

A STUDY ON SOME PLANTS BY TRIPURI AND REANG TRIBES TRIPURA USING ETHNOBOTANICAL IN INDIA

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ABSTRACT

In this paper we are studding in some plants by tripuri and reang tribes Tripura using Ethnobotanical in india. Most of the tribal economies have been engaged in subsistence agriculture, Jhum, piggery, fishery and hunting. The ethno medicinal study of plants in Tripura state discovered that some less knows medicinal plants has been used by the indigenous tribes. Use of medicinal plants were documented using an interview datasheet mentioning detailed information of the informants and vernacular names, parts used, method of preparation and administration modes of botanicals. In this paper we are presenting a study of ethnobotanical introduction, review of research work of some plants by tripuri and reang tribes Tripura using Ethnobotanical in india, Objective, of this paper, needs of paper and materials and methods of tripuri and reang tribes Tripura using Ethnobotanical in india. The legal scientific name, family, local names, habit, dosages and traditional formulation of 33 species belonging to genera and 25 families are enumerated in this thesis. Ethnobotanical survey was conducted in the remote hills, forests and rural areas of Tripura, a diversified ethnic people rich state of North-Eastern India, for gathering information about traditional method of birth control. Use of medicinal plants were documented using an interview datasheet mentioning detailed information of the informants and vernacular names, parts used, method of preparation and administration modes of botanicals.

Keyword: - Ethnobotany, India, medicinal plants, Tripura state, Piggery and Fishery etc.

1. INTRODUCTION

The North-Eastern region is considered as one of the richest biodiversity centres of the Indian sub-continent. The investigations on ethnobotanical studies in the North-Eastern region have been recorded and reported by different ethnobotanists. The North East region is habitat different types of tribes who depend on the nature to meet their daily need which has been reflected in their traditional culture, beliefs, folklore etc. Few ethnobotanists explored indigenous knowledge of different ethnic groups which are settled in North East India such as Islam (1996) explored ethnobotanical knowledge of Naga, Manipuri and Assamese; Pandey *et al.* (1996) explored the traditional knowledge of Tai Alton, Tai Khamyang, Tai Trung, Sonowal Kachari and Tangal Kachari; Singh *et al.* (1996) explored the ethnobotanical knowledge of Mishing tribe; indigenous knowledge of Shan was explored by Bora & Pandey (1996); Tiwari & Tiwari (1996) studied the traditional knowledge of use plants of tribes of Arunachal Pradesh; Huidrom B.K. Singh (1996a,b) explored the indigenous knowledge of Meitei and the tribes of Tripura; Arora (1997) explored the indigenous knowledge of the tribes of North East region; Dam & Hajra (1997) studied the indigenous knowledge of Mompas tribe; Kharkongor & Joseph (1997) explored the indigenous knowledge of Khasi and Jaintia tribe. Rao (1997) studied the ethnobotanical knowledge of Naga tribe; Vasudeva & Shampru (1997) explored the indigenous knowledge of Garo tribe; Rawat & Choudhury (1998) explored the indigenous knowledge of Nishi and Apatani tribes; Lalramnghinglove (1999) studied on the indigenous knowledge of the tribes of Mizoram. The importance of ethnobotanical work in North East India has got much attention but in comparison to a

