Introduction

The records of conscious use of plants other than food by human races have been obliterated in remote historical past. When the "Vedas" appeared in written form, the use of plants appeared to be the first documentary evidence as curative agent. The subject ethnobotany gain importance in the beginning of 20th century. In those days it was thought that the knowledge of plants of different ethnic people is the main bowl of ethnobotany. Those people had no written alphabet. It was further conceived that discourses about the uses of plants by these aborigines and ethnic people is the ethnobotany. But the area of ethnobotany is deeper and wider. The whole human races consisting of all sub races, castes groups and within direct or indirect uses of plants and their research investigation, inquiry and discussions is the subject of ethnobotany. These discussions may be aesthetic, utilitarian or historical.

In the year 1895, on 4th December, Dr. John William Harshberger, a professor of botany at Pennsylvania University used the term "Ethnobotany" while delivering a lecture on archaeology. In 1896, this paper was published in Philadelphia Evening Telegraph with a title "some new ideas". That was the point of time when ethnobotany came up to us as a branch of science.

Rural India relies on local traditional medical practitioner for various ailments. Such treatments are ill organised. Some of the local medical practitioners called as 'Kabiraj'/ 'Baidya' – who uses their experiences and inherited knowledge of medicinal plants from several sources – mostly from family knowledge. Tribal healers often use medical knowledge derived from earlier generations – which is quite different from Āyurvedic medical knowledge. Thus there is distinct knowledge – dichotomy between Āyurvedic knowledge and knowledge of medicinal plants and their uses by tribals of various categories. *Āyurveda* means – the knowledge (*Veda*) of the life span (*Ayus*). It teaches how one may utilize the span of life activity by nature. In other terms *Āyurveda*, an ancient science of life is deeply rooted in Indian culture. Most commonly *Āyurveda* has been applied related to medical matters and thus it is justified to say it as medicine

provided to the various ailments. Meulenbeld (1990) observed, "The classical treatises on *Āyurveda*" clearly states that this science can be applied to all living organism.

The *Charak Samhita* begins with the verse –

Athato dirghajiviyiyamadhyam vyakhyasyamah// (Charak Samhita, Su, 1.1)

The English translation is like this:-

"So then we shall explain the lesion about longevity". It transpires from this verse and etymologically *Āyurveda* signifies the knowledge of longevity. The Indian indigenous system of medical treatment has a long history of about 3000 years where "Vedic" people had expertise for utilizing local plants. The ancient system of treatment could be distinctly divided into medicine (*Charak Samhita* – 1000 BC-100 AD) and Surgery (*Sushrata Samhita* – 800-700 BC). However, this system of medical practice confronted with the arrival of colonial medicine. Today's medical treatments are almost the contribution of western medicine knowledge. Ancient medicine was not solely based on empiricism and this is evident from the fact that some medicinal plants which were used in ancient times still have their place in modern therapy (Das and Mondal, 2012). Herbal medicine is still the mainstay of about 70 – 80% of the Indian population and the major part of the traditional therapy involves the use of plant extract and their active constituents (Akerele, 1993). A significant number of wild plants and the purified extracts have shown beneficial therapeutic potentials owing to presence of phenolics, flavonoids, alkaloids, antioxidant compounds etc. There is extensive evidence to implicate free radicals in the development of degenerative diseases. Almost all organisms possess antioxidant defenses that protect against oxidative damage and numerous damage removal and repair enzymes to remove or repair damage molecules.

The genus *Ocimum* of the family Lamiaceae consists of aromatic perennial or annual herbs or undershrub. *Ocimum* is a successful genus of entire dicotyledonous having worldwide distribution. Most importantly this genus includes culinary basil (*O. basilicum*) and the holy basil (*O. tenuiflorum*, Syn. *O. sanctum*). Earliest reference to medicinal uses of holy basil (*O. tenuiflorum*) may be traced to ancient literature like Rigveda and Atharvaveda (Dash and Kashyap, 1987). Most distinctively medicinal uses have been mentioned in *Charaka Samhita* (Ray and Gupta, 1965) and since then holy basil is being worshiped throughout the Indian subcontinent.

Taxonomists have estimated between 63-150 species of *Ocimum*, which includes natural species, natural hybrids and artificial hybrids. Majority of taxonomists felt it is a difficult job to distinguish between some closely related species. This indistinctiveness difficulty arises due to easy hybridity and crossability between species to species rendering difficulty for reproductive isolation – a criterion for specific definition.

The species of *Ocimum* especially *O. tenuiflirum* is widely recognized for its therapeutic potential from time immemorial (Singh *et al*., 2002a). The members of the genus have shown spectacular uses including antiviral, antibacterial, antifungal, larvicidal and insect repellent properties (Chopra *et al*., 1956; Kirtikar and Basu, 1975; Simon *et al*., 1999; Pragadheesh 2013; Pattanayak and Dhal, 2015). Of late, *Ocimum* is used as an important plant bio-resource to shed light on plant association and their communities. It is seen to be grown in varied agro-climatic condition ranging from tropical to sub-tropical regions. India being the tropical country is one of the rich depositories of *Ocimum* species. It is naturally grown mostly in the uncultivated lands, wastelands and along the roadsides. However, the most preferable ecological condition for *Ocimum* species is slightly sloppy to plain, alluvial soils with comparatively high temperature and humidity.

The morphological variation observed within the species of *Ocimum* includes plant height, leaf shape, leaf colour, flower colour, seed shape, seed colour etc. These variations are not well documented and pose a taxonomic puzzle. Taxonomists often find it difficult to classify the species more accurately by their phenotypic characters only. The morphological variation in the genus *Ocimum* is greatly influenced by the environment, therefore, it is necessary to think in a broader perspective implying more sophisticated biological tools. In this context, Random Amplified Polymorphic DNA (RAPD) opens up a new avenue in studying the genetic variation in *Ocimum* species more precisely. Recently, RAPD emerged as accurate and trustworthy molecular technique to investigate the genetic diversity at the DNA level throwing light on plant evolution (Singh *et al*., 2004).

Linolenic, linoleic, oleic and palmitic acid were found as major fixed oil components in different *Ocimum* species. However, these components significantly vary intra

specifically and contribute as important chemical indicator for taxonomical classification (Azhari *et al*., 2009). Therefore, traditional and chemotaxonomy may be combined with molecular markers for characterization, classification and evaluation of different *Ocimum* species, sub-species and varieties.

Dakshin Dinajpur district came up in the year 1991 by the bifurcation of erstwhile West Dinajpur district of West Bengal. Presently Dakshin Dinajpur consisting of eight developmental blocks is a primarily agriculturally sustained district. The principal tribal communities are – Santal, Munda, Oraon along with Scheduled caste communities like Rajbanshis. This district has an old folk culture of using herbal medicines. However, the importance and such use of medicinal plants/plant parts are being lost due to rapid urbanization and deforestation. As a result many useful medicinal plants are becoming threatened and precious knowledge is lost.

Therefore, the present study has been undertaken with the following objectives–

- To document the traditional knowledge of local people in utilizing different wild plant species and their extracts for therapeutic purposes.
- To study the ethnobotanical perspectives of medicinal plants particularly concentrating on *Ocimum* in Dakshin Dinajpur district.
- To study the ecological factors responsible for optimum growth of *Ocimum* in natural habitat and their associations with other plant communities.
- To study the diversity in *Ocimum* adopting morphological, chemical and genetical approaches for characterization, classification and evolution of its genotypes.
- To find out a method for low cost technique for mass multiplication of *Ocimum* for its conservation.