



## Indigenous Knowledge on the Utilization of Medicinal Plants by the Sonowal Kachari Tribe of Dibrugarh District in Assam, North-East India

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### Abstract

*In the present study, an attempt has been made to explore the diversity of IKS pertaining to utilization of medicinal plants by the Sonowal Kachari tribe of Dibrugarh district in Assam, NE India. Intensive field work was conducted in 03 Sonowal Kachari inhabited villages viz. Boiragimath Kachari gaon, Duliabam and Paroliguri during 2012. Data collection was done through extensive personal interviews, in-depth discussions and participant observation method. A total of 33 species of medicinal plants belonging to 29 families were recorded. The most dominant plant family is Leguminosae; leaves are found to be the most frequently used plant part for medicine preparation; the most common method of medicine preparation is paste; and shrub is the dominant category of the plants. Utilization of medicinal plants is an important IK tradition of the Sonowal Kacharis and further phyto and pharmaco-chemical investigations of their ethno-medical remedies may lead to the discovery of new drugs to fight human diseases.*

**Keywords:** Indigenous knowledge, medicinal plants, sonowal kachari, Dibrugarh, Assam.

### Introduction

Utilization of plants since ancient times for various human needs represents a long history of human interactions with the environment. Medicinal plants used as a source of primary health care indicate the rich indigenous knowledge (IK) of the tribal and rural populations. Over the centuries, traditional cultures around the world have learned how to use phyto-medicines to fight illness and maintain health. Medicinal plants contain a wide range of metabolites that can be used to treat chronic as well as infectious diseases. In spite of tremendous development in the field of synthetic drugs and antibiotics during the 20<sup>th</sup> century, plants still continue to be a major source of drugs in modern as well as traditional systems of medicine throughout the world. Today about 80% of the world's population relies predominantly on plants and plant extracts for healthcare<sup>1</sup>. In recent years, research on medicinal plants has been extensive in order to develop new products and medicines to treat diseases. Medicines derived from plants possess a potentially safer and more reliable medicine than synthetically produced drugs. Medicinal plants have always been the principle source of medicine in India. The medicinal plant wealth is our national heritage and it seems to be the first and foremost line of defense for the treatment of various diseases mostly in tribal and rural communities<sup>2</sup>.

North-East (NE) India is endowed with a wide spectrum of biodiversity in plant genetic resources and represents an important part of the Indo-Myanmar biodiversity hotspot, one of the 25 global bio-diversity hotspots recognized currently<sup>3</sup>. It possesses rich flora and many are accredited with medicinal value. NE India is also the homeland of a large number of tribal and ethnic

groups who came from different directions at different historical times. These groups depend on the surrounding plant resources which form an integral part of their material and spiritual cultures. They have always generated, refined and passed on a vast repository of IK about the use of plants from generation to generation. Amongst them the knowledge and mode of utilizing medicinal plants in their traditional health care system is the most important. Hence, with enormously diversified tribal and ethnic groups and rich biological resources, NE India represents one of the veritable emporiums as well as an important venue for indigenous knowledge system research.

So far a wide range of plants with ethno-medicinal value against some very important diseases have been reported from Assam<sup>4-8</sup> as well as from several other parts of India<sup>9-12</sup>. But, many ethno-medicinal plants used by the Sonowal Kacharis have remained unexplored and unreported as very little work has been done on the topic<sup>13-14</sup>. The Sonowal Kacharis, since time immemorial, have been practicing their own unique indigenous system of diagnosis, treatment and control of several diseases. In this backdrop, the present paper attempts to record the use of some locally available medicinal plants by the Sonowal Kachari traditional medical practitioners. Documenting IK through ethno-medicinal studies is important for the conservation and sustainable utilization of biological resources. Therefore, it is hoped that the current study will be helpful in preserving the rich IK traditions and tribal cultural heritage of the Sonowal Kacharis. It is also hoped that, the data contained in this paper will be a useful lead for further phyto-chemical and pharmacological studies.

