Chapter I

Introduction
I. INTRODUCTION

1. GENERAL INTRODUCTION

The Science of medicine is said to have its origin in India, as evident from the written records of the material health care system, dates back to almost 5,000 years and still it is in practice.

Man, ever desirous of knowledge has already explored many things, but more and greater still remain concealed, perhaps reserved for far distant generations who shall prosecute the examination of their creator's work in remote countries and make many discoveries for the pleasure and convenience of life.

The organic world is sustained by plants through the fundamental process of photosynthesis. Plants have provided all basic needs of man ever since his birth and evolution. Plants are the sources of food medicine, fuel and others. Even before the beginning of agriculture, man must have eaten some plants to satisfy hunger and regulate his digestive system and cure different diseases. As civilizations developed people identified and used many plants for all his basic needs.

The primitive man mainly dependent on the forests and forest resources for his survival, started examining the properties using trial and error and obtained beneficial properties. This valuable information has been preserved as family secrets.
The collection, documentation and preservation of folklore information laid the foundation to the subject Ethnobotany.

Many of the scientists defined the term Ethnobotany and tried to give better explanation from time to time. Generally it is the study of all aspects of the relationships between man and plant resources. Power (1874) coined the term "Aboriginal Botany" for the study of plants which were used by ethnic group of people, who were confined to geographical area, particularly in and around the forest resources.

Vast ethno botanical knowledge exists in India from ancient time. Since the 1950's the study of ethno botany has been intensified; many books and paper have been published. The work for over four decades, both in the field and literacy studies, has resulted in a dictionary of Indian folk-medicine and ethno botany that includes approximately 2532 plants with medicinal value. The flowering plants estimated presently are about 2,50,000 species, of which 1,50,000 are said to be growing in tropical countries, about 85,000 species in Latin America, 21,000 in Africa and about 50,000 in Tropical Asia. Survey and enumeration of plant species present in many countries is either incomplete or non existing and the number suggested above are approximate ones (Mandelsohn and Baliak, 1995; Prendergast etal, 1998). India has about 45,000 plant species and medicinal properties have been assigned to several thousand. About 2000 are frequently found in the literature, but indigenous systems commonly employ 500. Despite early (4500 - 1500 BC) origins and a long history of usage, for the last two centuries Ayurveda has received little official support and hence less attention from good medicinal practitioners and researchers. Much work is now being done on botany, pharmacognosy, chemistry, pharmacology and biotechnology of herbal drugs. The value of ethnomedicine has been realized; work is being done on psychoactive plants, household remedies and plants sold by street drug vendors. Statistical methods are being
used to assess the credibility of claims. Some recent work in drug development relates to species of *Commiphora* (used as a hypo-lipidaemic agent), *Picorkzia* (which is hepatoprotective), *Bacopa* (used as a brain tonic), *Curcuma* (anti-inflammatory) and *Asclepias* (Cardiotonic). A scrutiny of folk claims found 203 plants for evaluation. A few well known ethnomedicines have been identified that are used to treat intestinal, joint, liver and skin diseases (Jain SK. 1994) Ethnobotany and research on medicinal plants in India is mainly carried out by Institutions like National Botanical Research Institute, Lucknow, India.

Folk medicine in the region is full of recipes for curing various diseases. Ethnobotanical information is of great interest to pharmacological study while ethno-art and crafts display indigenous technology. Ethnobotany can be developed into an instrument of socio economic transformation of the poorer section of the people. As a consequence of the revival of "natural" products in the last few years, the market has been invaded by a wide range of products elaborated on the basis of plants.

The potential of the regional flora and vegetation is still incompletely known. The inventory and conservation of the medicinal and aromatic plants is performed within analysis of the whole vegetation. The whole territory undergoes the increasing impact of degradation, which becomes desertification in certain areas. Knowledge of bio-diversity at the specific and infraspecific levels is an urgent task, before it is affected by degradation. Different methodologies are applied to achieve this objective. The continuous exploration of the territory, the phytosociology, the Chorology, and the Geobotanic Cartography are valuable assistants of the Taxonomy.
Most of the achievement ingredients in chemically manufactured drugs were originally derived from plant compounds (e.g., the pyrethroids). In many developing countries, medicinal plants are still being used on a regular basis. In developing countries, medicinal plants often are more accessible than manufactured drugs.