large number of tribes inhabit in this region, very few tribes have been explored in relation to ethnobotanical studies (Dutta & Dutta, 2005). In last few years the research and documentation of traditional knowledge of North Eastern states has increased but in comparison to rest of India, the survey is very less though it is a vast source of indigenous knowledge (Chakraborty *et al.* 2012). reported 33 ethnomedicinal plants used by non-tribal and tribal medicine men of Tripura; Saikia *et al.* (2006) reported 85 plants which are used to cure different types of skin diseases and also as cosmetics in Assam; Sajem & Gosai (2006) worked on Jaintia tribes and reported 39 plants which are used by the tribes of North Cachar Hills of Assam; iSankaran *et al.* (2006) reported 40 edible fruits which are used by the rural people of Tripura; Bhuyan (2007) studied on plants used by different tribes of Arunachal Pradesh and reported 50 indigenous plants; Buragohain & Konwar (2007) studied on the plants which are used by Indo-Mongoloid communities of Upper Assam to cure various skin diseases and reported 68 plants; Chandra *et al.* (2007) reported 36 plants which are used to treat gastrointestinal disorders in Sikkim; Lalfakzuala *et al.* (2007) worked on ethnobotanically important plants of Mamit district of Mizoram and reported 89 plants which are used as folk medicine, food and other purposes. In their study they assessed the medicinal uses of 33 pteridophyte species belonging to 21 families on the basis of field surveys and taxonomic identification of plants. Similarly investigated one pteridophyte with respect to ethnobotanical uses by Tripuri and Reang tribes of Tripura. The Reang medicine men use some common pteridophytes in their routine health care system to treat diseases like bones fracture, cough and cold, carbuncle, cardiac problem, pyorrhoea, headache, blood clotting, throat pain, cut or wound etc. Plants having such properties may have role in rapid discharge of the fertilized ova from the fallopian tube, inhibition of implantation due to a interruption in oestrogen- progesterone balance, foetal abortion due to lack supply of nutrients to the uterus and the embryo, and also on the male by affecting sperm count, motility, and viability. In recent years, many workers have reported a lot of traditional plants used for antifertility purpose. Most of the tribal economies have been engaged in subsistence agriculture, Jhum, piggery, fishery and hunting. With the passage of time, tribal communities have been developed a great deal of knowledge on the use of plants and plant products in curing various diseases, ailments. In the present study, an attempt has been taken to investigate and document the herbal practices for antifertility purpose by the ethnic peoples of Tripura state. Aquatic Botany is publishing fundamental and applied studies of molecular, biochemical and physiological aspects of macroscopic aquatic plants as well as the classification, structure, function, dynamics and ecological interactions in plant-dominated aquatic communities and ecosystems. It is an outlet for papers dealing with research on the consequences of disturbance and stressors (e.g., environmental fluctuations and climate change, pollution, grazing and pathogens), use and management of aquatic plants (plant production and decomposition, commercial harvest, plant control) and the conservation of aquatic plant communities (breeding, transplantation and restoration). Even today, many tribal communities and rural population is dependent heavily upon the natural resources obtained from the surrounding forest regions for treatment of various diseases. The Indian traditional medicine based on different systems such as Ayurveda, Siddha and Unani is in use by these tribal communities. Though, lots of studies focus on the medicinal properties of plants, especially angiosperms, has been taken place, unfortunately limited amount of studies have been done to explore the medicinal potentialities of the pteridophytes. The pteridophytes constitute a significant part of the earth's plant diversity and being the second largest group of vascular plants, they form a dominant component of many plant communities. The medicinal qualities of ferns, real or imaginary, are mentioned as early as 300 B.C. by the Greek philosopher Theophrastus and by his Indian contemporaries Sushrut and Charak. A herbarium is a store house of plants, pressed and mounted on a particular size of sheets and so it serves as the function of data bank of plants (Jain, 1995). Herbaria and Musea play an important role in ethnobotanical research (Jain, 1981). The herbarium of Royal Botanical Garden, Kew in U. K., today houses about 6.5 million sheets; The Harvard University Herbarium has about 1.5 million sheets; The Central National Herbarium of Calcutta has got more than 2.5 million sheets (Jain, 1995). The outstanding work on the study of herbarium specimen was done by Altschul (1968, 1970a, 1970b) who scrutinized several hundred thousand herbarium specimens of Harvard University and recorded note of 5178 less known or unknown uses of plants. Very little work has been done on this aspect in India. Jain & Dam (1979) searched a part of about one hundred thousand specimens in North-east India (at Assam) for recording ethnobotanical data. Vast knowledge on ethnobotany exists in India from ancient time. More than 1,200 herbal plants are mentioned in ancient Indian texts (Jain & Mudgal, 1999). Written records of the use of plants for curing human and animal diseases in India can be traced back to the earliest records (4500 - 1600 BC), in the scriptures of the Hindus, the Rigveda (Jain, 1994), Ayurveda, the Indian indigenous system of medicine dating back to the Vedic ages (1500 - 800 BC), has been an integral part of Indian culture (Weiss, 1987). Curative effects of plants have long been studied by Indians since 2500 B.C. Some literature still exist viz., 'Amar-Kusha' of Amar Singha of 6th century A.D.-a lexicon mentioned about the medicinal properties of 358 drugs. In the works "Manitraya" i.e., "Panini", "Kalyayana" and "Patanjali" referred the plants yielding drug. The work of 'Ashaladhyayi,' 'Votika' and 'Mahabashya', respectively, among others have named a large number of plants having medical use. It is interesting