**A brief account of the Sonowal Kacharis:** The Sonowal Kacharis are one of the aboriginal tribes of Assam, recognized

as the *Sons of the Soil*, inhabiting the land from time immemorial. They are a scheduled tribe (plains) with a total population of 235, 881 (Census of India, 2001). The origin of the Sonowal Kacharis is very difficult to trace. They are a branch of the Bodo Kacharis of Assam. Kachari is a generic term for a number of endogamous tribal groups of NE India such as Boro, Burman, Dimasa, Dhimal, Garo, Hajong, Hojai (Dimasa), Lalung (Tiwa), Mech, Rabha, Jamatia, Bru (Reangs), Uchai, Debbarma (tiprasa), besides the Sonowal's, all claiming a common ancestry. In the unknown past, the Kacharis migrated to the Brahmaputra valley, Assam from their original abode in Tibet and Western China. It is possible that there were at least two immigrations from north and north-east into the rich valley of the Brahmaputra, i.e. one entered North-east Bengal and Western Assam through the valley of the Tista, Dharla and Sonkosh; and the other making its way through the Subansiri, Dibang and Dihong valleys into upper Assam<sup>15</sup>, the Sonowal Kacharis are believed to be from the second group. Thereafter, the Kacharis spread and settled in the foothills of the Eastern Himalayan range which includes the whole of Assam, Tripura, parts of Meghalaya, North Bengal and parts of Nepal and Bangladesh. All the Kachari tribes are Mongoloid in origin and belong to the Tibeto-Burman linguistic family.

The Sonowal Kacharis are popularly described as those people who were engaged in washing gold particles from the sands of the river Subansiri in upper Assam and therefore the prefix 'Sonowal' (Gold washer) was added to signify them. It is also opined that, the Kacharis of upper Assam who became the disciple of *Gossain* (a religious head) named *Keshawdeo* were considered to have super-natural power of offering a certain quantity of gold in a bamboo tube while the Ahom king Godadhar Singha was on the throne and these people came to be known as Sonowal Kacharis. However, contrary to the above explanations, oral tradition has it that the Badu-hunoloy group of Kachari people established their territory named Hemali and Halali which were situated in and around present day Sadiya of upper Assam. These people came to be known as Sonowal from the word 'Hunoloy'<sup>16</sup>.

At present, the Sonowal Kacharis predominantly inhabit the upper Assam districts of Dibrugarh and Tinsukia; and sparsely in the districts of Dhemaji, Golaghat, Jorhat, Lakhimpur and Sibsagar. They are medium statured; skin colour is yellowish, black; straight hair; broad and flat face; mesorrhine nose; head shape is mesocephalic with a high forehead and they display a high incidence of HbE gene (above 50%) of the haemoglobin variant HbE<sup>17</sup>. They are divided into 7 major clans (*Khels*) which are again divided into 14 sub-clans (*Bongshas*) that are further sub-divided into 108 sub-sub-clans (*Hons/Poriyls*). The Sonowal's are patrilineal, patriarchal and patrilocal. The rules of tribal endogamy and clan, sub-clan exogamy are followed with regard to marital alliances. Therefore, marriage among the same *Bongshas* and *Honses* is strictly prohibited since they are blood relatives. Agriculture is the main economy of the people and rice is the staple food. Bihu is their main festival. *Haidang*

*Husori*, *Bohuwa nitya*, *Log bihu nitya*, etc. are some of the important folkdances. The Sonowal Kacharis have more or less completely lost their language. They speak Assamese and use the Assamese script. But, many local words which are different from the Assamese ones are still retained in their vocabulary, and thus, it forms a dialect for communication especially in some rural areas.

They have a dual religious system; their traditional religion is *Bathou* or *Bathouism* which has been practiced from ancient times. *Bathouism* is the worship of Lord Shiva, the supreme god of the Sonowal Kacharis. They hold sacrificial worship to their ancestors and a number of other traditional deities. Simultaneously, they are devout followers of Hinduism, worshipping all the Hindu gods and goddesses. Also, they are the followers of *Mohapurushia Baisvan Dharma* propagated by Srimanta Sankardeva in Assam. *Baitho puja*, *Gatigiri puja*, *Gojai bhoj (puja)*, *Horogdeo puja*, *Kechaikhathi Goshani puja*, etc. and *Burha puha*, *Na-puruhor hokam*, *Apeswari sobha*, *Bari sukar hokam*, *Lokhimi mota*, etc. are some of the significant traditional community and household religious ceremonies respectively.

