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Original Article

Traditional Remedies for Ailments Prevalent Amongst the Thengal-Kacharis of Lakhimpur District, Assam, India

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Abstract

Assam, the 'Gateway of North-East India', is renowned for its phyto-diversity, myriad ethnic make-up and age-old tradition of indigenous healthcare. This paper documents the indigenous ethno-medicinal knowledge of the *Thengal-Kachari* tribesmen, who belong to the greater *Bodo-Kachari* ethnic group, residing in Lakhimpur district of Upper Assam. The information was collected through questionnaires in consultation with the tribal *Bej*'s (local healers). Plant and animal species were identified with the help of relevant standard literature and presented along with their part(s) used, method(s) of preparation and modes of administration in target diseases. About 30 species of plants, belonging to 22 plant families, and 4 species of animals belonging to 4 animal families, were collected and enumerated for their traditional usage in treatment of 13 diseases. With respect to usage, there were more plant parts (86.49%) utilized than animal parts (13.51%), of which aboveground phyto-biomass was used in bulk (64.71%) quantity, herbs being utilized in major proportion (14). The correlation of ethnomedicinal usage with Dr. Duke's Phytochemical and Ethnobotanical database evidently points out the medicinal implication of data claimed by this tribe. The present study, thus, underlines the potential for further documentation of such ethno-medicines from local healers from the rest pockets of the region for further phyto-chemical analysis, forestry practices and biodiversity conservation studies pertaining to medicinal plant utilization by this hitherto less studied ethnic group.

Keywords: *Bodo-Kachari* ethnic group, cross-cultural comparison, documentation, Dr. Duke's ethnobotanical database, ethnomedicinal plants

Introduction

Since remote past, the tribal people have been utilizing plants for curing diseases or alleviating bodily affliction, apart from depending for food, fire, fabric, dwelling, etc. Perhaps as early as the Neanderthal man, plants were believed to have healing powers, but as no mode of recording events existed in prehistoric times, there were no data on the methods of treatment practiced in that period (Jain, 1986). By virtue of a harmonious proximity with nature and steady nomad-to-cultivator transition, these tribesmen had developed their indigenous knowledge systems with respect to curing of diseases and ailments. The practice of ethnomedicine by different ethnic groups to cure diseases and ailments bears a testimony to indigenous knowledge system. Ethnomedicine can be defined as "those beliefs and practices relating to disease which are the products of indigenous cultural development and are not explicitly derived from the conceptual framework of modern medicine" (Hughes, 1968).

In spite of incredible progress in the field of allopathic medicines, the pharmacological researcher wants to go "back to nature". This present day relevance of ethnomedicines springs out due to three main reasons, *viz*. high cost of medicines, side-effects and gradual resistance of microbiota to the antibiotics. It is estimated that a total of 60% of the world population and 80% of the population in developing countries depend on traditional medicines, mostly plant drugs for their primary health care needs (Baker *et al*., 1995; Shrestha and Dhillion, 2003).

The tribesmen residing in the remotest parts and pockets of North-Eastern India still rely to a great extent upon the empirical folk medicines, or simply ethnomedicines. Based upon the ethnic, linguistic and cultural affiliations, the tribal population of India can be divided into three distinct territorial zones, *viz*. the North-Eastern zone, the Central zone and the Southern zone (Borah, 2012). Anthropologically, the tribesmen of North-Eastern India can be broadly divided into two racial categories, e.g. the *Khasi* and *Jaintia* tribes belonging to the *Mon-Khmer* culture of Austoic dialect, and the other mongoloid ethnic groups of the region belonging to the Tibeto-Burman subfamily of Tibeto-Chinese linguistic group (Dutta and Dutta, 2005; Kala, 2005; Parkash *et al*., 2013).

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Keeping in mind the multitude of ethnic communities and tribes along with the variety of phyto-resources, there is ample scope of hidden indigenous knowledge in the North-Eastern part of India.

