1. INTRODUCTION

Ethnobotany is the scientific and logical study of plants used by ethnic communities in their medicines, folk-lore, food and beverages, tools, socio-religious aspects and cultivation of plants. The words "Ethnic" denotes a racial or national or tribal group and "Community" means a group of people united by shared interests, religion, nationality etc. (Longman, 1987). The study of plants with its uses for various needs is called Ethnobotany. The term Ethnobotany was for the first time used by J.W. Harshberger (1895) and it is defined as "the use of plants by aboriginal people" (Maheshwari, 1996a). Ethnobotany broadly means all aspects of direct relationship of plants with man (Jain, 1995a). The study of relationship between man and his ambient vegetation is obviously a very broad field, including many aspects of botany and many other disciplines, so there is a worldwide resurgence of interests in ethnobotanical studies among botanists, anthropologists, palaeobotanists, linguists, folklorists, vaidyas, hakims etc. (Maheshwari, 1995). It was noted "ethnobotanists can play very useful roles in rescuing disappearing knowledge and returning it to local communities" (Martin, 1995).

In one of the early 20th century research in India, the plant *Embelia ribes* Burm.f. was used against influenza (Menon, 1919). The study of medicine and cure of diseases was studied (Bodding, 1925). There were reports of vegetable dye from *Dioscorea rhipogonoides* Oliv (Mc Clure,1927), a vast knowledge on the utilization of wild plants in communist China (Cheng, 1965) and a wider aspect of ethnobotany of southern Appalachian aborigines (Core, 1967). Various workers (Raffauf, 1962; Schultes, 1962; Wasson, 1969; Prance, 1970) had taken interest in finding out different chemicals viz. hallucinogens, narcotics and alkaloids in plants. According to Biswas (2006), "herbal medicine is the oldest form of healthcare system known to mankind".

Vegetables are considered essential for well-balanced diets since they supply vitamins, minerals, and dietary fibre and phytochemicals. Each vegetable group contains a unique combination and amount of these phyto-nutraceuticals which

distinguishes them from other groups and vegetables within their own group (Dias, 2012). Denisen (1972) opined that "horticulture is the cultivation of fruits, vegetables and ornamental plants. The purpose for which horticultural crops are grown is two-fold, for human food or for aesthetic value". Bristow (1977) noted, "there is great satisfaction in raising and eating your own vegetables. They are cheaper and fresher than the ones you buy, they taste better at least to the person who grew them and they are said to be better for you"**.**

According to Splittstoesser (1979), "Plant parts eaten as vegetables include leaves, petioles, bulbs, stems, tubers, roots, flower clusters, fruits and seeds". Blessing *et al.* (2010) reported high contents of nutrients including amino acids, proteins, carbohydrates and minerals good for human and animal health. In one of dietary guidelines for Americans it was written "you make one-half of your plate fruits and vegetables" (Slavin and Lloyd, 2012). It can be noted that Indian vegetarian diets were found to be adequate to sustain nutritional demands according to recommended dietary allowances with less fat. Lower vitamins B_{12} bio-availability remains a concern and requires exploration of acceptable dietary sources for vegetarians (Sridhar *et al.*, 2014).

The material culture and its implements are inseparable parts of human beings. The development of human civilization rested on the making of tools. Tools are made by primitive people with wood or bamboo from their surroundings. Nowadays, in the modern technology, mostly plastics and iron are used to make tools but in the rural areas plants are still used (Das and Nag, 2006; Karthikeyan *et al.*, 2009; Sharma *et al.*, 2009; Patil *et al.*, 2014; Elzubeir, 2014).

Humans started to overcome obstacles with the natural weapons of stones and sticks. "The produce of the earth furnished man with all he needed, and the instincts told him how to use it" (Rousseau, 1754). The primitive people generally depended on the plants collected from the surroundings for musical instruments,

house-making, baskets, agricultural implements, furniture, pencil, papers, medicines, food etc. (Sharma, 1996).