## Material and Methods

**Study Area:** Dibrugarh district (27°5'38" N-27°42'30" N latitude & 94°33'46"E-95°29'8"E longitude) covers an area of 3381.00 sq. km and is bounded by Dhemaji district in the north, Tinsukia district in the east, Tirap district of Arunachal Pradesh in the south-east and Sibsagar district in the south. The area stretches from the south bank of the river Brahmaputra, which flows for a length of 95 km through the northern margin of the district, to the Patkai foothills in the south. Dibrugarh experiences a sub-tropical monsoon climate with mild winter and warm-humid summer. The average rainfall is 2195 mm and the annual temperature ranges from 15°C-29°C. Dibrugarh has the world's largest area covered by tea gardens. The entire district has many tea plantations, some of which are more than 100 years old. There is a large tract of Tropical Rainforest in the eastern and southern regions of the district. The total forest cover is 754 km<sup>2</sup> i.e. 22.30% of the total geographical area of the district. The forests serve as store house to a variety of naturally growing medicinal and aromatic plant species. The temperature and rainfall of the district seems to be favorable for the luxuriant growth of the plant resources. The present study was conducted in three Sonowal Kachari inhabited villages viz. *Boiragimath Kachari gaon*, *Duliabam* and *Paroliguri*. *Paroliguri* is a forest village (FV) under the Dihingmukh Reserve Forest (RF), and as a matter of fact the villagers collect most of the medicinal plants from the RF itself. The distance of *Boiragimath Kachari gaon* from the main city centre is about 4 km, *Paroliguri* is located within 18 km from the main city in the periphery of the Dihingmukh RF, whereas *Duliabam* is about 28 km from Dibrugarh city. All the villages have a scattered settlement pattern (village houses are distributed throughout).

The villagers are primarily agriculturists as well as raise livestock for milk, meat and manure.

**Data Collection:** Intensive field work was conducted in the study villages over a period of 06 months (May-October' 2012). Information on different ethno-medicinal plants viz. their local names; part/s used; condition of part/s used (fresh/dried); methods of medicine preparation; dose regimen; route of administration and application in the treatment of a particular disease/s were recorded. For the purpose, extensive personal interviews and in-depth discussions were held with the traditional medical practitioners who are locally called *Bez*. Participant observation method was followed while visiting homestead plantations of the traditional practitioners and surrounding plant resources to have a firsthand knowledge of the medicinal plant species.

**Data Analysis:** The data collected was systematically organized and analyzed to draw a clear and updated picture of the ethno-medicinal use of plants. Plant species were identified and verified with the help of standard literatures on the local flora<sup>18-19</sup>. The documented plant species are arranged according to their scientific name. It is followed by family; English and vernacular names (as recorded during the field work); part/s used; therapeutic uses and method of herbal medicine preparations. MS Excel spread sheet was utilized to make simple calculations and draw figures.

**Ethics:** IK studies needs higher degree of ethical consideration. As such, prior consent of the knowledge holders was taken. The objective of the study was clearly explained and efforts were made to take them into confidence that this study is to document and preserve their rich IK tradition. After verbally taking their due permission, the data pertaining to this study has been processed for publication.

## Results and Discussion

*Aegle marmelos* Correa. [Rutaceae; Beal tree; *Bel*] - 3-4 fresh leaves are ground to extract the juice which is taken with sugar once daily for 3 days to cure nasal bleeding.

*Amaranthus spinosus* Linn. [Amaranthaceae; Spiny Amaranth; *Hati Khutura*] - Fresh roots are crushed and the extract is mixed with water and taken twice daily for curing jaundice.

*Andrographis paniculata* Wall. ex Ness. [Acanthaceae; The King of bitter; *Kalmegh*] - Leaf juice extract is administered to cure irregular bowels and intestinal worm trouble in children.

*Asparagus racemosus* Willd. [Liliaceae; Asparagus; *Sotmul*] - Decoction of root is administered orally to cure gallstone.

*Averrhoa carambola* Linn. [Oxalidaceae; Carambola; *Kordoi*] - For curing jaundice, fruit juice mixed with juice of sugarcane is administered thrice daily.

*Bonnaya brachiata* Link. and Otto. [Schrophulariaceae; *Horu Kasidoria*] - Paste of fresh leaves is applied over cut injuries and carbuncle.

*Caesalpinia bonducella* Flem. [Leguminosae; Bonduc nut; *Letaguti*] - Seed paste is applied to abscess for quick healing and relieve pain.

*Cassia alata* Linn. [Leguminosae; Ring worm Senna; *Khor par*] - To cure ringworm, a paste prepared from tender leaves is directly applied to the infected area.

*Cassia tora* Linn. [Leguminosae; Sickie Senna, *Bilokhoni*] - Leaf paste is applied externally to treat skin diseases like ringworm, scabies and eczema. Leaves are extensively used in the magico-religious treatment of body pain, snakebite, rheumatism, etc.