Up till now, different authors have reported 1,350 ethnomedicinal uses of plants in the region (Dutta and Dutta, 2005), but there is still research to be done. For instance, the ethnobotany of the *Thengal-Kacharis* is unavailable with the exception of Pandey *et al*. (1996), where only remedy for jaundice prevalent amongst the mentioned tribe residing in Golaghat district, Assam, was recorded. Thus, a need was felt to gather their ethnomedicine knowledge, which might be threatened under the influence of habitat destruction.

The *Kacharis*, or specifically the *Bodo-Kacharis*, are the earliest known inhabitants of the Brahmaputra valley (Rajguru, 1988; Phukan, 1992; Gait, 2008), although their origin and christening is much more obscure (Wadell, 1986; Endle, 1990). The *Thengal-Kacharis* are one of the numerous minor clans belonging to the *Bodo-Kachari* ethnic group of the Indo-Mongoloid race (Barooah and Pathak, 2009). They represent the greater *Kachari* group in the eastern tracts of Assam (Goswami, 2012). With regard to the homonymy of this tribe, there are two opinions; some speculate that their ancestor, *Thengal,* ascended to heaven with his legs forward, while another legend states that wearing a uniform of a *thenga* shirt might have led to the name (Sengupta, 2003; Barooah and Pathak, 2009; Saikia, 2009). There is also a legend that the *Thengals* were also involved in silver-washing in the *Dhansiri* River (Saikia, 2009) and hence also known as *Rupowal-Kachari* (Sonowal, 1962; Borboruah, 1997).

The tribal status of *Thengal-Kacharis* is however a matter of debate. The name of the *Thengal-Kacharis* was there in the list of scheduled castes and scheduled tribes of Assam till the year 1976. But then it was secretly removed, without any notification. The tribe has never been separately enumerated in the five census operations conducted in Assam since independence (1951-2001). Noteworthy are the remarks that *Thengal-Kachari* is included in "a few more small *Kachari* communities which now ceased to have independent identity" (Rajguru, 1988) and "the *Thengals* are not schedule tribes" (Goswami, 2012). It is interesting to note that they had received enumeration as a Scheduled Tribe included with the *Sonowal-Kacharis* (Prabhakara, 2003).

Assam, the 'Gateway of North-East India', is renowned for its phyto-diversity, myriad ethnic make-up and age-old tradition of indigenous healthcare system. The *Thengal-Kacharis* (Dutta, 2013) are concentrated in 204 villages of Assam. The present study was carried out amongst the *Thengal-Kachari* tribal residing in Loridonga village of Dikrong Gaon Panchayat, Bihpuria sub-district, Laluk sub-division, Bihpuria police station, Lakhimpur district (26048′ - 27053′ N latitude and 93042′ - 94020′ E longitude) (Fig. 1). There are 189 households with a total population of 987 persons, comprising of 513 males and 474 females (Census Report, 2015). Although there is no exact figure in the Government records for ascertaining the number of the tribesmen studied, in the course of study the village can be considered a small pocket of the whole population.

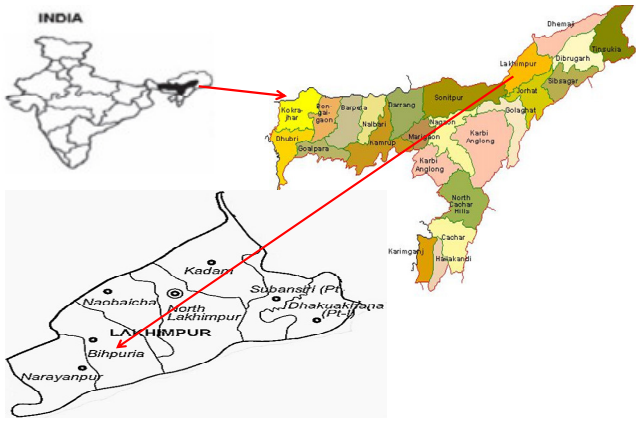

Fig. 1. Map depicting the study site (Loridonga village, Lakhimpur district, Assam, India)

