to prove the authenticity of these traditionally used phytochemicals. Without proper identification of phytoactive particles, their nature of action and their strength, the use of herbal medicine is not safe. But vast potentiality of ethnopharmacological research is there in Assam for establishing a standardized herbal therapeutic system as an alternativeto modern synthetic drugs. In NE India there are so many plants whose medicinal value are not known properly .Which may be the source of medicines of deadly diseases like cancer,AIDS,Hepatitis etc. In NE India there is sufficient employment potentialities through medicinal plant gardening. The tribal people of this area have sufficient knowledge on herbal medicines and that will be helpful in establishing medicinal plant garden successfully.

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