Socially, a special function called *Pana kwa puba* or *Panuka puba* is involved in Muslim (*Pangal/Meitei-Pangal*) marriages. The word *Panuka puba* is a compound word of the *Pana mana* (betel leaf) and *Kwa* (betel nut). It is said that in the olden days, the groom's party carry *Pana mana* and *Kwa* only in small packets called *Potla* to the residence of the bride for that function (Rahman, 1998). It was recorded, "when the Pangals played Sagol Kangjei (Polo), Mukna (traditional wrestling), Mukna kangjei (wrestling with a kind of hockey), Khong Kangjei (traditional hockey with wrestling) and Yubi lakpi (coconut game), they used to adopt a division known as Khunthak (North) vs. Khunkha (South) and Ahallup (Elders) vs. Naharup (Youths) (Shah, 1998). Muslim houses were made of wood and bamboo fragments. The roofing done with the straw of *Imperata cylindrica* (L) Raeusch. and *Oryza sativa* L were still available. The socio-religious practices can be seen through their customs (Ahmed and Singh, 2007).

Folklore study in relation to man-plant interaction is observed in the analysis (Malinowski, 1935; Jain, 1964a; Hanslin, 1967). Thus, the inhabitants of Manipur, a small state in the NE India, speak Manipuri language (a Tibeto-Burman language). Muslims (*Pangal/Meitei-Pangal*) in Manipur speak Manipuri language as their mother tongue. In Manipur, there is a way of speaking with proverbs having reference of plants. The study of proverbs helps us to understand the mind of the people by finding various plants used in folk-proverbs (Ahmed and Singh, 2006).

Likewise, having sung many of plants in their folk-songs, the Muslims (*Pangal/Meitei-Pangal*) in Manipur are a part of "oneness of culture in India that is an evidence of oneness of our country" (Agrawal, 1997; Ahmed and Singh, 2009). Their folk-songs were not wholly detached from the mainstream of the folk culture of Manipur (Singh, 1993). The state has unique flora from time immemorial, the people of Manipur believed that these were reflected in their folk-songs too. Their agricultural

and horticultural activities are also reflected in their folk-songs (Ahmed and Singh, 2009). “On the whole the record of folk songs and the associated plants by Indian ethnobotanists are not many” (Joshi, 1995).

The plant introduction and domestication started since time immemorial. With the advent of fire and wheels, the humans were rolling in the path of development through domestication of plants and animals. Traditional communities possessed deep knowledge about the local natural resources and relied on them for commercial fodder, fuel, food, medicine, timber and other artistic products etc. This knowledge system was linked to the cultural traditions and had strong commitment to the sustainable development of regions (Devi and Gupta, 2004). The domestication of wild plants could be considered as a measure of low cost conservation of economically important plants in a greater extent. The plants were domesticated because plants were used for various purposes (Chhetri, 2006).

Despite several plan and recommendations on conservation, yet, the disappearance of natural wealth is being continued unabated as before without considering earth’s limiting factors. The Green asylums, the pillar of plant biodiversity that provide timber, food, fuel, fodder and diverse utility have been decreased alarmingly (Pandey *et al.,* 2007). However, “the socio-religious rules that restrict or regulate the collection of plant parts have been a self-regulating mechanism between human and plant kingdoms. Our generation must be committed to preserve these traditions of conservation for posterity” (Jain, 1998). The two commonly used strategies for conserving plant resources are *in-situ* conservation, which allows evolution to continue within the area of natural occurrence, and *ex-situ* conservation, providing a higher degree of protection to germplasm compared to *in-situ* conservation (Shyam *et al.*, 2002). The conservation of biodiversity cannot be considered alone as the environment cannot be segregated. The International Conference on Human Environment held in Stockholm in 1972 considered socio-religious environment (socio ethnic customs, beliefs, cultural heritage, historical and archaeological sites etc.) as one of human efforts of conserving the plants(Sharma, 2012).

