I. Introductory Account
1.1. **Introduction:**

The utility of plants in human life has been of wide acceptance. The use of plants as a source of medicine dates back to the pre-historic times. Perhaps as early as Neanderthal man, plants were believed to have healing powers. Some of the earliest written records of phytomedicine have been found in Babylonian circa of 1770 B.C. and Egyptian circa of 1550 B.C. (Anna, 1993). In India, the *Sushruta Samhita* attributed to Sushruta in the 6th century BC describes 700 medicinal plants (Dwivedi and Dwivedi, 2007).

Dependence on plants is still seen, especially amongst the tribal and ethnic groups of the world. Today, 75% of the world’s population and three-fourths of the poor still rely on ethnomedicine (Duke, 1990). 20% of the plant flora has, so far been studied and 60% of the synthetic medicines have a plant origin. About 7,500 of the 17,000 species of higher plants in India are known for their medicinal properties.

Indigenous medicinal systems for the treatment of diseases are largely based on the use of bark, roots, leaves, fruits and flowers of different plants. Isolation, structural and synthetic studies have accordingly been directed to the discovery of new natural products (Rahman, 1989). The range of medicinal plants and the potential medicinal compounds in them is vast. The diseases covered by them range from common bacterial and viral infections like cold, stomach troubles, etc., to serious and fatal diseases like hepatitis, cancer and even AIDS.
Phytochemicals of medicinal importance could be broadly classified as oligosaccharides, polyphenols, indoles, isothiocyanates, allylic sulfur compounds, terpenes, phytic acid and saponins (Srinivasn, 2007).

Ethnobotanically derived compounds have been shown to have greater activity than those derived from random screening. Therefore, they have a greater potential for product development (Balick 1990). A total of 47 marketed drugs have been reported to be derived from 39 tropical forest plants (Farnsworth 1988). The search for new molecules, has taken a slightly different route nowadays where the science of ethnobotany and ethnopharmacognosy are being used as guide to lead the chemist towards different sources and classes of compounds. It is in this context that the flora of the tropics by virtue of its diversity has a significant role to play in being able to provide new leads (Gurib-Fakim, 2006).

**IMPORTANCE OF PLANTS IN TRADITIONAL MEDICINAL PRACTICES**

Phytomedicinal plants occupy an important aspect of traditional medicine all around the world. For instance, the folk medicine of Paraguay is well established throughout the entire population. A survey reported 13 species of perennial herbs of medicinal importance, belonging to 9 families (Basualdo et al., 1991). Besides, the Akha tribesmen of northern Thailand are reported to use about 121 medicinal plants in their day to day life (Anderson, 1986). Another field study in Italy recorded several plants of ethnomedicinal value. The ailments treated by these plants range from wolf bites to toothache, head ache and many more (Guarrera, 2005). Of the several plants used by the Albanians of Lepushe, the worth mentioning ones are *Phyllitis scolopendrium* (in respiratory and lung infections), *Lilium martagon* (in liver diseases) (Pieroni, et al., 2005). A huge number of medicinal plants have been documented from Ghagra of Rangamati district in Bangladesh. Some of these are,
Alpinia conchigera Griff., Blumea lacera (Burmf.) DC., Nelsonia canescens (Lam.) Spreng. etc., (Yusuf et al., 2007).

The Ayurveda has been a repository of several phytomedicinal formulations. Medicinal properties have been exhibited by several polyherbal preparations from the Ayurveda (Bhattacharya and Kumar, 1997). In this context, mention might be made of Trasnia, against Alzheimer’s disease. Ashtwarga, a group of eight drugs is employed in preparing a number of rejuvenating tonics (Kumar, 2002).

India has been one of the major sites of medicinal plant biodiversity. The herbal medicinal practices of the huge number of ethnic groups of the country record the use of a wide variety of medicinal plants. During a study, therapeutic effects were seen among 81 drugs from 67 plant species from Karaikal region of Pondicherry (Nadanakunjidam, 2006). Aloe vera (L.), a popular folk medicine is thought to be effective in stomach ailments, gastrointestinal problems, skin diseases and constipation (Noor et al., 2008). Bark, roots and leaves of Premna tomentosa are widely used in the ethnomedicine of Madhya Pradesh. The plant has cytoprotective and immunomodulatory functions (Gayathri, et al., 2007). The genus Drocera has wide range of medicinal applications including hyperglycemia, leprosy, cancer and several others. The major medicinally important species include Drocera indica L. and Drocera burmanii (Jayram and Prasad, 2006).

The northeast (NE) region of India is inhabited by a large number of tribals of various communities. Although the tribal population in this zone is less than 12% of the total tribal population of the country, it constitutes bulk of the population in this region. Tripura, a small state of NE India is a rich site for wide variety of biodiversity. A large number of plants are being used by the several ethnic groups for medicinal purposes. A vast majority of them have still remained unexploited.
These plants have been used by the present day tribes and their ancestors and are of wide usage. They range from anti-carcinogenic, anti-tumorigenic to hepatoprotective, anthelmintic and even active against kidney stones. Of the 275 plant species examined for the treatment of skin diseases and related problems in Northeastern India on the basis of ethnobotanical reports, 224 species have been used for treatment of specific human ailments such as allergies, burns, cuts and wounds, inflammation, leprosy, leucoderma, scabies, smallpox and sexually transmitted diseases. Some of the plant species, include *Artemisia nilagirica* (Cl) Pamp., *Calotropis gigantea* (L) R. Br., *Cannabis sativa* L., *Cassia alata* L., *Cassia fistula* L., *Centella asiatica* L., *Cyclea peltata* Hk., etc., (Begum and Nath, 2000).

