Available online at www.ijpab.com

ISSN: 2320 – 7051
Int. J. Pure App. Biosci. **2 (5):** 107-114 (2014)

Research Article

INTERNATIONAL JOURNAL OF PURE & APPLIED BIOSCIENCE

Application of Local Health Traditional Knowledge in Oral Health and Hygiene among the Ethnic tribes of Nalbari and Barpeta Districts of Western Assam (North East India)

Kishor Deka* and Namita Nath
Department of Botany, Goalpara College, Goalpara-783101, Assam
*Corresponding Author E-mail: dekakishor300@gmail.com

ABSTRACT

The present study was conducted to document the ethno medicinal practices followed for oral health and diseases by the tribal people of Nalbari and Barpeta district of western part of Assam. Western Assam is found to be rich in such traditional herbal system of health care practices. Western Assam is located at the extreme western part of Assam it extends from $89^0 49' 20'' E$ to $91^0 48' 16''$ longitude and $25^0 27'$ N to $26^0 54''$ latitude covering lower Brahmaputra valley. The people of this area largely depend on the herbal medicines to cure various types of diseases like jaundice, piles, high blood pressure, fever etc. The ethnic tribes of Western Assam even today are using stem and bark of certain plants for cleaning their teeth .They are also use some plant parts in curing pyorrhoea or other oral disorder. The present work was conducted during the year of 2012-13 where importance was given to all such practices related with oral hygiene. Systematic recording of data was done using a specially designed questionnaire and ultimately the data has been analysed .The results obtained reveal that 39 species of medicinal plants belonging to 38 genera and 29 families are being used traditionally, to cure and control a variety of oral problems.

***Key words**: Oral hygiene, Ethno medicine, Western Assam.*

INTRODUCTION

Ethno botany is the branch of botany which deals plants with human beings. The World Health Organization (WHO) has defined herbal medicines as "Finish labelled medicinal products that contain as active ingredients, aerial or underground parts of plants, or other plant material or combination thereof, whether in the crude state or as plant preparation." It has been estimated that out of about 2000 drugs that have been used in curing human ailments in India, only about 200 are of animal origin and a similar number are of mineral origin. The history of medicine in India can be traced to the remote past in the Vedic period. The rest, i.e. about 1500 are of plant origin. The classical Indian texts include Rig Veda, Atharva Veda, Charaka Samhita and Sushruta Samhita also we find the mention of medicinal plants. Of which, Ayurveda the science of life is considered upveda (about 2500 B.C.) contains a more detailed account of many drugs and there uses. Charka Samhita, the first recorded treatise on the Ayurveda is the edited version of the old scientific treatise by Agnivesha who wrote the first treatise on Ayurveda medicine based on teaching of Ayurveda from his preceptor, Atryega, the great stage[11]. The period from (800 B.C.) is considered as golden era in the Indian system of medicine. According to World Health Organization (WHO) as much as 80% of the world's population directly depends on medicinal plants.

Assam is known for its rich flora and diverse forests and vegetation due to its unique topography, climate and altitude patterns[12].This region of India is also a homeland of people belong to more than 100 ethnic tribes and sub tribes[6]. Ethno botanical practices are very ancient in Western Assam of north east India. Various works have been done on such practices like Tribal Studies in Indian Ethnobotany[8], The Role of a Botanist in folk-lore research[9], scope and study of Ethnobotany[10], Less known medicinal use of plants

among the tribes of Karbi Anglong[2], Certain plants in folklore and folk life of Karbi[3], Studies in Ethnobotany of the Karbis[4], Herbal remedies of the Nepalese of Assam[5], Some folklore claims from the Brahmaputra valley of (Assam)[1] and others have documented medicinal plants from various parts of Assam. These are some of the significant works on ethnobotanical studies in the state of Assam. The Western part of Assam is inhabitant of several ethnic tribes -like Bodo, Rabha, Hajong, Sarania Kachari, Madahi and Koch which are belonging to Indo-Mongoloid racial stock. Each tribe differ in its culture, characters and socio economic status. But one very important common aspect is that their culture is based on Agriculture. The ethnic tribes still depend to a great extent on the indigenous system of medicine. For this reason, it is very significant to explore or to document the ethno medicinal applications traditionally practiced by the ethnic tribes of this region.