Materials and Methods

A survey was carried out during 2011-2012 to collect plant samples with ethnomedicinal claims amongst the *Thengal-Kachari* tribesmen associated with them. The standard methods of ethnobotanical studies followed, which were undertaken after procedures of several researchers (Jain, 1986; Jain, 1995; Martin, 1995; Parkash and Aggarwal, 2010). The direct approach of ethnobotanical studies was taken under consideration. During the field surveys, villagers were consulted about their primary methods of treatment during ailments. As a result, information about persons in local healing practices (*Bejs*) were obtained, attempts were made to come in contact with those healers, with the basic aim of documentation of knowledge. While collecting information on ethnomedicinal claims, semi-structured questionnaires were used and later the data was analyzed. Detailed information with regard to their vernacular names, plant parts used, process of preparation of medicine e.g. either individually or in combination with other plant/ animal parts, mode of application and doses for the treatment of a particular disease were recorded. All voucher specimens were identified using relevant floras and standard literature (Kanjilal *et al*., 1934, 1940; Haridasan and Rao, 1985, 1987). The medicinal values claimed by these healers were cross-checked with ethnomedicinal data on medicinal plants from Dr. Duke's Phytochemical and Ethnobotanical database (U.S. Department of Agriculture, Agricultural Research Service, 1992-2016).

The present study has brought to light 30 species of plants belonging to 22 plant families and 4 species of animals belonging to 4 animal families, used by *Thengal-Kacharis* in treatment of 13 ailments (Table 1, Fig. 5). For curing different ailments, plant parts (86.49%) were rather used than animal parts (13.51%). Of these plant parts, the above ground parts were used in bulk (64.71%) quantity, in comparison to the underground parts (35.29%). Amongst the aboveground plant parts, maximum usage was reported in case of leaves (8 species) followed by fruits (6 species), flowers, bark and stem (2 species each) (Fig. 2). Utilization of herbs was maximum (14), followed by shrubs and trees (7 each), while climbers contributed the least (3) (Fig. 3).

Table 1. Diseases with their respective ethnomedicinal formulations practiced by the Thengal-Kacharis population within the study site