to note that the chemistry of natural products isolated both from flora and fauna during Ayurvedic period was well understood, at least for practical purposes (Bhattacharya & Patra, 2004). Sing & Chunekar (1972) have published a full glossary of medicinal plants included in the classical works of Charaka Samhita, Sushutra Samhita and Astanga Hridayam. Aroids or the members of Araceae Family are distributed worldwide with 117 genera and 3790 species. In India including North east India though various floristic works has been carried out very few records of ethnobotanical works can be found which are scattered in various journals and periodicals, making the data mostly not easily accessible to researchers. Cross cultural ethno-botany is essential not only in authenticating and assessing the values of plant lore's but also in credibility testing of folklore claims and also finding out the new and less known use of plants. Ethno-Pharmacology has become a scientific backbone in the development of active therapeutics based upon traditional medicine of various ethnic groups. The present communication is a review based on the reported folklore medicinal claims involving members of the Aroid family used by different tribes in Assam for various disease conditions. The present study has brought into light 82 prescriptions of plant folk medicines covering more than 60 disease conditions represented by 14 aroid species and 10 genera. Among the total plant species enumerated in this communication, positive correlation between folklore use and biological activities has been recorded in preliminary review for only 4 plant species. Here an attempt has been made to test the credibility of the folklore claims by cross cultural studies among different tribes and to corroborate the claims with reported biological activities of the species in due course for scientific validation. Aroids or the members of the Family Araceae are known for ornamental, edible as well as for medicinal uses which are distributed worldwide chiefly in tropical and subtropical regions; except at the polar regions and deserts, Aroids are found in various natural habitats such as swamps, ponds, lakes, canals, rivers to rice fields, climbers and as well as epiphytes. Some species thrive well in forest floors with good canopy coverage. This family is grouped into nine subfamilies, 117 genera and 3790 species. Members of this family are herbs, perennial, they are climbers, floating aquatics, helophytes, and geophytes. Underground stems are absent and if present, they are in the form rhizome or tuber; with definite node and internode regions; aerial stems are evergreen; leaves alternate or apparently basal, usually petiolate with sheathing bases. Spadix bears bisexual or unisexual flowers and sometimes with a sterile, terminal appendix. Fruit usually a head of 1-to several-seeded and commonly red, green, white, or yellow, rarely blue. They also possess crystals of calcium oxalate or raphides in the tissues. In India though various floristic works has been carried out but the total reported number of distributed species varies greatly and very few records of ethno botanical works can be found which are scattered in different region of reporting. According to the Flora of British India by Hooker there are 228 species and 31 genera of Indian aroids. Karthikeyan reported 25 genera and 138 species in India and Yadav has reported 29 genera and 150 species.

2. REVIEW OF RESEARCH WORK

Majumdar et al., 2006 , 33 plants (from 31 genera of 25 families), Several tribal villages, Plants are prescribed by tribal and non-tribal medicine men (Auchai, Ozai, Kabiraj) of Tripura for treatment of different diseases.

Sankaran et al. 2006 , Fruits of 40 plants, Tripura, Fruits of these plant have economic and great nutritional value.

Chakraborty N in his book documented 287 species of different medicinal herb and shrub of Tripura. Some of these are also used as vegetable, spice, animal food, green fertilizer, preparation of wine, and as a raw material in industry. The book includes 193 dicot plants from 5 families and 94 monocot plants from 15 families. Excess use of 15 plants may produce poisonous effect.

Chakraborty N in his another book described 351 plants. Most of the plants discussed in the book have medicinal value and used for every almost all ailments in daily life. Some of the plants have no medicinal value but used by people as vegetable and in different industries.

Aiyegoro and Okoh (2010) investigated the in vitro antioxidant activities of the aqueous extract of *Helichrysum longifolium* DC. Extract showed the positive result for tannins, flavonoids, steroids and saponins. The total phenolic content, total flavonoid and proanthocyanidin contents of extract were 0.499, 0.705 and 0.005 mg gallic acid equivalent/g of extract.

