INTRODUCTION
1. INTRODUCTION

Over the years, people have accumulated knowledge about plants and their uses, especially as food and medicine. The knowledge gathered gets transmitted orally and even textually through generations. Many modern medicines have their origin in traditional medical knowledge. This attracts an increasing interest in the scientific study of Human-Plant interaction in the natural environment which is clearly visible among various indigenous groups. Medicinal plants continue to play a central role in the healthcare system of large proportions of the world’s population. This is particularly true in developing countries where herbal medicine has a long uninterrupted history of use. Digitoxin, ephedrine, morphine, quinine, taxol, atropine, artimesinin, digoxin, vincristine, vinblastine and reserpine are some common drugs derived from plants that are very popularly used. The starting point in the development of all these drugs is due to reference about the plants in the traditional system of medicine or in folk the medicine.

Presently, there is worldwide demand for assessing plant resources that are of medicinal and economic values. The World Health Organisation estimated that 80% of the populations of developing countries still rely on traditional medicine, mostly plant drugs for their primary healthcare need (Chivian and Bernstein, 2008). Demands for medicinal plants are increasing in both developing and developed countries due to their growing recognition of the fact that natural products are non toxic, show no side-effects and are easily available at affordable prices. The medicinal-plant sector has traditionally occupied an important position in the socio-cultural, spiritual and medicinal area of rural and tribal families. India, a land of cultural, social and linguistic diversity is endowed with ecosystems of tremendous biodiversity. It is a land of immense
biological treasure in which three out of 34 hotspots of the world are located (Hot spots by region, 2007). It is also one of the 17 mega biodiversity countries of the world (Mitter Meir *et al.*, 1997). India is a goldmine of well recorded and traditionally well practiced knowledge of herbal medicine. The medicinal plants of the area have stood the test of time for their safety, efficacy, cultural acceptability and minimal side effects.

India recognizes over 3000 plants for their medicinal value. It is estimated that over 6000 plants in India are in use in traditional folk and herbal medicine, representing about 75% of the medicinal needs of the third world countries (*Jayashree Rout et al.*, 2012). On every part of the globe where humans have lived, there has developed a body of herbal knowledge. The Medicine-Man and Herbalist undertook, in various ways, to cure Man’s disease and bring relief to the sick. Herbs are considered as food for the body. They are valuable sources of natural medicine, vitamins, minerals and phytochemicals that have a remarkable history of curative effects, when used under the supervision of an experienced and knowledgeable practitioner. They are considered generally safe and do not produce side effects.

In ancient times, Herbalism, like life in general was mixed with magic and superstition. Today with scientific methods, it is possible to determine what is superstition and what is fact. Herbs traditionally used have been put to scientific tests and many have proven curative potential. This is one reason that renewed interest in herbalism as we see it today. Herbs often prove to be effective and safe alternatives to synthetic, unsafe and expensive drugs. Currently, researchers in plant science are focusing mainly, on ethnobotanical and ethnomedicinal investigation to fulfill the increasing demand for herbal products.

Ethnobotany (“Ethnos- peolple and “botany” – science of plants) is the scientific study of the relationship that exists between people of particular culture
and religion and plants in their local environment (Yang, 2007). Ethnobotanists aim to document, describe and explain complex relationship between cultures and (uses of) plants, focusing primarily on how plants are used, managed and perceived across human societies (eg. as foods, as medicines, in spirituality, in cosmetics, in dyeing, as textiles, in construction, as tools, as currency, as clothing, in literature, in rituals and in social life). Though the term “Ethnobotany” was not coined until 1895 by the US Botanist John William Harshberger, teaching at University of Pennsylvania. However the history of this field begins long before that when Greek surgeon Dioscorides published “De Materia Medica” which catalogued about 600 plants in the Mediterranean in AD 77 (Harshberger, 1896).

Greek physician Hippocrates 460 – 377 BC who is often referred to as the “Father of modern medicine” was a Herbalist. He is credited with having written “Let your foods be your medicine And not medicines your food”. A major push by the whole of the pharmaceutical industry is focused on design and development of novel and indigenous plant-based drugs through investigation of leads from traditional systems of medicine (Patwardhan et al., 2004).