Sl.No.	Name of disease	Botanical name	Local name	Family	Part(s) used	Ethnomedicinal preparation
1.	Pneumonia	*Rubus ellipticus* Sm.	Jetulipoka	Rosaceae	Root	Root of one *Rubus ellipticus* plant, 5-8 leaves of *Croton caudatus*, root of one *Xanthium strumarium*, 3 whole plants of *Centella asiatica* and *Hydrocotyle javanica*, each along with 5-7 (1-2, in case of children) fruits of *Piper nigrum* are ground to a paste which is administered orally to the patient.
		Croton caudatus Geiseler	Lota mahudi/ Xumxumia pat	Euphorbiaceae	Leaf	
		Xanthium strumarium Linn.	Ogora	Asteraceae	Root	
		Centella asiatica (L.) Urban	Bor Manimuni	Apiaceae	Whole plant	
		Hydrocotyle javanica Thunb.	Xoru Manimuni	Apiaceae	Whole plant	
		Ageratum conyzoides (L.) L.	Gendhali bon	Asteraceae	Root	
		Piper nigrum L.	Jaluk	Piperaceae	Fruit	
2.	Ear ache	*Carica papaya* L.	Omita	Caricaceae	Root	Root juice of one *Carica papaya* plant is administered locally in the ear.
3.	Malaria	*Kyllinga brevifolia* Rottb.	Keya bon	Cyperaceae	Fruit	5-8 fruits of *Kyllinga brevifolia*, *Caesalpinia crista* and *Piper nigrum* are grounded and mixed with the intestines of *Hystrix indica* and given to the patient orally.
		Caesalpinia crista L.	Leta guti	Fabaceae	Fruit	
		Piper nigrum L.	Jaluk	Piperaceae	Fruit	
4.	Gastric	*Erythrina stricta* Roxb.	Modar	Fabaceae	Leaf	33-35 leaves of *Erythrina stricta* and *Citrus aurantifolia* are grounded to a paste and administered orally.
		Citrus aurantifolia (Christm.) Swingle	Gol nemu	Rutaceae	Leaf	
5.	Piles	*Musa sapientum* L.	Malbhog kol	Musaceae	Rhizome	3 young rhizomes of *Musa sapientum* and 3 *Metaphire posthuma* are boiled in a pan and the patient has to take the steam on his anal part after defecation.
6.	Seminal disorder	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn.	Orjun	Combretaceae	Bark	3 pieces of *Terminalia arjuna* bark are grounded and the juice is given to the patient mixed in 250 ml cow (*Bos taurus*) milk.
7.	Dysuria	*Cynodon dactylon* (L.) Pers.	Dubori	Poaceae	Root	5-7 roots of *Cynodon dactylon*, 3 flowers of *Lagenaria sicenaria*, 3 stems of *Costus speciosus* (each having 3 internodes), 3 strips of *Mimusops elengi* bark are grounded together; the juice is mixed in 250 ml cow (*Bos taurus*) milk and administered orally to the patient.
		Lagenaria sicenaria (Molina) Standl.	Jati lau	Cucurbitaceae	Flower	
		Costus speciosus (J.König) Sm.	Jomlakhuti	Costaceae	Stem	
		Mimusops elengi L.	Bokul	Sapotaceae	Bark	
8.	Diarrhoea	*Psidium guajava* L.	Modhuri aam	Myrtaceae	Tender leaves	Tender leaves from the 3 axis of *Psidium guajava* plant are crushed to juice mixed with exudates of 1 *Musa balbisiana* fruit; this mixture is orally administered to the patient.
		Musa balbisiana Colla	Bhim kol	Musaceae	Fruit exudate	
9. (a)	Fever	*Scoparia dulcis* L.	Seni bon	Plantaginaceae	Root	Roots of one *Scoparia dulcis* plant and 3 *Clerodendrum viscosum* plants are grounded to juice, which is taken orally by the patient.
		Clerodendrum viscosum Vent.	Dhopat tita	Lamiaceae	Root	
9. (b)	Fever	*Corchorus capsularis* L.	Morapat	Malvaceae	Leaf	7-9 leaves of *Corchorus capsularis*, a piece (12 inches) of *Cissampelos pareira* stem and soot (*Elandhu*) are ground edto a paste and applied locally on the forehead.
		Cissampelos pareira L.	Tubuki lota	Menispermaceae	Stem	
10. (a)	Cough	*Phlogacanthus thyrsiflorus* Nees	Tita phool	Acanthaceae	Leaf	Decoction of 9-10 *Phlogacanthus thyrsiflorus* leaves is given to the patient orally.
10. (b)	Cough	*Ocimum basilicum* L.	Tulsi	Lamiaceae	Leaf	Juice of 11-15 *Ocimum basilicum* leaves and 2-3 internodes of *Zingiber officinale* are mixed with honey and administered orally.
		Zingiber officinale Roscoe	Ada	Zingiberaceae	Rhizome	
11.	Vomiting	*Oryza sativa* L.	Dhan	Poaceae	Fruit	5-7 flowers (or in any odd numbers) of *Lagenaria sicenaria* are crushed and mixed with powdered rice (*Oryza sativa*) and applied locally on forehead.
		Lagenaria sicenaria (Molina) Standl.	Jati lau	Cucurbitaceae	Flower	
12.	Abscess of Breast	*Mimosa pudica* L.	Nilaji bon	Fabaceae	Root	Paste of *Mimosa pudica* roots is applied locally.
13.	Blood dysentery	*Hibiscus sabdariffa* Linn.	Tengamora	Malvaceae	Leaf	13-15 leaves of *Hibiscus sabdariffa* are wrapped by a plantain leaf, roasted in fire and the pulpy residue is orally administered.