*Cinnamomum tamala* (Buch-Ham.) Nees and Aberm. [Lauraceae; Indian Cassia; *Tezpat*] - To cure diabetes, 4-5 fresh or dried leaves are simply crushed by hand and kept dipped in a glass of water over-night. Next morning, the filtrate extract is administered in empty stomach.

*Colocasia esculenta* (L) Schott. [Araceae; Taru yam; *Pani kochu*] - Tubers are crushed and the juice extract is applied on skin sores and blisters; petiole juice is applied on cuts and wounds.

*Croton tiglium* Linn. [Euphorbiaceae; Purging nut; *Koni bih*] - Young leaf buds and seeds are ground to a paste and applied on raw carbuncles for quick healing.

*Dillenia indica* Linn. [Dilleniaceae; Elephant fruit; *Ou tenga*] - Calyx (covering of the fruit) of fresh or dried fruits are cut into small pieces and properly sun dried. It is then powdered and regularly taken with water to cure diabetes. Fruits are also taken to relieve constipation and Stomach ache.

*Eupatorium cannabinum* Linn. [Asteraceae; Water hemp; *Tongloti*] - Root paste is used to cure scurvy and swelling of the hands and feet.

*Ficus religiosa* Linn. [Moraceae; Bot tree; *Ahot goss*] - Tree bark along with tortoise shell is burned and the resultant ash is applied over cuts and wounds as antiseptic and for quick healing.

*Garcinia Morella* Desv. [Guttiferae; Indian Gamboge; *Kuji thekera*] - Fruits are acidic, usually cut into small pieces, sun dried and preserved to be taken as a remedy for stomach trouble and dysentery; paste of young seeds is applied externally to cure skin allergy.

*Hibiscus rosa-sinensis* Linn. [Malvaceae; China rose; *Joba phul*] - 2-3 drops of crushed flower juice are poured in the nostril to cure sinus.

*Houttuynia cordata* Thunb. [Saururiaceae; Heartleaf; *Mosonduri*] – Fresh leaves are crushed and eaten raw or steam cooked and taken as a remedy for constipation and indigestion.

*Leea indica* (Burm.) Merr. [Vitaceae; Bandicoot berry; *Kukurathengia*] - Paste of stem bark is used to cure hydrocele.

*Mimusops elengi* Linn. [Sapotaceae; Indian Madar; *Bokul*] - Decoction of fresh barks and roots is administered as mouth wash to stop bad breath.

*Paederia foetida* Linn. [Rubiaceae; Skunk-vine; *Bhedai lota*] - Tender leaves and leaf buds are cooked and taken with daily food to cure piles; leaf paste is also used against rheumatism.

*Perilla ocimoides* Linn. [Labiatae; Perilla; *Sookloti*] - Root paste is applied orally to cure mouth ulcer.

*Piper longum* Linn. [Piperaceae; Long pepper; *Pipoli*] - Fruits along with fresh leaf buds of *Punica granatum* are prepared into a paste and taken as a remedy for influenza.

*Plumbago zeylenica* Linn. [Plumbaginaceae; White lead wort; *Boga Agechita*] - To cure piles, roots with 2-3 pieces of turmeric are ground with water to prepare a paste which is applied on the diseased area.

*Polygonum chinense* Linn. [Polygonaceae; Red sank; *Modhusuleng*] – Young leaves are steamed cooked as vegetable and taken as a remedy for stomach trouble and dysentery.

*Pongamia pinnata* (L) Merr. [Leguminosae; Indian Beech; *Koroch goss*] - Fresh tree barks are boiled in water. The filtrate decoction is taken orally thrice daily to cure blood dysentery.

*Punica granatum* Linn. [Lythraceae; Pomgranate; *Dalim*] - Leaves, barks, flowers and seeds are crushed and the resultant paste is applied on mouth sores.

*Spondias pinnata* (Koem.) Kurz. [Anacardiaceae; Hog plum; *Omora*] - Fruits are eaten for curing dyspepsia and dysentery; fresh seed paste is applied externally on skin diseases such as ring worms, abscess.

*Stephania hernandifolia* Walp. [Mnispermaceae; Tape-vine; *Tubuki lota*] – Leaves are crushed to a paste which is used to cure septic inflammation and applied on boils for opening.