1.1. Rationale

It can be said that the plants are used in every aspect of life. It is very important to study plants in relation with human beings. The screening of other research works revealed study of plants in many ways which points out the use of plants as medicines, food, house building, tools and instruments etc.

The ethnobotanical study was initiated as an official programme in the BSI (Botanical Survey of India) with its inception in the year 1954. As such, S.K.Jain in the 1960's started intensive ethnobotanical study (Jain, 1963a-c, 1964a-b and 1965a-b) among tribals of central India (Mudgal, 1995), he is known as the 'Father of Indian Ethnobotany' (Saha, 1995; Jain, 2016). There were reports of work from around 23 states and union territories and these works belong to 73 tribal groups from all over India (Mudgal, 1995). The research accounts of work from NE India (Jain and De, 1964, Jain and Dam, 1979; Jain and Borthakur, 1980) were also accessible. These reports were from Assam (Borthakur, 1976 a-b; Borthakur and Goswami, 1995; Singh *et al*., 1996), Nagaland (Kemp, 2003), Manipur (Singh and Singh, 1985, Singh*et al*, 1988; Singh *et al.,* 1996), Arunachal Pradesh (Maikhuri and Ramkrishnan, 1992; Gupta, 2006), Meghalaya (Bhattacharjee and Nair, 1978; Chhetri, 2006), Sikkim (Bennet, 1985) and Tripura (Das *et al*., 2009).

In Manipur, the first major research work in ethnobotanical aspects was "Ethnobotanical study of Manipur" (Sinha, 1987a). Later, the researchers worked on "Ethnobiological studies of Manipur valley with reference to museological aspects" and "Floristic study of Tamenglong district, Manipur with Ethnobotanical notes" (Devi, 1989) and (Singh, 1991) respectively. Some of the work and their publications worth mentioning were on medicinal plants (Sinha, 1987b), plants used in medico-sexual purposes (Huidrom, 1996), superstition in botanical folk-lore (Singh and Singh, 1996), ethno-medico-biological studies (Singh *et al.,* 1997), ethnomedicinal uses of monocotyledonous plants (Sharma *et al.*, 2003), wild edible plants (Chakraborty, 2003), seeds of a particular plant (Singh *et al*., 2003) etc. Some recent research publications from Manipur were about medicinal plants(Singh, 2007), traditional

herbal medicine(Devi, 2011), ethnobotany of Chothe tribe (Sanglakpam *et al*., 2012), ethnomedicinal plants (Pfoze *et al*., 2012), medicinal plants (Lokho, 2012), medicinal plants of dermatological care (Devi and Das, 2015), edible bamboos (Premlata *et al*., 2015), wild edible plants (Singh and Binu, 2016) and wild aromatic medicinal plants (Thangjam *et al*., 2018).

However, ethnobotany among tribal cultures of northeast especially Manipur warrants further research categorically focused on individual communities because of their unique and rich cultural traditions of plant preservation and usage. Ethnobotanical study of Muslim community in Manipur appears to be one that has not been studied before although their traditional practices mainstream the use of plants in multiple ways. This study would help identify and document various plants in the region and their usage by the community. Such details are generally recorded in the local folk-songs and folk-proverbs, which if reviewed can unveil a plethora of possibilities that plants have brought into improving human lifestyle since time anon (Medicinal, Food and beverages, Material Culture and Socio-religious etc.). Based on such context, this study would be a rare one and would add value to the existing literature on tribal ethnobotany.

