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).
Keeping in mind the multitude of ethnic communities and tribes along with the variety of phytoreources, 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 ethno-botany of the Thengal-Kachari 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 ethnomedicinal 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 (Raiguru, 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 Rapowal-Kachari (Sonowal, 1962; Borborual, 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” (Raiguru, 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 Sonomal-Kachari (Prabhakara, 2003).

Assam, the ‘Gateway of North-East India’, is renowned for its phytodiversity, 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.

Materials and Methods

A survey was carried out during 2011-2012 to collect plant samples with ethnomedicinal claims amongst the Thengal-Kachari tribes 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 (86 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.

| S.No. | Name of disease | Botanical name | Local name | Family | Part(s) used | Ethnomedicinal preparation |
|-------|-----------------|----------------|------------|--------|--------------|---------------------------|
| 1.    | Pneumonia       | Rosmarinus officinalis L. | Jathopkali | Rosaceae | Leaf | Root of one Rosmarinus officinalis plant, 5-8 leaves of 'Comm caudatus, root of one Xanthium strumarium, 3 whole plants of Costus speciosus and Hyoscyamus nigeria, 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. |
| 2.    | Earache         | Canaropsis sativa L. | Oronita     | Canaceae | Root | Root juice of one Canaropsis plant is administered locally in the ear. |
| 3.    | Malaria          | Kyllinga breviflora Roehh. | Kaseybon | Cyperaceae | Fruit | 5-8 fruits of Kyllinga breviflora, Canandina crista and Piper nigrum are ground and mixed with the intrinsics of Hyoscyamus nigeria and given to the patient orally. |
| 4.    | Gastric         | Hibiscus sabdariffa L. | Mooliar     | Fabaceae | Leaf | 3 young rhizomes of Musa sapientum and 3 Metaphire pustumara are boiled in a pan and the patient has to take the steam on his head and after 20 minutes. |
| 5.    | Piles           | Musa sapientum L. | Malhogyed    | Mecaceae | Rhizome | 3 pieces of Terminalia arjuna bark are ground and the juice is given to the patient mixed in 250 ml cow (Bos taurus) milk. |
| 6.    | Seminal disorder | Terminalia arjuna (Roehh.ex DC.) Wight & Arn. | Orjan       | Combretaceae | Bark | 5-7 roots of Cassia angulata, 3 flowers of Lagerstroemia speciosa, 3 stems of Comm brahmagiri (each having 3 internodes), 3 strips of Morinda cheve are ground together; the juice is mixed in 250 ml cow (Bos taurus) milk and administered orally to the patient. |
| 7.    | Dysuria          | Cynodon dactylon (L) Pers. | Dohori     | Poaceae | Root | 5-9 leaves of Cynodon dactylon, 3 flowers of Lagerstroemia speciosa, 3 stems of Comm brahmagiri (each having 3 internodes), 3 strips of Morinda cheve are ground together; the juice is mixed in 250 ml cow (Bos taurus) milk and administered orally to the patient. |
| 8.    | Diarrhoea        | Pariocapryllium L. | Modhiuraam | Myrtaceae | Stomach | Tender leaves of 3 S. subhirtella guajii plant are crushed to juice mixed with 33-35 leaves of Hystrix indica and given orally. |
| 9.    | (a) Fever        | Separia decida L. | Soriaino     | Plantaginaceae | Root | Room of one Separia dactylar plant and 3 Clerodendrum steenum plants are grounded to juice, which is taken orally by the patient. |
| 10.   | (b) Fever        | Corchorus capsularis L. | Monpat      | Malvaceae | Leaf | 7-9 fruits of Corchorus capsularis, a piece (12 inches) of Cassia parviflorum stem and root (Elaeolb) are ground into a paste and applied locally on the forehead. |
| 11.   | Vomiting         | Octopus sativa L. | Dinna       | Poaceae | Flower | 5-7 flowers (or in any odd numbers) of Lagerstroemia speciosa are crushed and mixed with powdered rice (Octopus sativa) and applied locally on forehead. |
| 12.   | Abscess of breast | Mimosa pudica L. | Niuhbon     | Fabaceae | Root | Paste of Mimosa pudica root is applied locally. |
| 13.   | Blood dysentery | Hibiscus sabdariffa L. | Tengarmar | Malvaceae | Leaf | 13-15 leaves of Hibiscus sabdariffa are wrapped by a plamnet 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 | Unexpected in present study | Established by(s) | Reflected country | Reference |
|----------------|-----------------------------|-------------------|------------------|-----------|
| *Agaritina congriosa* (L.) L. | Pneumonia | Novomexico | Novomexico | Novomexico |
| *Catalpa occidentalis* L. | Malaria | Novomexico | Novomexico | Novomexico |
| *Cassia papaya* L. | Pneumonia | Novomexico | Novomexico | Novomexico |
| *Catalpa occidentalis* (L.) Urban | Malaria | Novomexico | Novomexico | Novomexico |
| *Cissampelos pareira* | Pneumonia | Novomexico | Novomexico | Novomexico |
| *Citrus aurantifolia* (Christm.) Swingle | Pneumonia | Novomexico | Novomexico | Novomexico |
| *Cyperus dichotomus* (L.) Pers. | Pneumonia | India | India | India |
| *Erythrina crista-galli* | Pneumonia | Novomexico | Novomexico | Novomexico |
| *Hibiscus sabdariffa* Linn. | Pneumonia | Novomexico | Novomexico | Novomexico |
| *Hydrocotyle javanica* Thunb. | Pneumonia | India | India | India |
| *Kyllinga longifolia* Royle | Pneumonia | India | India | India |
| *Lagamia scribneri* (Mollinda) Standl. | Pneumonia | India | India | India |
| *Mimosa pudica* L. | Pneumonia | India | India | India |
| *Mimosa divaricata* | Pneumonia | India | India | India |
| *Musa balbisiana* Colla | Pneumonia | India | India | India |
| *Oxandra javanica* L. | Pneumonia | India | India | India |
| *Oxandra javanica* L. | Pneumonia | India | India | India |
| *Piper nigrum* | Pneumonia | India | India | India |
| *Podium goviense* L. | Pneumonia | India | India | India |
| *Rhus elliptica* Sm. | Pneumonia | India | India | India |
| *Sapindas chinensis* (Rehder, ex DC.) Wright & Ams. | Pneumonia | India | India | India |
| *Zingiber officinale* Roxp. | Pneumonia | India | India | India |

Fig. 4. Status of plants according to families
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 (Hystricidae) 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 ethnomedical 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 ethnomedical 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-Khamyangs (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 ethnomedical 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.

Acknowledgements

Authors are extremely thankful to the Bejs (local healers) for extending their cooperation, in spite of the domineering sentiments attached with their knowledge of these ethnomedicines. The help rendered in the course of this study by Sh. Debajyoti Bora, Research Fellow (presently, Assistant Professor, Department of Statistics and Mathematics, C.K.B. Commerce College) and Sh. Pabitra Saikia, Multi Tasking Staff of Rain Forest Research Institute, Jothar, Assam is also acknowledged. Thanks are also due to Prof. Dr. Sarthak Sengupta, “Head, Dept. of Anthropology, Dibrugarh University, Assam. Both the authors express their deep sense of gratitude to the Director of the Rain Forest Research Institute for the laboratory and library facilities.

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