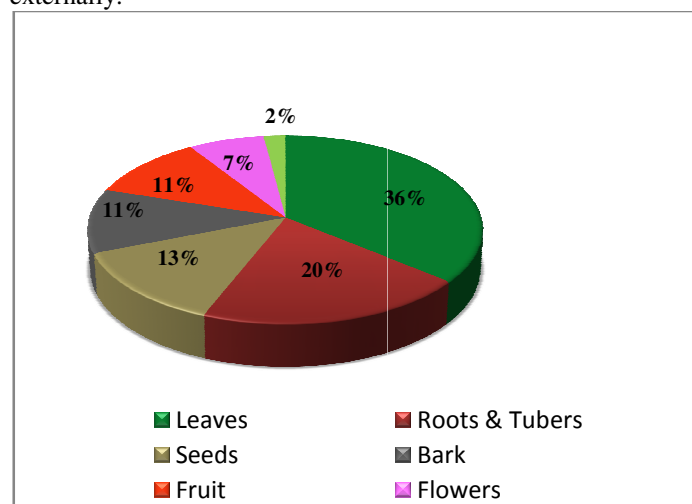
*Terminalia chebula* Retz. [Combretaceae; Chebulic myrobalans; *Hilikha*] - Dried fruits are grind properly to powder, mixed with lemon juice and taken once daily in empty stomach for 3 days to cure dysentery.

*Tinospora cordifolia* (Willd) Miers. [Menispermaceae; Tinospora; *Soguni lota*] – Decoction of leaves is used against gout.

*Trichosanthes palmata* Roxb. [Cucurbitaceae; *Kuwabhatari*] - Fresh roots and seed paste is externally applied on carbuncle.

*Urena lobata* Linn. [Malvaceae; Candillo; *Bor-hunborial*] - Root paste is used in the treatment of body oedema.

The present study documented a total of 33 species of medicinal plants belonging to 29 families. In terms of number of medicinal plant species, Leguminosae is represented by the highest number of species (04; 12.13%). This is followed by Malvaceae with 02 (6.06%) species, while the rest of the 27 families are represented by 01 (3.03%) species each. Figure-1 depicts the different plant parts used for the preparation of medicine, leaves (36%) were found to be the most frequently used plant part followed by roots and tubers (20%), seeds (13%), fruits (11%), tree/stem bark (11%), flowers (7%) and petiole (2%). The preference of leaves to other plant parts could be due to the easiness of preparation<sup>20</sup>, and the presence of more bioactive ingredients in leaves developed in response to phytophagous organisms since they are the most vulnerable parts of a plant<sup>21</sup>. It is seen from figure-2 that shrubs (36.37%) were more frequently used for traditional medicine preparations as compared to trees (30.30%), herbs (18.18%) and climbers (15.15%). In most of the times fresh plant parts are used for the preparation of medicine. The data reveals that the medicinal plant parts are mostly crushed/ground to a paste (45.71%), squeezed for juice (17.14%) and decocted (12.12%) during remedy preparation. Plant parts are also eaten raw (5.71%), sometimes steamed cooked (5.71%) and powder (5.71%) made from fresh or dried material. Extraction with cold water (2.85%), sun drying (2.85%) and burning (2.85%) are the other reported methods of medicine preparation. As the route of administration and application, medicines are either taken raw or in the form of juice and filtrate extract when consumed internally, and as ointments, powder or raw paste when applied externally.