The herbal medicine trade is booming business worldwide. In India, for example, there are 46,000 licensed pharmacies manufacturing traditional remedies, 80% of which come from plants (Alok, 1991 in http://peopleandplants.org/wpl/africa.htm).

The World Health Organisation (WHO) recognised traditional medicine or herbal medicine about 20 years ago and started exploring the possibilities to improve or popularize the herbal medicine already used by the people in developing countries of the world for thousands of years. The state of the art was reviewed in different countries (Alkerleelal 1991) and a conservation strategy was setup for better utilization and management of plant natural resources (Hamann, 1991; Hussain 1991). Almost 90% of the rural people in the developing world depend on herbal traditional medicine. WHO attempted to list all plant species about 20,000 used medicinally and later a database was established for about 9,200 species in USA (Fransworth and Soerjarto 1991). Almost 28% of all the 2,50,000 higher plant species present on the earth, nearly 70,000 species are used for medicinal purposes (Rao 2000).

Robbins et al., (1916) gave a broad definition to the area of Ethnobotany as the investigation and evaluation of the knowledge of all phases of life amongst the primitive societies and dealt with the effects of the plant environment upon the life
customs beliefs and history of the tribal people. Schultes (1962) explained ethnobotany as a science that requires an interdisciplinary approach.

Ethnobotany is a synthetic science which involves different branches of the subjects such as Botany mainly taxonomy, Phytogeography, ecology, anthropology, sociology, medico-botany, pharmacology, toxicology, phytochemistry, archaeology and even psychology. All of these aspects were considered by the scientists, studying the Ethnobotany.

One of the most important contributions of Ethnobotany to the society is natural medicine. The other beneficial aspects of Ethnobotany are food, shelter, fiber, dyes, fodder, non wood forest produce (NWEP) etc. Since from the beginning of human civilization, plants were believed to have healing properties and they were found even in Rig-veda, believed to be the be earliest record on medicinal plants in India. Detailed account on medicinal properties were found in Chikista-sthanam of Sushruta Samhita. The traditional medicine are popularized among the civilised people through the rural herbal healers who were developed by a strong interaction with the forest resource. They become repositories of folklore medicine and hence attempt was made to inquire into the countries old secrets of traditional medicine.

Most of the people believe that Allopathy, a modern health system developed in Western countries of which all are of synthetic drugs which is not evidenced by rational origin and the use of allopathic drugs shows adverse side effects.

According to the survey of World Health Organisation, it is estimated about 80% of the people still depend on traditional medicine for their Primary Health Care (Fransworth et al., 1985).
Present scenario the herbal care getting world wide acceptance and emphasizing scientific evaluation of wild drug yielding plants created new vistas in finding new sources of alternative medicine. The traditional herbal drugs which are used in indigenous system of medicine gained maximum global importance (Cox, 1990).

The ethnobotanical studies also help in resolving conservation strategies. These studies provide significant framework for utilisation of traditional knowledge in deriving conservation strategies. Most of the raw drugs are collected from forest resources. This over harvesting and destructive collection techniques leads to the local extinction of important medicinal plants. The tribal people protect them by attaining sacredity to such potential medicinal plants (Cox 1970).

Medicinal plants are being used in India either directly as folk medicine or medicaments of different ancient system of medicine like Ayurveda, Sidha and Unani. About 7,500 plant species are being used in different medicaments out of 40,000 medicinal plants described in India. The credibility of these systems of medicine depends on the availability of authentic raw material in sufficient quantities.