STUDY AREA

Western Assam include eight districts of Assam, which extends from $89^0\ 49'\ 20''$ E to $91^0\ 4'\ 16''$ longitude and $25^0\ 27'$ N to $26^0\ 54''$ latitude covering lower Brahmaputra valley. Western Assam is a melting pot of people, culture and tradition which covers about 20% of the total area of Assam. Out of eight, two major districts of Assam, Nalbari and Barpeta district were visited for extensive data collection. Nalbari with a longitudinal extension of $91^0\ 15'\ 8''$ E to $91^0\ 30'\ 52''$ E and latitudinal extension of $26^0\ 12'$ N to $26^0\ 45'\ 10''$ N latitude and an area of 2257 sq. km. Barpeta district $90^0\ 45'\ 11''$ E longitude to $91^0\ 50'\ 4''$ E and $26^0\ 25'\ 5''$ N to $26^0\ 45''$ E latitude with an area of 3345 sq. km. The population of Nalbari and Barpeta district is 769,919 and 1,693,622 respectively. These two districts represent diversity in agro-climatic as well as in geographical situation also.

MATERIALS AND METHODS

A specially designed questionnaire was used to do a survey in the study area. The questionnaire is simple and it includes most relevant questions regarding preparation of medicines, dosages, process of consumption, plant or plant parts used etc. The data of the study area were collected among different ethnic tribes of western Assam through personal interview. For primary data collection various localities were visited to meet the local rural peoples as cowboys, farmers, fish man and especially local healers, who are well experienced with local health practices. At the time of data collection importance was given regarding the uses of medicinal plants for curing teeth related problems or other oral problems. The survey was conducted during the year of 2012-2014 of Nalbari and Barpeta district of western Assam. The present paper deals with some useful medicinal plants which are commonly used in oral disorders or oral hygiene. Local names of plants vary from community to community, in some cases more than one name could refer to a particular plant. The fresh herbal specimens were collected from the study area and were dried and made into herbarium specimens by following the standard herbarium method[7]. The identification of the dried specimens was done with the help of local floras and herbarium of Botanical Survey of India, Shillong. PIC (Prior informed consent) was obtained during data collection

RESULT AND DISCUSSION

The tribal people of Western Assam are using the natural products for thousands of years as folk medicine for several purposes including oral hygiene, which is the chief concern of this research work. The present study provides several information on traditional oral hygienic practices. The oral hygienic plants are very popular especially as tooth brush, for gargling or others used frequently by the common people of Nalbari and Barpeta district of Western Assam. The ethnic tribes of this region very strongly holding the traditional medicine and the knowledge which still survive in the memories of middle age group people. The present study demonstrated that 39 species of medicinal plants belonging to 38 genera of 29 families are commonly used for oral hygiene by the local people in the study area. It is found that maximum number of medicinal plants belongs to the family Zingiberaceae (4 species) followed by Myrtaceae, Arecaceae, Moraceae, Piperaceae, Apiaceae, Lamiaceae, Asteraceae each represented by 2 species and rest all the families are represented by one species only. Data collected for this ethno-botanical survey is compiled in Table 1, Table 2 and Table 3 and so on. Table 1 contains botanical name, family local name,

part used for each species including curative practices and mode of preparation. Table- 2 and Table -3, Table- 4 and Table- 5 contain herbal recipe 1, herbal recipe- 2, herbal recipe-3 and herbal recipe-4. All these Tables are provided with scientific name, family, local name, parts used and proportion. Among these leaves were reported to be the most frequently used part of the plants, consisting 28% of herbal preparation which was followed by stem (25%), fruit (15%), rhizome (10%), bark (7%), root (5%), seed (5%), flower (5%), Bulb (2%). In all the cases mode of application was oral. It is noteworthy that all the ingredients of these medicines are widely found in the villages, either roadside or near forest areas or sometimes collected from their own medicinal plant garden. The knowledge of plant based tooth stick or other oral medicines used by the different ethnic tribes seems to be the unique of its kind of the herbal medicine. It is very interesting to note that the use of medicinal plants or the type of Herbal recipe shows diversity of traditional knowledge which differ from tribe to tribe in the concerned study area.