Nagulendran et al. (2007) using several in vitro free radicals and ROS scavenging assay method. Extract showed concentration dependent scavenging, metal chelating and reducing power ability. The extract was found effective in preventing mitochondrial lipid peroxidation induced by FeSO₄/ascorbate in concentration dependent manner in young and aged rat brain mitochondria.

Tai et al. (2011) performed antioxidant activity and isolated chemical constituents of edible flower of *Sophora viciifolia*. The antioxidant activity is evaluated by DPPH, ABTS, ferric reducing antioxidant power (FRAP), reducing power and inhibition of lipid peroxidation models.

Das et al., 2009, 33 plants (from 32 genera of 25 families), Tribal villages of Tripura, Plants used by the Tripuri and Reang tribes.

Shil & Dattu Choudury, 2009, 16 plants (from 14 genera of 10 families), Different villages of Tripura, These 16 pteridophytic floras are used by the Reang tribes.

Shil & Dattu Choudury, 2009, 58 plants (from 57 genera of 39 families), Dhalai district, Plants are used by the Reang tribes.

Das & Datta Chaudhury, 2010, 26 plant, North Tripura, Twenty one plants are used against gastrointestinal troubles and five plants are used to treat hemorrhagic condition.

Chaudhury et al., 2010, 10 plants (from 9 families), Tripura, The fruits of the plants are edible and widely consumed by the tribes of Tripura.

3. OBJECTIVE OF SOME PLANTS BY TRIPURI AND REANG TRIBES TRIPURA USING ETHNOBOTANICAL IN INDIA

Schultes (1962) and Jain (1967) stressed for field work amongst the tribals and their surroundings, scrutiny of literatures, Herbaria and Musea and study of archaeological remains. Raghavaiah (1956) provides guidance for approaching tribals. *An Introduction to Ethnobotany* by Faulks (1958) is the first book on ethnobotany but most of the topics deal with economic botany thus, giving more scope to economic botany than ethnobotany. The knowledge of plants that has come orally through generations and which normally forms the core component under ethnobotany was not discussed in this book except a few instances in historical perspective. *The Nature and Status of Ethnobotany* (Ford, 1978) dedicated to Volney H. Jones contain seventeen papers on various issues of ethnobotany. The concept of ethnobotany has been elaborately dealt with in some papers; other papers are mostly of anthropological origin. The empirical knowledge of plant wealth finds little space in this volume too. The main objective research work is:

1. To collect and make a list of fern and fern allies growing in Mahabaleshwar forest area.
2. To study microclimatic and rhizosphere soil properties of selected medicinal ferns
3. To conserve some medicinal ferns in botanical garden under Pune climate.
4. To study eco-physiology of selected ferns in their natural habitat and new environments

Interest in Ethnobotany in India in an organised manner can be said to have originated with the researches of late Dr. Janaki Ammal around the middle of the 20th century. Work on ethnobotany was considerably intensified in the Botanical Survey since the 1960s and subsequently taken up by several other institutions in our country. Some 35 years back Dr. M. S. Swaminathan, Dr. T. N. Khoshoo and Dr. S. K. Jain along with some other scientists met to review the status of Ethnobiology in India. Among other things, they considered the need for preparation of bibliography on ethnobotany and the task was entrusted to the Botanical Survey of India. In 1984 a book titled 'Bibliography of Ethnobotany' was published by Govt, of India (Jain *et al.*, 1984). When the 'All India Coordinated Project on Ethnobiology' was accorded sanction in 1982, ethnobotanical study in our country picked up momentum. The ferns have also shown to have an important role in bioremediation of wastewater. Ma *et al.* (2001) found that *Pteris vittata* L. to be a hyper-accumulator of the toxic metal Arsenic. This fern produce large biomass in short period and also accumulate Arsenic to a higher concentration upto 2.3% in its aerial portions. Similar hyper-accumulation properties of *Pteris* and many other ferns were also reported later on by many researchers. Tu *et al.* (2002) suggested that *P. vittata* could be an excellent model to study arsenic uptake, translocation, speciation, distribution and detoxification in plants and for phytoremediation of arsenic contaminated soil and water. The fern *Salvinia* exhibit equivalently high potential to remove heavy metals. *Salvinia* has wide geographical distribution, high productivity, high surface area and carboxylic content, efficiency of pollutant removal throughout different seasons, higher rate of metal removal per surface unit. Its ability of easy to grow makes it an important species to be used in phytoremediation technologies (Dhir, 2009).