Globally 420,000 flowering plants have been recorded (Govaerts, 2001). Among these, more than 50,000 plants have been used for medicinal purposes (Schippmann et al., 2002). India, rich in its own flora has 17,500 species of higher plants, 64 species of Gymnosperms, 1200 Pteridophytes, 2850 Bryophytes, 2021 Lichens, 15,500 Fungi and 6500 Algae as reported. It includes 5725 species of Angiosperms, 10 Gymnosperms, 193 Pteridophytes, 678 Bryophytes, 260 Liverworts, 46 Lichens, 3500 Fungi and 1924 Algae endemic to India (Sanjappa, 2005). Traditional knowledge of medicinal plants and their use by indigenous cultures are not only useful for conservation of cultural traditions and biodiversity
but also for community healthcare and drug development for the present and for the future. In India, plants have been used in traditional medicine for several thousand years. Of the 2500 plant species used by traditional healers, 100 species of plants serve as regular sources of medicine. Many of the methods used for treating injuries and diseases have been passed down through families for generations and some of these have been adopted by the modern systems of medicine (Joshi and Pant, 2012).

India is a veritable emporium of medicinal and aromatic plants. It has been estimated that of the 17,500 species of higher plants, 9000 are commercially useful and 7500 are medicinally important (Rajendran and Gunasekhar, 2006). These plants have been used in different traditional medicinal systems like Ayurveda, Unani and Homeopathy for the treatment of various diseases. They have now assumed great importance owing to side-effects of synthetic drugs (ICFRE, 1993). Traditional healers, Ojhas, Vaidyas, Guniyas and folk healers employed medicinal and aromatic plants to cure patients with different ailments. People have strong cultural bonds between their biophysical environment and social system (Ramakrishnan, 2002). There is a growing demand for plant-based medicines, health products, food supplements and cosmetics in national and international markets (Cavendish, 1985). In recent years, ethnobotanical and traditional use of natural compounds, especially of plant origin, received much attention as they are well tested for their efficacy and safety for human use. There are many remedies among the various traditional systems for cure, for a number of ailments. Therefore, there is a need to tap unexplored plants for their therapeutic potential.
ETHNOBIOLOGY IN INDIA

According to the 1994 status report of the Ministry for Environment and Forest, Govt. of India, ethnobiology is defined as the study of association, interaction and inter-relationship of human societies especially primitive human societies like tribal and aboriginal communities with surrounding flora and fauna. It brings together diverse disciplines such as Botany, Zoology, Anthropology, Linguistics, Sociology, Agriculture, Archaeology and even Geography for the better understanding of both cultural and biological factors involved in the inter-relationships of tribals with plants and animals.

Living close to nature, the tribals acquired unique knowledge about the use of wild flora and fauna not only as food but also as medicine and various other purposes and this knowledge was not known to the outside world. They are settled agriculturist and have a very rich knowledge on plant based resources and their utilization for their survival. They practice folk medicines to take care of their health and related problems primarily from the plant resources available within and in the vicinity of their environment. Forests were their dear homes and their relationship with the forests was symbolic in nature. They utilized the resources without disturbing the delicate balance of the ecosystem. So they mostly remained as stable societies and were unaffected by the social, cultural, material and economic evolutions that were taking place with the civilized societies. But the peaceful coexistence of the tribals had violently shaken in the recent past due to the interference of the civilized societies in their habitats.

There was a sharp decline in the transfer of the oral traditional knowledge gained by the tribals over the years to their educated younger generation as they
were attracted towards modern culture. Hence, there was an immediate need for preservation and for proper documentation. The Traditional Knowledge, if subjected to scientific scrutiny could benefit the humankind in many ways. So, there was an urgent need to launch a coordinated programme on Ethnobiology, since biological sources in the tribal and other backward areas are becoming scarce as a result of their indiscriminate and unplanned management. It was in recognition of such a need, All India Coordinated Research Project on Ethnobiology (AICRPE), was instituted in 1982 by the Minstry of Environment and Forests, Government of India.