### 1.2. Geography and physiology of Tripura state

Tripura is a landlocked hilly state of North eastern India with average altitudes varying from 15m to 940m above the sea level. The climate is tropical and rainfall is during the monsoon.

Located in the North- Eastern part of India, Tripura is the third smallest state. The state is bounded four- fifth by present Bangladesh. It is connected through one fifth of its border by the states of Assam and Mizoram towards the north and eastern borders, respectively. The state has four districts which include North Tripura, South Tripura, West Tripura and Dhalai.

Tripura lies in between 22°56’N and 24°32’N latitude and between 90°09’E and 92°20’E longitudes covering an area of 10,491 sq. km. the Tropic of Cancer passes through the state. The climate is usually hot and humid; temperature ranges from 10°C to 35°C. The maximum humidity is about 88% while the minimum is 40%. The state receives an average of 247.9 cm rains within a year. The
tropical evergreen, semi evergreen and moist deciduous forests of the state cover 77.18% of its total geographical area (Majumdar and Dutta, 2007).

Tripura’s physical feature differs from the north to south. It is a land of high hills, hillocks, and is interspersed with river valleys. To the north, it has four valleys that have been separated by hills with heights of about 1,000 meters. Towards the south, it has open forested land spread over a wide area. The Jampui hills mountain range run along the north east frontier of the state. Bethlianchip with a height of 3200m above the sea level is the highest peak.

Due to sufficient and well-distributed rainfall, the state has an ideal composition of land mass and water housing a large variety of flora and fauna. Recent studies revealed that Tripura possess 1545 plant species. Out of these, there are 379 tree species, 320 species of shrubs, 581 herbs, 165 climbers, 34 ferns, 45 epiphytes, 4 parasites and 16 climbing shrubs. Among these, 7 are endangered, 7 are endemic and 18 are rare species (Kshirsagar and Upadhyay, 2009). Tripura is also the home to the Spectacled monkey (Trachypithecus phayrei) enlisted in the Red Data Book (Mukherjee, 1982).

1.3. Tripura and its ethnobotanical treasure

The climate and soil type of Tripura has made it to be home to a wide variety of plant species, a great percentage of which have well accepted ethnomedicinal uses.

Medicinal plants have a very dignified position in the history of the state. Like the pre historic days, herbal medicinal was the chief form of medicine during the royal period. Majority of the ethnic communities of the state still depend on this form of medicine.
Tripura is a virtual herbarium of a wide variety of medicinal plants. Out of over 1500 species of plants in the state, till now, around 266 have been identified as having medicinal value. The state government has identified around 25 plants as priority species. About 100 medicinal plant species are said to be cultivated or commercially extracted in small quantities in the state.

The formation of the Medicinal Plants Board of Tripura in the state has been a positive step, which proves the State Government's initiative to improve the status of medicinal plants in the state. Appointment of this state level nodal agency is also likely to bring in the much-needed coordination between the different players in the overall development of medicinal plants. In Tripura the medicinal plants are cultivated in the 9 Forest Territorial Divisions with funding assistance from the Medicinal Plants Board of Tripura (Forest department, Govt. of Tripura, 2009).
Figure 1. Study site: Tripura
1.4. About the communities under study

Tripura is a land of several ethnic communities which include 19 tribal and 2 non-tribal groups. Out of these, four tribal (Halam, Darlong, Tripuri and Chakma) and one non-tribal community (Manipuri) have been selected for the present ethnomedicinal study.

1.4.1. Manipuris: People have reported that about a hundred years ago there was a riot in Manipur among the native ruler and the Burmese as a result of Burmese aggression. At that time, the Manipuri king lost the battle and the state of Manipur was taken over by the Burmese. As in most such cases, this was followed by extensive tortures on the natives. As a result, many people from Manipur fled away in small groups to the neighboring states of Assam, Bengal, etc. A group of such refugees had moved to the Sylhet district of Bengal. The people of this particular village and all such villages in Tripura and that of Assam are reported to be formed by people who migrated out from that group.

1.4.2. Halams: The Halams are said to be the descendents of the Kuki group of people and belong to the Indo- Mongoloid racial family. These people are said to have lived in Tripura since hundreds of years. The people of the Kuki tribe who submitted to the authority of the Tripuri Raja came to be known as Halams. The Halams believe themselves to have come from Khurpuihabum, somewhere in Manipur during the reign of King Amar Manikya. Another belief suggests the Halams to have migrated to Tripura through a route through the present Mizoram.

1.4.3. Darlongs: So far, no accurate records regarding the origin and ancestry of the community have been found. However, the people of the Darlong community consider themselves to be of the same ancestry as the Mizos of Mizoram or Hmars of Upper Assam who, in the course of time had migrated to Tripura.
1.4.4. Tripuris: The Tripuri people are descendents of the Tibeto-Burmese ethnic group. They have been reported to have migrated from Western China. Tripuris entered their present country through its north-eastern corner, and settled gradually over the whole of Tripura. These people form the largest tribal population of the state among the 19 tribes of the state.

1.4.5. Chakmas: Ethnically, the Chakmas are of Mongoloid origin. Their ancestors were soldiers of Mughal Emperor Humayun. At the time of Humayun’s temporary defeat from Sher Shah, this group of Mughal soldiers moved Bengal of India to settle in the Arakan. Most of the Chakma people later moved to eastern Bengal (present day Bangladesh and areas of present Mizoram in India). The Chakmas were historically the rulers of Chittagong Hill Tracts under the control of a king. Today, however, the Chakma population of India is concentrated mostly over the states of Mizoram and Tripura.