1.2. Ethnology of Manipuri Muslims

The Manipur state is home to different ethnic communities such as *Meiteis* and Muslim (*Pangal/Meitei-Pangal*) in the valley and 33 different tribal groups (34.41 %) in the hills. *Meiteis* form the largest community in the state. Mostly *Pangal/Meitei-Pangal* community is inhabited in the Thoubal district. They are also inhabited in the districts of Imphal East, Imphal West, Bishnupur and Chandel district. The Muslims in Manipur share a population of around 8.4 % out of the total population 28,55,794 (Anonymous, 2011: Total population excludes Mao-Maram, Paomata and Purul sub-divisions of Senapati district of Manipur, due to administrative reasons). The present day Muslims are the inheritors of ancient Muslim fathers and *Meitei* mothers. The Muslims in Manipur are known by a term *Pangal* or *Meitei-Pangal*. The prefixing of *Meitei* to the word *Pangal* exemplifies the strong relationship exists in between the

two communities. However, all communities use the term *Pangal* in more common form to identify this ethnic group (Ahmed and Singh, 2007).

The first Pangal/Meitei Pangal settlement at Chothe Yangbi, Pangal Siphai and Lilong was noted (Singh, 2010). The presence of Muslim community in Manipur is believed to have started from c. 618-85 CE (Ahmed, 2011). There are up to 74 traditional clans (Sagei) among Manipuri Muslims and the first Muslim clan group being Aribam clan that was given by King Naophangba (CE 594-624 CE) (Singh, 1989; Ahmed, 2011). In 1606, the combined force of Cachar and Taraph invaded Manipur under the command of Muhamad Shani, the Nawab of the Southern province of Taraph kingdom (Anonymous, 2004). The transplanting system of paddy and agricultural technology was one of the greatest contributions of the Meitei Pangal towards the economic development and progress of the kingdom of Manipur (Singh, 2017). "They are found in different parts of Manipur in 95 hamlets/villages/sub blocks of town. The Manipuri Muslim (Meitei Pangal) community is considered to be one of the religious minorities and the Government of Manipur issued a notification on the 5th September, 1994 declaring the Meitei Pangals to be belonging to Other Backward Classes (OBC's) of Manipur" (Anonymous, 2004).

1.3. Ethnic association of plants

Some plants were related to Muslims in Manipur as tobacco (*Nicotiana tabacum* L) smoking was introduced in Manipur in 1610. It was recorded that the first mention of *Zea mays* L in the Royal Chronicle in 'Langban' (about September). Muslims cultivated Poppy (*Papaver somniferum* L) but only to a limited extent (Singh, 1992).

It is believed that the different group of people brought plants as they came, still existing terms are Awa thabi (*Carica papaya* L), Awa Phadigom (*Eryngium foetidum* L) and Awa Kege (*Jatropha curcas* L). The word 'Awa' means Burma, currently Myanmar (Ahmed and Singh, 2007).

The diversity in flora is caused by many factors such as sunlight, temperature, precipitation, soil etc. Here, the plant grows faster in summer because of the longer duration of sunlight.Manipur is bestowed with sub-tropical monsoon; hot and wet summer, cold and dry winter. The important rivers in Manipur are Khuga, Imphal, Thoubal and Iril River. The soil of this place is alluvial and peat in the valley and red and laterite soil in the hills (Singh, 2008). Manipur is close to Himalayan region and its hills are actually an extension of the Himalayas (Anonymous, 2016). The altitude of Imphal is above MSL 790 meters and the annual rainfall in 2001 is 967.20 mm (Anonymous, 2002).

The works of ethnobotany of Muslim (*Pangal/Meitei-Pangal*) community in Manipur state is yet to be documented. Keeping this view, the present research plan was proposed to explore plants in ethnobotanical aspects during study period (2012-2016) with the following objectives.

1.4. Objectives

1) To document the traditional medicinal plants used to cure diseases and promote health and well-being.

2) To identify the plants used as food and beverages.

3) To record plants used as material culture.

4) To study the socio-religious use of plants.

1.5. Hypothesis

The following hypothesis is intended to test during the study:

H_0. There is no difference between the various uses of the plants mentioned in Folk-songs and Folk-proverbs.

H_1: There is difference between the various uses of the plants mentioned in Folk-songs and Folk-proverbs.