Table-1

S.No.	Botanical name	Family	Local name	Part(s) used	Uses/Curative Practices	Mode of preparation
1	*Streblus asper* Lour.	Moraceae	Sawra (Ass)	Stem	Tooth brush, bleeding Gum	Tender stems are cut carefully and regularly practiced early in the morning as tooth brush.
2	*Areca cathecu* L.	Arecaceae	Tamol (Ass) Goi (Bodo) Kui (Rabha)	Fruit bark	Tooth brush, foetid smell, dentifrice	Bark of matured betel nut is removed thickly and is commonly used as tooth brush.
3	*Psidium guajava* L.	Myrtaceae	Modhuriam (Ass) Sophari (Bodo) Lamthe (Rabha)	Stem, dry bark power, leaf	Tooth brush, toothache and Foetid smell	Tender stem is used as tooth brush. Powder prepared from dried bark of the plant is mixed with a pinch of salt and used regularly as tooth powder. Leaves are often chewed for some time that has the capacity of removing foetid smell of mouth.
4	*Jatropha curcas* L.	Euphorbiaceae	Bhut-ara (Ass) Anda (Bodo) Lalanju (Rabha)	Tender stem	Toothbrush, mouth ulcer, foetid smell	Juvenile stem used as tooth brush against mouth ulcer and foetid smell of mouth.
5	*Vitex negundo* L.	Verbenaceae	Posotia (Ass) Nisinda (Bodo)	Tender stem	Toothbrush	Tender stems are used as tooth brush for healthy teeth.
6	*Mimusope elengi* Roxb.	Sapotaceae	Bokul (Ass)	Tender stem, dry bark powder	Toothbrush, toothache	Tender stems are used as tooth brush and aqueous extract used as mouth wash or gargle at the time of toothache and also against tonsil.
7	*Nicotiana tabacum* L.	Solanaceae	Dhopat (Ass) Thanku belai (Bodo) Shak (Raba)	Burn leaf powder	Tooth powder, mouth ulcer, dental diseases	Remains of burned leaves after smoking hoka (a typical smoking apparatus) is mixed with a pinch of salt and used as tooth powder.
8	*Spilanthes paniculata* Wall.ex Dc.	Asteraceae	Huhoni (Ass) Usumwi (Bodo)	Flower	Mouth ulcer	Flower is chewed up at the time of mouth ulcer
9	*Allium sativum* L.	Alliaceae	Nahuru (Ass) Sambram gufur (Bodo) Bokkai Raisung (Rabha)	Bulb	Relief of gum pain	Paste of bulb is applied locally over the gum at the time of gum pain.
10	*Zingiber officinale* Rosc.	Zingiberaceae	Moran ada (Ass) Haijeng (Bodo) Sinku (Rabha)	Underground stem	Dental carries, toothache	Rhizome extract is mixed with *Curcuma longa* (1:1) and is laid over the gum at the time of toothache and dental carries.