The modern Phyto-Pharmacologists are modifying the pure drugs to enhance its activity and to reduce toxicity. These are called semisynthetic drugs. They are provided by rational base. But synthetic drugs which do not have any rational base may lead to acute side effects. A plant is a natural pharmaceutical industry which produces different secondary metabolites that are commercially used as flavours, fragrances, bio-pesticides, pharmaceuticals - Havours.

India played active role on understanding the chemical and pharmacological investigations of plants employed for thousands of years in
Ayurvedic and other native systems of medicine and parally with modern medicine as a part of comprehensive health care programme. This also achieved great success in the people of republic China (Ayensu, 1978).

The indigenous medicine and pharmacoepia have been standardized through teaching and research. In recent part much work in this science has been done in United States, England, France, Mexico, India etc. (Minnis 1976).

Ethnobotanical research in India got flourished when the department of environment and forests, Government of India launched the multidisciplinary study. All India Coordinated Research Project on Ethnobiology (ICFRE) in 1982 started with a view to conducting exhaustive survey and study of plants and animals used by various tribal populations in India. Government of India established several institutions such as Central Institute of Medicinal and Aromatic plants (CIMAP) Lucknow, Central Drug Research Institute (CDRI) Lucknow, Tropical Botanical Garden and Research Institute (TBGRI) Tiruvananthapuram and many local universities have put considerable efforts to gather information on medicinal uses of plants from different forest inhabitants. A few of institutes isolated the lead compounds from potential crude drugs based on the traditional information.

India's traditional medicine as part of honored time tested culture that still intrigues people today in developing countries. Ethnobotany is four decades old in India and during this period more than about 1200 papers have been published on various aspects (Jain & Srivastava 2001). There should be continuous effort on documentation from each class of people in India, who hide the novel medicinal properties from their surrounding environments. The sources of information in India are old people, housewife, rural people, witch doctor, tribal heads, who have
families touch with treating different ailments with plants. The healers in rural people are called Natuvaidhyas.

Based on thorough understanding of the ethnobotanical knowledge from different sources of information the present investigation was taken in a small geographical area for ethnobotanical survey. The survey is to document the medicinal properties of plants present in Nigidi forest range in Anantapur district of Andhra Pradesh. The primitive people (adivasi) inhabited in and around the forests of Nigidi range are widely using the medicinal plants for healing different ailments. The details of physiography types of forests and the adivasi were discussed in detail.

In addition to documentation of medicinal properties from adivasi the crude drugs were subjected to phytochemical analysis to understand the distribution of various classes of secondary metabolites. The crude drug extracts were further tested for its bio assay on selected human pathogenic microorganism in order to know the biodynamic activity.

1.2. Physiography :

Andhra Pradesh is the fifth largest and fourth most populated state in India. It occupies the eastern side of peninsula and southeastern part of India. The state situated between latitudes of 12°40' and 19°54' N and longitudes of 76°50' and 84°54' E, displays a considerable amount of diversity in Phytogeographic, socio economic conditions. The Anantapur district is one of the southern most district of Andhra Pradesh (Fig - ). Geometrically the district is located between 13°14' and 15°14' North latitudes and 76°47' and 78°26' east longitudes.

Geological formations of the Anantapur district can broadly be categorised into two distinct and well marked groups an older group Archean rocks and an
younger one of sedimentary rocks of Cuddapah and Kurnool systems. Rocks belonging to the laterite formation cover the area of Tadipatri taluk and the eastern parts of Gooty, Singanamala and Kadiri taluks. The remaining of the district are composed of older archean group of rocks.

The hill ranges of Anantapur district are not named specifically. The district possess certain valleys, popularly known as 'Konas', which possess scarcely distributed vegetation in and around.

The present investigation focused on ethnobotanical survey on seminomadic tribes in Nigidi forest range is Anantapur district.