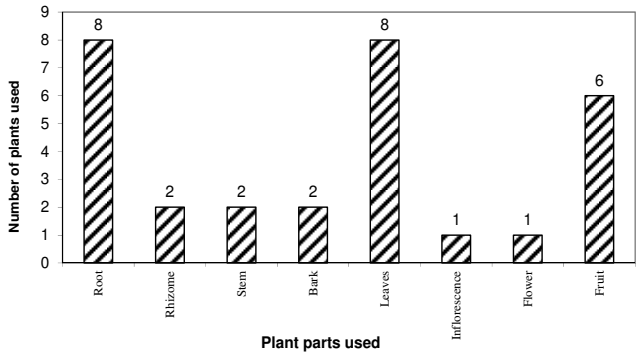

Fig. 2. Status of different plant parts used for various local remedies

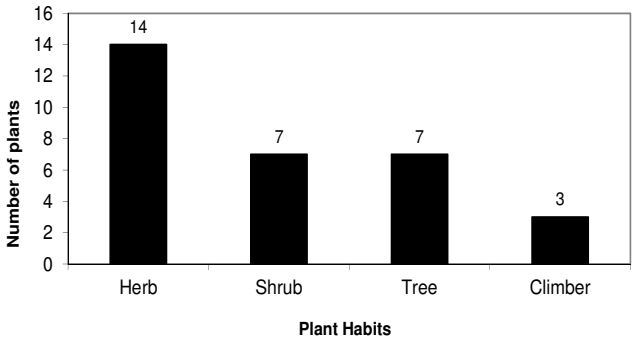

Fig. 3. Status of plants according to habits

Table 2. Cross-cultural comparison of ethnomedicinal plants utilized by the Thengal-Kacharis populations within the study site, with Dr. Duke's Phytochemical and Ethnobotanical database