11	***Syzygium aromaticum* (L.) Merr.**	**Myrtaceae**	**Long (Ass)**	**unopened flower bud**	**caries cavities, dentifrice**	**Flower bud is chewed up and kept inside mouth for some time at the time of dentifrice and caries cavities.**
12	*Curcuma domestica* Valet.	Zingiberaceae	Haldi (Ass) Haldia (Rabha)	Burn rhizome Powder	Tooth powder, foetid breath	Dried burned rhizome powder and common salt (3:1) mixed and use as toothpowder.
13	*Azadirechta indica* A. Juss.	Meliaceae	Mohanim (Ass)	Stem, burn leaf powder	Toothbrush, foetid smell, pyorrhoea	Tender stems are used as toothbrush and burned leaf powder mixed with few amount of salt at a proportion of 3:1 and is used for pyorrhoea and foetid smell.
14	*Cocos nucifera* Linn.	Arecaceae	Narical (Ass) Nalengkhor (Bodo)	branch of spadix	Toothbrush, Foetid smell	Matured branch of spadix is used as tooth brush
15	*Ficus benghalensis* L.	Moraceae	Bor gos (Ass) Dok fang (Rabha)	Prop root	Toothbrush, dental and gum disorders	Prop roots are cut into pieces and used as tooth brush against dental and gum disorder
16	*Hibiscus rosa-sinensis* Linn.	Malvaceae	Joba (Ass)	Tender stem	Toothbrush	Used as toothbrush for cleaning teeth.
17	*Terminalia arjuna* Wight and Arn.	Combretaceae	Arjun (Ass)	Bark	Gum pain, dentifrice	Aqueous extract of bark is used as gargle for spongy gum.
18	*Caesalpinia pulcherrima*(Linn)Sw	Caesalpiniaceae	Krishnasurha (Ass)	seed	Gum disorder	Aqueous Seed extract mixed with a pinch of salt and used it to gargle.
19	*Cynodon dactylon* Pers.	Poaceae	Dubori bon (Ass) Dubri gangsu (Bodo) Dubla sum (Rabha)	young leaf	Pyorrhoea	Fresh Leaf extract is used for washing teeth.
20	*Achyranthes aspera* L.	Amaranthaceae	Ultihoth (Ass) Samfer ulta (Bodo)	Root	Toothache	Root decoction with pinch of salt used as mouth wash.
21	*Scoparia dulcis* Linn.	Scrophulariaceae	Bondhania (Ass) Dhongfang rakhab (Bodo) Sumki sum (Rabha)	Leaves	Toothache	Young leaves are boiled and is commonly used as mouth wash.
22	*Justicia adhatoda* L.	Acanthaceae	Boga bahok (Ass) Basikho jola (Bodo) Bokai baskai (Rabha)	Tender stem	Toothbrush, Foetid breath	Tender stems are used as toothbrush that can remove foetid breath.
23	*Leucas plukenetii* (Roth) Spreng.	Lamiaceae	Durun (Ass) Khangsingsa (Bodo) Sumkanjai (Rabha)	Leaf	Toothache	Aqueous extract of leaf with common salt is given to gargle twice a day to cure toothache.
24	*Musa gigantea* Duthie	Musaceae	Bhim kol (Ass) Thalir aathia (Bodo) Aathia rathe (Rabha)	Leaf midrib	Teeth pain	Warmed midrib of leaf hold between the teeth to quick relief pain.
25	*Annona squamosa* Linn.	Annonaceae	Aatoi fol (Ass) Balam (Bodo)	Tender stem	Toothbrush, toothache	Tender stem used two times daily for healthy teeth
26	*Acacia farnesiana* (L.) Willd.	Mimosaceae	Torua kodomm (Ass)	Tender stem	Toothbrush	After removing the spines twigs are used as toothbrush.