1.2.1. Physiography of Nigidi Forest Range:


1.2.2. Soil:

The soils of the Nigidi forest range is of two kinds (1) Black cotton soils 2) Red and Gravely soils. The soil is mostly derived from disintegrated rocks with occasional quartz formation. It is often gravelly and occasionally mixed with boulders of varying sizes and varies from red sandy ferruginous loam to clayed loam normally lacking in organic matter.
1.2.3. Climate:

Four climatic seasons are observed based on the temperature, rainfall. Summer season starts from March and probably end with May. Southwest and northwest monsoons fall in June and November. The remaining period of the year is cold season. The mean daily maximum temperature ranges from 25.6° - 35.5°C in summer and 16.8°C - 28.7°C in winter season. The average annual rainfall loses its significance due to abnormal variations from year to year.

1.2.4. Vegetation:

The area of Nigidi range forest is 12074.37Ha According to champion and seth (1964), forest in Nigidi range is mainly of southern tropical dry deciduous type and classified as 5AC3. The top story is comprised Albiza amara, A. chinesis, Alangium alvifolium, Anogeissus latifolia, Bauhinia racemosa, Cassia fistula, Cochlospermum religiosum, Dalbergia paniculata Gardenia gummifera, Gmelina asiatica, Lannea coromandelica, Madhuca longifolia, Tectona grandis, Terminalia spp., etc. The middle story consists of Atlantisa monophylla, salanctes roxburghii, Ata Bauhinia racemosa, Capparis sepiarea, Carissa spinarum, Chloroxylon swietenia, Erythroxylon, monogynum, Givotia rotteriforins, Grewia, spp. Etc. Hardwickia binata, Morinda tomentosa, Pavetta parvi flora, Securenega lucopyrus, etc. The common climbers are Abrus precatorius, Ampelocissus tomentosa Asparagus racemosus, Capparies zeylanca, Cissampelos pereira, Cocculus hirsutus, Deccalepis hamiltonnii, Gymnema sylvestre, Hemidesmus indicus, Cerogepia spp., Tinospora etc. Some of the exotic species are found in the forest boundaries (Ecotones) like Calotropis spp, Azadiracta, ficus spp, Prosofis juliflora, Euphorbia antiquorum, E. Caducifolia, E. tirucalli, Opuntia stricta, Lantana camera etc. some aquatic angiospermic plants in wetlands of
Fig. 1. Map of Andhra Pradesh
Fig. 2 Map of Nigidi Forest Range

Anantapur (Andhra Pradesh)
forest range are *Bacopa monnierii*, *Cyperus* spp. *Fimbristylis* spp. *Monochoria vaginalis*, *Typha angustata*, *Utricularia* etc.

The bottom flora at forest is dominated by *Cymbopogon* spp., in monsoon season. In addition *Aphysicarpus* spp., *Barleria* spp., *Blepharis* spp., *Cassia absus*, *Cynotis* spp., *Crotalaria* Spp., *Euphorbia fusiformis*, *Oldenlanida* spp., *Vicoa indica* etc. are also present.

1.3. **The People:**

The sudras are most popular, people in the research area. The important tribes in sudras distributed in Nigidi forest range area, balijas, Kapu, Kamma, Kuruva, Boyas (Valmiki), Manali (Naeeibrahmins), Idigas, Odderas, Chakali (Candri), Madigas and Mala (Harijans). They speak telugu.

1.3.1. **Ethnology of the Tribal people:**

Tribals, the distinct groups, usually confined to definite geographica areas speak common dialect. They form a considerable percentage of total population in certain regions of India.

Tribal people of India mostly live in forests with, plateaus and naturally in isolated regions. The Tribes are most popularly termed as Adivasi (Anusichit Janjit - Scheduled tribe). There are altogether 550 tribal communities all over India. According to 2001 estimates (Source : Ministry of Welfare, Government of India, Annual report 2002), the scheduled tribe population in the country is constituting about --% of country's total population of 100 million. It is estimated that the predominant tribal areas over about 15% of total geographical area of the country.
There are about 33 tribes and 60 other small tribes in Andhra Pradesh. The tribal population of million which constitute % of the state's total population of state. The main tribes of Anantapur district and especially inhabiting in and around Nigidi forest range are namely 1. The Erukalas, The Sugalis and the Yanadis.