Botanical name	Use reported in present study	Established use(s)	Referred country	Reference
Ageratum conyzoides (L.) L.	Pneumonia	No records	No records	No records
Caesalpinia crista L.	Malaria	No records	No records	No records
Carica papaya L.	Ear ache	Ache (Head)	Elsewhere	*https://phytochem.nal.usda.gov/phytochem/ethnoPlants/show/149?qlookup=Carica+papaya*
Centella asiatica (L.) Urban	Pneumonia	No records	No records	No records
Cissampelos pareira L.	Febrifuge	Febrifuge	Elsewhere Mexico Guatemala	Uphof JC (1968). Dictionary of economic plants. 2nd ed. Verlag von J. Cramer. Standley P. Trees and shrubs of Mexico. Contributions U.S. National Herbarium, vol. 23. Govt. Printing Office, Washington, D.C. Standley PC, Steyermark JA (1952). Flora of Guatemala. Fieldiana Botany, vol. 24, pt. 3. Museum of Natl. History, Chicago.
Citrus aurantifolia (Christm.) Swingle	Gastric	Stomachic	Dominican Republic	Liogier AH (1974). Diccionario Botanico de Nombres Vulgares de la Espanola. Universidad Nacional Pedro Henriquez Urena, Santo Domingo.
Clerodendrum viscosum Vent.	Febrifuge	Convulsion, Spasm	India	*https://phytochem.nal.usda.gov/phytochem/ethnoPlants/show/2729?et=*
Corchorus capsularis L.	Febrifuge	Febrifuge	Iraq	Al-Rawi A (1964). Medicinal Plants of Iraq. Tech. Bull. No. 15. Ministry of Agriculture, Directorate General of Agricultural Research Projects.
Costus speciosus (J.König) Sm.	Dysuria	Depurative	Elsewhere	*https://phytochem.nal.usda.gov/phytochem/ethnoPlants/show/1192?qlookup=Costus+speciosus+&offset*
Croton caudatus Geiseler	Pneumonia	Constipation	Elsewhere	Uphof JC (1968). Dictionary of economic plants. 2nd ed. Verlag von J. Cramer.
Cynodon dactylon (L.) Pers.	Dysuria	Calculus, Depurative, Diuretic Diuretic	Egypt Spain	Tackholm, Vivi, Gunnar. 1973 (reprint). Flora of Egypt. Vol. 1-4. Originally published in Foriad I Univ. Bulletin of the Faculty of Science, vol. 17, Cairo, 1941. Font Query P (1979). Plantas Medicinales el Dioscorides Renovado. Editorial Labor, S.A. Barcelona. 5th Ed.
Erythrina stricta Roxb.	Gastric	No records	No records	No records
Hibiscus sabdariffa Linn.	Blood dysentery	Demulcent	Mexico	Standley P. Trees and shrubs of Mexico. Contributions U.S. National Herbarium, vol. 23. Govt. Printing Office, Washington, D.C.
Hydrocotyle javanica Thunb.	Pneumonia	Dyspepsia	India	*https://phytochem.nal.usda.gov/phytochem/ethnoPlants/show/1287?qlookup=Hydrocotyle+javanica*
Kyllinga brevifolia Rottb.	Malaria	No records	No records	No records
Lagenaria siceraria (Molina) Standl.	Dysuria	Emetic	China Turkey	Shih-chen L (1973). Chinese medinal herbs. Georgetown Press, San Francisco. Steinmetz EF (1957). Codex vegetabilis. Amsterdam.
	Vomiting	No records	No records	No records
Mimosa pudica L.	Abscess of Breast	No records	No records	No records
Mimusops elengi L.	Dysuria	No records	No records	No records
Musa balbisiana Colla	Diarrhoea	No records	No records	No records
Musa sapientum L.	Piles	Piles	Java	*https://phytochem.nal.usda.gov/phytochem/ethnoPlants/show/2830?qlookup=Musa+sapientum*
Ocimum basilicum L.	Cough	Cough	Malaya	*https://phytochem.nal.usda.gov/phytochem/ethnoPlants/show/527?qlookup=Ocimum+basilicum*
Oryza sativa L.	Vomiting	Excipient	Japan	ANON. 1978. List of Plants. Kyoto Herbal Garden, Parmacognostic Research Lab., Central Research Division, Takeda Chem. Industries, Ltd., Ichijoji, Sakyoku, Kyoto, Japan.
Phlogacanthus thyrsiflorus Nees	Cough	Cough	India	*https://phytochem.nal.usda.gov/phytochem/ethnoPlants/show/2235?qlookup=Phlogacanthus+thyrsiflorus*
Piper nigrum L.	Pneumonia Malaria	No records Malaria	No records Turkey	No records Steinmetz EF (1957). Codex vegetabilis. Amsterdam.
Psidium guajava L.	Diarrhoea	Diarrhoea	Mexico Haiti Trinidad	Martinez M (1969). Las Plantas Medinales de Mexico. Brutus TC, Pierce-Noel AV (1960). Les Plantes et les Legumes d'Hati qui Guerissent. Imprimerie De L'Etat, Port-Au-Prince, Haiti. Wong W (1976). Some folk medicinal plants from Trinidad. Economic Botany 30(2):103-142.
Rubus ellipticus Sm.	Pneumonia	Tonic	Nepal	Singh MP *et al.* (1979). Medicinal plants of Nepal - Retrospects and prospects. Economic Botany 33(2): 185-198.
Scoparia dulcis L.	Febrifuge	Febrifuge	Sierra Leone	Ayensu E (1978). Medicinal plants of West Africa. Reference Publications, Inc.
Terminalia arjuna (Roxb. ex DC.) Wight & Arn.	Seminal disorder	No records	No records	No records
Xanthium strumarium Linn.	Pneumonia	No records	No records	No records
Zingiber officinale Roscoe	Cough	Cough	China	ANON. 1974. A barefoot doctor's manual. DHEW Publication No. (NIH):75-695.