**Figure– 1**  
**Percentage composition of different plant parts used in ethno-medicine preparation**

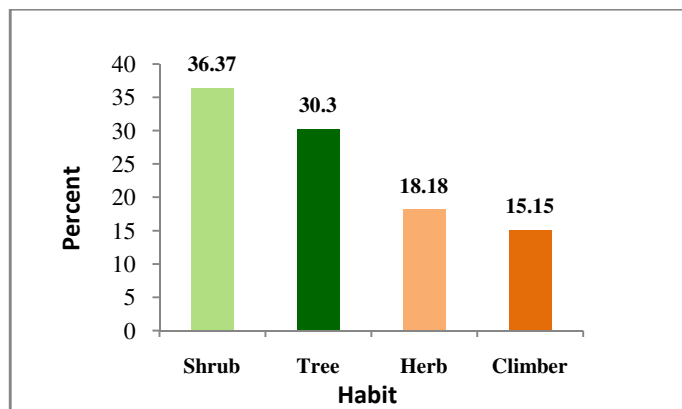


Figure- 2

### Growth forms (habits) of the documented medicinal plant species

According to the traditional practitioner's herbal medicines are prescribed to patients differently for different age groups. The dose prescription for children is mostly smaller than for adults. The amounts of remedy and prescription rates are generally dependent on the degree and duration of the ailment. Further, they reiterated that their remedies were devoid of any adverse effects. Some of the recorded plant species such as *Houttuynia cordata*, *Paederia foetida*, *Perilla ocimoides*, *Polygonum chinense*, *Colocasia esculenta*, *Dillenia indica*, etc. are regularly taken as vegetables. While *Spondias pinnata* and *Averrhoa carambola* are two important fruits in the food habit of the people. This plays a major role in meeting the nutritional requirements as well as alleviating several ailments. Sometimes, a single species is used to cure more than one disease. *Eupatorium cannabinum* (scurvy and swelling of the hands and feet), *Garcinia Morella* (stomach trouble, dysentery and skin allergy), *Paederia foetida* (piles and rheumatism) and *Spondias pinnata* (dyspepsia, dysentery, ring worms and abscess) are the plant species found to be used in such manner. Some of the plants used by the Sonowal Kacharis for ethno-medicine preparation are also used by some other tribes of Assam as well as from other states of NE India in their respective traditional medicine preparation. The use of *Andrographis paniculata* to cure stomach related ailments by the Sonowal Kacharis is also reported from the Mishing tribe of Assam<sup>22</sup>. Stem paste of *Colocasia esculenta* is used by the Dimasa tribes of North Cachar hills district of Assam to cure insect bite<sup>23</sup>. The leaves of *Bonnaya brachiata* and *Croton tiglium* used by the Sonowal Kacharis to treat cut injuries and carbuncle are used by the Khamti tribe of Arunachal Pradesh to treat urine sensation, tuberculosis and malaria respectively<sup>24</sup>. The Lepchas of Sikkim use the leaves of *Eupatorium cannabinum* and *Ficus religiosa* to cure cuts/wounds and burning sensation of the genitals<sup>25</sup>. Similarly, *Houttuynia cordata* leaves used for curing constipation and indigestion by the Sonowal Kacharis is used by the Tripuris of Tripura to cure dysentery<sup>26</sup>. The linkage between the uses of similar plants by different tribal groups across different geographical boundaries remains to be investigated. Hence, the epistemology of the traditional medicines used by

these tribal people needs to be reviewed by the epistemology of scientific knowledge<sup>27</sup>.

The elderly practitioners are the principal knowledge holders and are the primary means of knowledge transmission. The accumulated wealth of plant based medicinal knowledge that the elder practitioners possess are those which have been derived through a lifetime of experiences in treating patients. Normally, they pass on the ethno-medicinal knowledge to their children/s or grand children/s through word of mouth. Sometimes a close relative or fellow villager also comes up voluntarily to acquire the ethno-medical knowledge from the elderly practitioners. However, such transfer of IK is liable to erosion as it could vanish when knowledgeable elders die before the knowledge is transferred. In addition, in recent years there has been a gradual decline in the practice of their indigenous medicine as the younger generation is reluctant to learn and continue their indigenous medical practices. This is largely due to profound economic changes and effect of globalization. Hence, there is an immediate need for proper written inventories of their ethno-medical knowledge. At the same time, the plants and the remedies as recorded here need phyto-chemical and pharmacological screening for their active principles and clinical trials for therapeutic action. Phyto-chemical studies must be tailored to match the biological activity while the chemical studies should provide information that help in standardization and quality control of the finished product<sup>28</sup>. In this regard, studies carried out on *Ficus religiosa*<sup>29</sup>, *Punica granatu*<sup>30</sup> and on few other species are worth mentioning<sup>31-35</sup>.

### Conclusion

The present study assumes significance since the ethno-medicinal uses of most of the recorded plant species by the Sonowal Kacharis were previously unreported. The observations emanating from the study proves that medicinal plants play an important role in providing primary health care to the rural people of the Sonowal Kachari community. Complete documentation of the medicinal plants utilized by the Sonowal Kacharis is still far from complete. More comprehensive scientific explorations and studies needs to be undertaken in order to draw out the complete picture. Today, the various IK traditions are not only for the cultures from which they evolve, but also for the scientists, planners, researchers, policy makers, Government Organizations/institutions, etc., all striving to improve the conditions of the rural/traditional societies as well as utilizing their IK for the betterment of mankind. In this respect, all scholars have a potential role in documenting each expression of the oral tradition and storing them for proper scientific studies. This inventory would also prevent erosion of the oral intangible culture and document a dying cultural heritage of the world.

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