**OBJECTIVES OF AICRPE**

1. Folklore survey, collection identification and documentation of plants and animals used by the tribals for food, fodder, fibre, dyes and medicine. Inventory of economic insects like silk worm, lac, bees, termites etc.
2. Collection and conservation of plants used by the tribal people with special reference to wild, cultivated and domesticated plants.
3. Collection and identification of indigenous germplasm of different species of animals with special traits.
4. Phytochemical and pharmacological screening and investigation of promising wild plants or plant parts /animal products used by tribals for medicine, pesticides etc.
5. Inventory of the wild edibles like roots, flowers, fruits etc., and their nutritional evaluation.
6. Investigation of the impact of several myths, totems and taboos observed by tribals related to conservation practices with regard to plants and animals.
AICRPE focused its attention to preserve and conserve all those traditional beliefs and oral knowledge systems that promote conservation oriented practices and sustainable utilization of the local resources. It was essentially a multi-institutional, multi-disciplinary action-oriented research programme. It had started about 24 research centres in the country for the indepth study and analysis of manifold perspectives of Indian tribal life, culture and tradition. During its phase-I period from 1982 – 1988, ethnobiology study of about 65% of the tribal areas in the country was carried out and during phase-II that started in 1989, exploration of more than 20% of the tribal areas was completed. It is still an ongoing programme.

As per the reports of AICRPE, the Indian subcontinent is inhabited by over 53 million tribals belonging to over 550 tribal communities that come under 227 linguistic groups. They live in different geographic and climatic zones of the country. Their vocation ranges from hunting-gathering, cave-dwelling nomadics to societies with settled culture living in complete harmony with nature.

**Region-wise Classification of Tribal Concentrated Regions of India**

Based on the tribal population in tribal concentrated regions of India, Six regions were identified as per the census of 1981. The states included in each region and the % of population are:

1. **Central Tribal Region** – Madhya Pradesh, Orissa, Bihar, Andhra Pradesh and West Bengal (58.03%).

2. **Western Tribal Region** – Maharashtra, Gujarat, Rajasthan, Dadra and Nagar Haveli, Goa, Daman and Diu (28.85%).

3. **North Eastern Tribal region** – Meghalaya, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, Sikkim and Asam (7.12%)
4. North Western Tribal region  –  Himachal Pradesh and Uttar Pradesh (0.83%)

5. Southern Tribal region  –  Karnataka, Kerala and Tamil Nadu (5.15%)

6. Island Tribal region  –  Lakshadweep, Andaman and Nicobar (0.12%).

Occupation of Tribals

With regard to nature of occupation, they are Hunters and food gatherers, Bird catchers, Wage earners, Labourers, Sellers of forest products, primitive agriculturists, Iron smelters, Shifting cultivators, Basket makers, Fishers, Cattle grazers, Honey collectors, Wood cutters, experts in Black Magic, Medicine men, Rope makers, Monkey catchers, Elephant drivers (Mahouts), forest plantation workers, Porters and some are skilled in horticulture.


Even now, due to poor condition of modern healthcare facilities, poverty, in-accessability to modern treatments, people of tribal and rural areas depend on medicinal plants to cure various diseases. Herbal medicines have regained in the recent times an international acceptance in restoration of human health.
Development of herbal medicines is an outcome of scientific study undertaken on the medicinal plants used in folkmedicine. Traditional and indigenous systems of medicines persist all over the world. The unique traditional system of health care, which progressed from generation to generation within the society is still prevalent within the remote and rural areas of the country. When the number of traditional healers dwindle, there is a danger of losing the treasure of traditional ethnobotanical knowledge, playing a vital role as an accessible cure for different ailments in rural areas even today. Therefore, there is an utmost need to document the flora of remote areas of the country along with available traditional ethnobotanical knowledge. Further, investigating the phytochemical constituents and their importance in anti-microbial activity and antioxidant potential has gained significance in scientific validation of ethnomedical uses. Hence, the present study is aimed at:-

**OBJECTIVES OF THE STUDY**

1. Survey, collection, identification and documentation of flora (qualitative type) of the Udayagiri hills.
2. Enumeration of flora with ethnomedical uses.
3. Qualitative studies of phytochemical constituents in selected plant species.
4. Quantitative estimation of certain phytoconstituents in selected plant species.
5. Studies on Antimicrobial activity in selected plant species.
6. Studies on Antioxidant potential of selected plant species.
7. Gas Chromatography Mass Spectrometry (GC-MS) studies on selected plants.