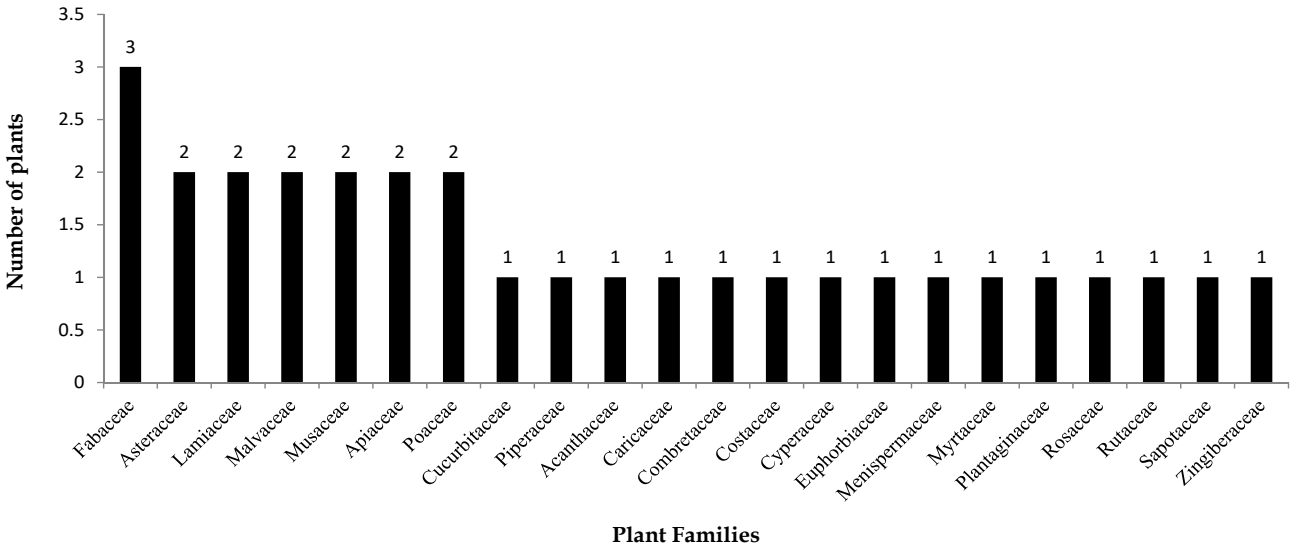

Fig. 4. Status of plants according to families

Fig. 5. Plants attributed ethnomedicinal claim by the Thengal- Kachari tribesmen; A – *Rubus ellipticus*; B – *Ageratum conyzoides*, C – *Mimosa pudica*; D – *Centella asiatica*; E – *Clerodendrum viscosum*; F – *Xanthium strumarium*; G – *Scoparia dulcis*; H – *Costus speciosus*; I – *Phlogacanthus thyrsiflorus*

The status of plants according to their families was also evaluated and it was found that plants of Fabaceae (3) contributed with the most plant parts in the ethnomedicinal formulations, followed by Asteraceae, Lamiaceae, Malvaceae, Musaceae, Apiaceae and Poaceae (2 each), while Acanthaceae, Caricaceae, Combretaceae, Costaceae, Cucurbitaceae, Cyperaceae, Euphorbiaceae, Menispermaceae, Myrtaceae, Piperaceae, Plantaginaceae, Rosaceae, Rutaceae, Sapotaceae along with Zingiberaceae contributed least (1 each) (Fig. 4). The ethnomedicinal claim of dicotyledonous plants was higher (80%) than the monocots (20%), amongst which *Piper nigrum* L. and *Lagenaria siceraria* (Molina) Standl. contributed to the preparation of medicine for more than one disease. Special mention can also be made of *Centella asiatica* (L.) Urban and *Hydrocotyle javanica* Thunb., which were used wholly in the respective preparations.