4. NEED OF WORK

The knowledge and utilization of local plants varies between the ethnic groups, their location and also on their remoteness from the modern world. The literature on ethnomedicinal plants of Tripura and their traditional uses extensively searched. But it was observed that very limited ethnobotanical surveys had carried out in Tripura in spite of its vast potential. The need of proposed work has brought into light 82 prescriptions of plant folk medicines covering more than 60 disease conditions represented by 14 aroid species and 10 genera, which have been in use among the ethnic communities in Assam, for various disease conditions. Most of the drugs (72%) are prepared using

single plant species; however, plant species used in combinations are also accounted for 28% of the formulations. Most of the preparations are orally administered either as extract, juice and decoction or infusion. Among the total plant species enumerated in this communication, positive correlation between folklore use and biological activities has been recorded in preliminary review for only 4 plant species. Further, reports on related biological activities of other important and highly used plant species are scarcely available and their correlation with the folk claims could not be ascertained in the present study and hence, pharmacological evaluation of these plant species may be prioritized.

5. MATERIAL AND METHODS

For the purpose of present review, important publications both tribe and area wise of the region have been taken into account. Folklore medicinal information reported in the literatures by different ethnic groups of the region were collected and compared. Corroboration study of the identified folklore medicinal claims of the plant species with available reported biological activities is being initiated as preliminary review of reported literatures to verify the validity of the folklore claims and to find out direct or indirect corroboration with the biological activities. Further critical review will be done in next phase of study. The ferns are mostly grown for ornamental purposes. Some of these ferns are very beautiful interesting and eye-catching and visitors know that some of these species could very easily be propagated. A large number of ferns are considered to be highly prized as foliage ornamentals whether indoors or outdoors. Fern plants are of great aesthetic value due to their grace and delicate beauty displayed by their fronds. Several ferns like *Nephrolepis*, *Lycopodium*, *Sellaginella*, *Adiantum* etc are the most preferred species.