Table-2: *Herbal recipe- 1*

S. No	Sciantific name	Family	Local name	Part used	Proportion
1	*Syzygium aromaticum* (L) Merr.	Myrtaceae	Long (Ass)	Flower bud	05 no.
2	*Elettaria cardamomum* (L) M.	Zingiberaceae	Horu elachi (Ass)	Fruit	05 no.
3	*Amomum aromaticum* Roxb.	Zingiberaceae	Bor elachi (Ass)	Fruit	03 no.
4	*Piper longum* L.	Piperaceae	Pepoli (Ass) Semphre (Bodo)	Fruit	10 no.
5	*Piper nigrum* L.	Piperaceae	Jaluk (Ass) jathwise allou (Bodo)	Fruit	05 no.
6	*Centella asiatica* (L) Urban	Apiaceae	Bor manemuni (Ass)	Leaves	25 gm
7	*Hydrocotyle sibthorpioides* Lamk.	Apiaceae	Horu manemuni (Ass)	Leaves	25 gm.
8	*Zingiber officinale* Rosc.	Zingiberaceae	Moran ada (Ass) Haijeng (Bodo) Sinku (Rabha)	Rhizome	01 pinch.
9	*Leucas plukenetii* (Roth) Spreng.	Lamiaceae	Dron (Ass) Khangsingsa (Bodo) Sumkanjai (Rabha)	Leaves	07 no.
10	*Vitex negundo* L.	Verbenaceae	Posotia (Ass) Nisinda (Bodo)	Leaves	50 gm.
11	*Allium sativum* L.	Alliaceae	Nohoru(Ass) Sambram gufur (Bodo)	Bulb	4-6 no.
12	*Acorus calamus* L.	Araceae	Boos (Ass) Bish bifang (Bodo) Rajamuni (Rabha)	Rhizome	1 pinch.
13	*Drymaria corduta* Willd	Caryophyllaceae	Lijabori (Ass) Jabihari (Sarania Kochari) Jabstree (Bodo)	Leaves	50 gm.
14	*Nigella sativa* L	Asteraceae	Kaljira (Ass)	Seeds	05 gm.
15	*Zanthoxylum nitidum* (Roxb.) DC.	Rutaceae	Jabrang (Ass) Khaijama befang (Bodo)	Fruit	02 no.

This medicine is used as a cure for oral ulcer. According to the healers, oral ulcer is a very dangerous disease which is caused due to the uncleanliness of mouth and teeth. Here the patients show symptoms-like pimple with pain, loss of chewing ability of food items, feeling weakness of gums etc. The medicine to cure or to control this dangerous oral disease is a very complex one. To prepare this medicine 15 plant ingredients are necessary. Here all the 15 plant materials are grinded and boiled in water. Three teaspoonful of this medicine is prescribed to the patients thrice daily. For children, the prescribed dosage is two teaspoonfuls thrice daily. The medicine is supplied for 7 to 10 days continuously. Like this way healer itself collected and prepare the medicine, supply to the patients. The patients are strictly restricted to take cold items, like cold drinks, curd as well as meat, fish etc.

Table-3: *Herbal recipe- 2*

S. No	Scientific name	Family	Local name	Parts used	Proportion
1	*Ocimum sanctum* L.	Lamiaceae	Tulsi (Ass) Tulsikrishna (Bodo)	Leaves	07 no.
2	*Musa balbisiana* Colla.	Musaceae	Aathia cal (Ass) Thalir aathia (Bodo) Aathia rathe (Rabha)	Rhizome	1 pinch
3	*Hedyotis corymbosa* L.	Rubiaceae	Horpojibha (Ass) Dawstri Aathig (Bodo)	Leave bud	07 no.

In this preparation of herbal recipe seven (7) numbers of leaf buds of both *Ocimum sanctum* L and *Hedyotis corymbosa* L. are crusted with one piece of rhizome of *Musa balbisiana* Colla. This preparation is found to be very effective in pyorrhoea. The paste is applied locally over the infected teeth for two hours. This is done continuously for one week. The patients are advised not to take sweets and to keep teeth and mouth clean regularly. This disease is commonly seen in case of children t the age group of 5 to 9 years.

Table-4: *Herbal recipe- 3*

S. No.	Scientific name	Family	Local name	Part use	Proportion
1	*Zingiber officinale* Rosc.	Zingiberaceae	Moran ada (Ass) Haijeng (Bodo) Sinku (Rabha)	Rhizome	01 pinch.
2	*Allium sativum* L.	Alliaceae	Nohoru(Ass) Sambram gufur (Bodo)	Bulb	4 no.
3	*Syzygium aromaticum* (L.) Merr.	Myrtaceae	Long (Ass)	unopened flower bud	4 no.