The use of animal parts, *viz*. cow milk (*Bos taurus* L.), bee honey (*Apis dorsata* Fabricius), porcupine intestine (*Hystrix indica* Kerr) and whole earthworm (*Metaphire posthuma* Vaillant) were also reported.

A cross-examination of the medicinal usage as reported by the ethnic group in question with the standard database (U.S. Department of Agriculture, Agricultural Research Service. 1992-2016) clearly points forth that although most of the plants have been authentically used by people residing in other parts and pockets of the world, yet there remain new vistas to be explored for the plants with novel usage (Table 2).

Discussion

The information provided in the hereby paper is limited and there is always a scope to initiate more ethno-medico-botanical study amongst the *Thengal-Kachari* tribesmen of Assam to gather information as far as possible. As stated earlier, this tribe is concentrated in 204 villages of Upper Assam, so further studies can also be made to document the traditional healthcare heritage of this hitherto less studied tribe residing in other parts of the state.

Impact of urbanization coupled with increasing dependence on modern medicine and health care system have given rise to negligence towards traditional knowledge and thereby leading to depletion of indigenous knowledge health system (Tushar *et al*., 2010). Moreover, transmission of the knowledge is through oral and folklore tradition, which is also partly attributed to the loss of knowledge. Reluctance on the part of the traditional healers to facilitate documentation of their indigenous knowledge can also be counted upon. Moreover, the ongoing tribal improvement programmes and welfare measures, sponsored by Government and non-governmental organizations, do not incorporate serious documentation of their indigenous ethnomedicinal knowledge. Documentation and inventory of such knowledge is the need of the hour, whereas if the chain of verbal conveyance is broken, this data could not be retrieved and will be lost irrevocably.

Further such studies are also important for species conservation and sustainable resource use (Gemedo-Dalle *et al*., 2005; Parkash and Aggarwal, 2010). The current investigation revealed that leaves and roots are the most collected plant parts for ethnomedicinal preparations. Collection of leaves for such purpose could be regarded as sustainable as far as some leaves are left over on the parent plant, although that is not the case with roots. Also, in the study it was observed that in almost all the cases the remedies were prepared from a multiple plant species. Moreover, the preparations are made by collecting the plants mostly from the wild. This is a serious concern from the conservation point and sustainability of the resources because if it continues unabated, such collection from the wild may lead to depletion of the population or in more specific terms, depletion of their genetic stock. Shiva *et al*. (1988) stressed that raising of medicinal plants in agroforestry is less cumbersome compared to raising agricultural crops as the former involves comparatively lesser cultivation options and gives higher annual returns.

With reference to the use of animal parts, it may be stated that use of cow milk and honey is sustainable although the use of intestine of *Hystrix indica* and whole *Metaphire posthuma* might in future lead to genetic depletion of their species from the biosphere. Uses of both these animals are also reported amongst the *Tai-Khamyang*s (Sonowal and Barua, 2011), although for different purposes.

Studies and documentation on ethnobotanical and traditional knowledge on medicinal plant uses has been considered as a high priority (Cox and Ballick, 1994; Hamil *et al*.., 2000; Pieroni, 2000; Dutta and Dutta, 2005), sometimes leading to the discovery of crude drugs (Cox and Ballick, 1996) or contributing to economic development.

Conclusions

Screening of medicinal herbs used by different ethnic groups or communities has now become a potential source for isolation of bioactive compounds. Thus preparation of an inventory of the plants and animals with ethnomedicinal claims pertaining to the tribe may augment alkaloid and metabolite synthesis through their bio-chemical and pharmacological analysis. In order to protect their indigenous knowledge and to ensure conservation and sustainable management, there is an urgent need for additional documentation, identification and prioritization of important medicinal plants, development of database, formulation of cultivation and proper harvesting techniques for potential species along with community awareness programs amongst the tribesmen.

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