The world flora consists of approximately 12,000 species of pteridophytes represented about 305 genera. Around 1,000 species have been reported from India, these belong to 191 genera and distributed in 70 families (Dixit, 1984). Ferns are one of the successful plant groups on the earth which require a lot of water for their luxuriant growth as well as for reproduction. Ferns are better in case of propagation and many species of pteridophytes are growing luxuriantly in different regions in India. Pteridophytes make an important contribution to earth's plant diversity. Ferns are almost distributed in different regions like Himalaya, Western Ghats, and Eastern Ghats. Many ferns and fern allies are growing luxuriantly on Himalayan slopes. They are abundant in all damp situations forming the undergrowth beneath a dense canopy of evergreen trees. They are also growing on tree trunks and branches as well as along the stream banks. Interest in Ethnobotany in India in an organized manner can be said to have originated with the researches of late Dr. Janaki Ammal around the middle of the 20th century. Work on ethnobotany was considerably intensified in the Botanical Survey since the 1960s and subsequently taken up by several other institutions in our country. Some 35 years back Dr. M. S. Swaminathan, Dr. T. N. Khoshoo and Dr. S. K. Jain along with some other scientists met to review the status of Ethnobiology in India. Among other things, they considered the need for preparation of bibliography on ethnobotany and the task was entrusted to the Botanical Survey of India. In 1984 a book titled 'Bibliography of Ethnobotany' was published by Govt. of India (Jain et al., 1984). When the 'All India Coordinated Project on Ethnobiology' was accorded sanction in 1982, ethnobotanical study in our country picked up momentum. The subject of ethnobotany includes various areas of study and disciplines both natural and social sciences. The interdisciplinary nature of the subject has attracted the attention of people from several parts of the world. Starting with a simple agenda of 'the study of relationship of plants with aboriginal peoples', ethnobotany has come along various stages of developments and today, the subject has invaded almost all fields of study, thereby giving rise to many interdisciplinary sciences viz., ethnomedicine, ethnopharmacology, ethnopharmacognosy, ethnomusicology, ethnogynaecology, ethnoanthropology, etc., including astronomy (i.e., Ethnoastronomy). Literatures on ethnobotany are accumulating at a rapid pace as the scope of the subject gets expanding with time. Since the introduction of the term "Ethnobotany" in 1895 by Harshberger, about two dozen books have been published on the subject outside India, such as, *The Folklore of Plants* (Dyer, 1889), *Ethnobotany of Coahuilla Indians* (Barrows, 1900), *Notes on Jamaican Ethnobotany* (Beckwith, 1927), *Ethnobotany of the Thompson Indians of British Columbia* (Steedman, 1930); *Ethnobotany of Western Washington* (Gunther, 1945), *An Introduction to Ethnobotany* (Faulks, 1958), *The Ethnobotany of Pre-Columbian Peru* (Towle, 1961), *Introduction à la Ethnobotanique du Cambodge* (Martin, 1972), *Palaeoethnobotany- The Prehistoric Food Plants of the Near East and Europe* (Renfrew, 1973), *Ethnobotany of the Hawaiians* (Beatrice, 1975), *The Nature and Status of Ethnobotany* (Ford, 1978), *Ethnobotanica- Legua Maskoy* (Arenas, 1981), *Palaeoethnobotany of the Kameda Peninsular Jomon* (Craford, 1983), *Huastec Mayan Ethnobotany* (Alcorn, 1984), *People of the Desert and Sea: Ethnobotany of the Seri Indians* (Felger & Moser, 1985), *Edible Wild Plants of the Prairie: An Ethnobotanical Guide* (Kindscher, 1987), *The Folk Biology of the Tobelo People: A Study of Folk Classification* (Taylor, 1990) and *Thompson Ethnobotany* (Turner et al. 1990). Two Ethnobotanical dictionaries have also been published, namely, *Dariene Ethnobotanical Dictionaries* (Duke, 1968), and *Isthmian Ethnobotanical Dictionary* (Duke, 1986).

6. CONCLUSIONS AND FUTURE WORK

A total of 55 ethnomedicinal plants used in different drug formulations belonging to 49 genera and 42 families have been documented along with their formulations from Tripura are listed in the present article. The 55 plant having antifertility property are mentioned here along with the name of tribal and non tribal community from whom the information were collected (Table No. I). Plant species are arranged with their scientific name, family, common name, parts used, activities, mode of preparation and dosage. Local names of plants are given as available in Bangalee (B), Tripuri (T), Reang (R), Halam (H), Darlong (D), Chakma (C), Mog (M) languages, respectively. Maximum numbers of ethnomedicinal plants were recorded from Combretaceae, Caesalpiniaceae, Fabaceae, Apocynaceae (each family having three plant species) followed by Alliaceae, Euphorbiaceae, Lamiaceae, Malvaceae, Moraceae, Plumbaginaceae, Solanaceae (each family having two plant species). Many families represented by single ethnomedicinal plant. In the present investigation, 52.72% plants have been reported with abortifacient property and 49.09% plants with contraceptive activity and 9.9% plants having both contraceptive and abortifacient efficacy. As the work has reported 10 new plants as human antifertility agents along with other 45 known plants, it may be of significant importance to explore further for isolation and characterization of novel active contraceptive agents. Our Earth is under the pressure of population explosion. In this regard, W.H.O. and other health organizations have put great notice on the search for a safe form of contraception which will be cheap and socially acceptable. Great attention is being given to plants with anti-fertility properties. The people of North Tripura district have rich traditional knowledge in the field of ethnobotany which are forming a strong base for primary health care system. In the present study, 55 medicinal plants from 42 families and 49 genera along with 42 formulations are recorded and documented which are used for family planning in Tripura. Maximum numbers of ethnomedicinal plants are recorded from Apocynaceae, Combretaceae, Caesalpiniaceae, Fabaceae family (each family with three plant species). 70.27% plants formulations have been reported which are used to induce abortion, 37.43% have been reported as contraceptive and 2.7% herbal formulations used for both contraception and abortion.

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