This Mixture of herbal medicine is most effective in gum pain or toothache and relief pain very quickly. In this herbal preparation all the above mentioned plant ingredients are crushed and applied locally over the infected gum. These can relief pain within 20 to 30 minutes. This herbal medicine can be useful from child to aged people which of-course does not have any side effect. But in case of child the dosage of mixture is less than those applied in case of adults. It is strictly restricted not to take fish, meat and very cold or very hot items by the patients.

Fig.1: Useful plant parts use for oral hygiene in Western Parts of Assam

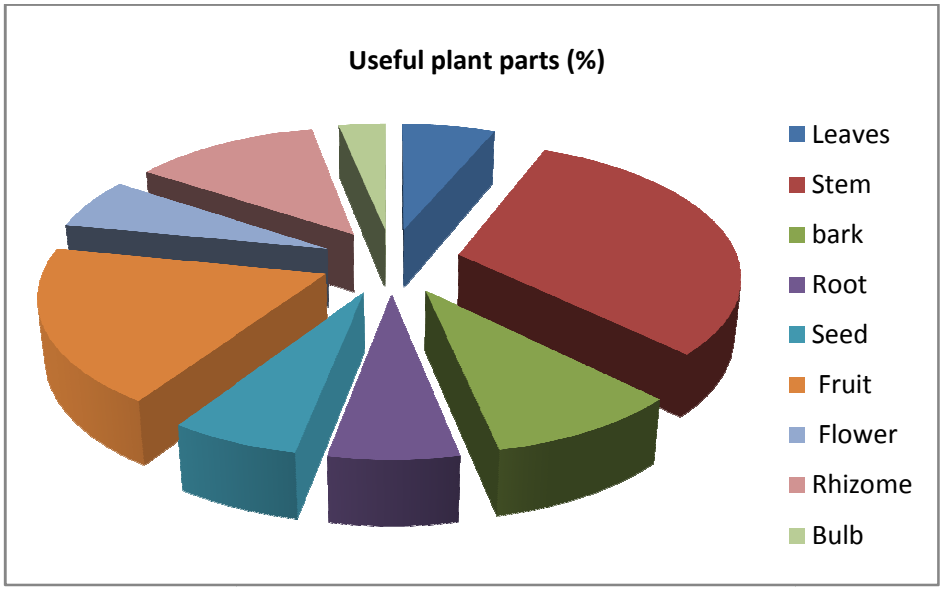


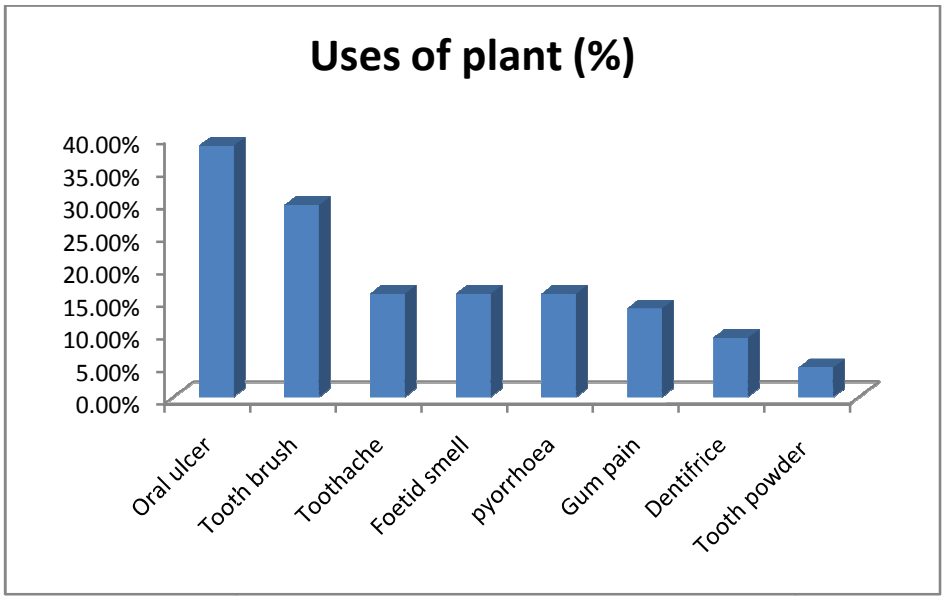
Fig.2:

Justicia adhatoda

Acacia farnesiana

Drymaria corduta

Fig.3: Uses of traditional oral hygienic plants in Western Assam



Present investigation indicates that Nalbari district of Assam is blessed with splendid diversity of ethno medicinal plants as well as traditional knowledge based practices. The study depicts that resource persons are invariably elderly people and the younger generation is reluctant to take up the culture. Therefore, documentation of traditional knowledge is the only way to preserve the knowledge base conserves the plant resources endemic to this area. It is also equally important to encourage the coming generations to maintain the long practiced traditional properties. Further, ethno medical approach for the treatment of oral disorder is a practical, cost-effective and biologically safe way to treat the diseases connected with oral health. Moreover herbal medicine is always a better option to treat disease with comparatively lesser side effects. It is always advisable to prevent oral disorder by regular cleaning of teeth and mouth. If possible it is very effective to use some plant items for cleaning or gargling purpose like Neem twig, Mimusops leaves etc, and otherwise this may ultimately lead to dreaded disease like cancer.

Acknowledgment

We are thankful to the provider of the Traditional Knowledge that is the healers of both Nalbari and Barpeta district for providing us the required data in local language. We are thankful to University Grants Commission (UGC), New Delhi, for providing us financial support for the research work.

REFERENCES

1. Baissya, C.L. & Majumdar, R. Some folklore claims from the Brahmaputra valley of (Assam), *Ethnomedicine;* 139-144 (1980)
2. Borthakur, S.K. Less known medicinal use of plants among the tribes of Karbi Anglong (Mikir Hills), Assam.*Bull. Bot .Survy.India* **18 (1-4)**:166-171 (1976 a)
3. Borthakur, S.K. Certain plants in folklore and folk life of Karbi (Mikir) of Assam. In: S.K. Jain *Contribution to Indian Ethnobotany* (3rd ed 1997), opp.169-178 (1981 a)
4. Borthakur, S.K. Studies in Ethnobotany of the Karbis (Mikirs) of Assam: *Economic Botany*. (1981 b)
5. Borthakur, S.K. & Goswami, N. Herbal remedies of the Nepalese of Assam *Fitoterapia* **67(3)**: 1995.231.
6. Dutta, M.L. and Nath, S.C. Ethno-medico Botany of the Deories of Assam India. Fitoterapia **LXIX (2)**: 147-154 (1998)
7. Jain, S.K. & Rao, R.R. 1997 : A Handbook of Field And Herbarium Methods. Today & Tomorrow's Printers and Publishers, New Delhi.
8. Jain, S.K. Tribal Studies in Indian Ethnobotany: *less known uses of fifty common plants from the Madhya Pradesh Bull. Bot. Surv. India* **5**:223-26 (1963)
9. Jain, S.K. 1964. The Role of a Botanist in folk-lore research, *Folklore* **5**:145-150.
10. Jain, S.K. 1967. Ethnobotany: Its scope and study .*Bull Indian mus*. **2 (10)**: 39-34
11. Kaushik, P. & Dhiman, A.K. 1999 Therapeutic Herb *Centella asiatica*: A Review. Advances in Biosciences **18 (II)**:7-16.
12. Mao, A.A. and Hynniewta, T.M. Floristic Diversity of North East India, Journal of the Assam Science Society **41(4)**:255-266 (2000)