The Erukalas:

The Erukalas, one of the major scheduled tribes of Andhra Pradesh inhabit more or less a compact area in the plains spread "Eruka" which means foresight or disclosing the facts about the futures, the present and the past of one's life.

The Erukalas are medium statured with well built bodies dark brown to dark skin, coarse, straight and black or dark brown hair and dark brown eyes (Fig. 5). The dress of the Erukalas is very simple and scanty. Tattooing (Pachha) serves not only the purpose of decoration but also denotes religious beliefs and social values among this tribe. It is believed that it gives protection from evil eye and relieves of body pains.

The settlement of the Erukalas is known as Erukula geri. All the houses are constructed with stones and bricks with a roof covered by palm leaves or grass. The huts are conical or oblong. The Erukalas have marriages with the people who live in and around their villages. Monogamy is the most common, but polyandry is strictly prohibited.

The economy of Erukalas is very poor. They get their livelihood from making baskets, ropes and twines from fibers, stings and ropes for drawing water and tethering animals and children's toys out of Palmyra leaves. The baskets made by them are mainly used for exporting fruits and betel leaves. Pig rearing is the secondary occupation. Some of their women are engaged in Gadde or Sodi or
Eruka i.e., fortune-telling tattooing and selling dry curry leaves, Karepaku (*Murraya Koenigi*).

**THE SUGALIS:**

Lambadis are known as Sugalis in Telugu speaking areas. Sugalis are one of the major tribal populations, largely distributed in Puttaparthi, Gorantla, Nallamada, Kadiri, Mudigubba, Rayadurg, Madakasira etc. In Northern states of India they are known as Banjaras. The name Banjara the corruption of Sanskrit word Lambada might have been derived from the word Lavana meaning salt, since their forefathers were traders of salt.

The Sugalis are good statured with fair complexion, dolichocephalous, with oral face, black or brown eyes, straight nose and long sky hair. Men's dress is very simple with a shirt of handloom cloth a dhoti and a turban on their head. The women wear patch - work petty coats and light fitting bodies of some material with several row of bead necklaces while their arms are covered with bracelets upon the elbow. The settlements of the Sugalis are clusters of crude huts called thandas, located at some distance from the established villages. The huts are oblong or square like in rows with a street in between. Each thanda or caravan has a chief known as Naik (head man). The Sugalis eat all kinds of meat including fouls and pork. Both female and male are addicted to heavy drinking, toddy is their favorable beverage. The Principal deity is lord "Krishna".

The Sugali have new opportunities to work for their socio-economic betterment. Most of them have taken to pastoralism, agriculture and various types of Labour. Their women collect forest produce and sell firewood out of sheer economic necessity.
The Yanadis:

The Yanadis are numerically, the third tribe in the state of Andhra Pradesh. They are mostly concentrated in Nellore, Chittoor, Prakasam, Guntur, Cuddapah districts and in a few parts of Anantapur District.

These tribals are characterized by dark skin color, short stature, platyrrhine nose, long head, prominent chin, thick lips and scanty hair both on head and body (Thurston 1909).

The settlement of the Yanadis is known as gudem, which ordinarily consists of 20 - 25 huts. The huts are conical, crudely built of bamboo covered with Palmyra leaves, grass or millet stocks with a small entrance.

Each gudem has a head man called pedda yanadi or kulampedda who exercise general social control over the inhabitants of a settlement.

The economic system of the Yanadis is so simple that they have no concept of "future". Hunting and catching rats from fields and collecting honey are their main occupations. They also hunt pigs, squirrels, rabbits, deers, fouls etc., further they catch and collect the skins of snakes to sell in local markets.

Objectives of the Present Investigation:

The present investigation was focused on documentation of medicinal properties of plants used by tribal people with the following objectives.

❖ Identification of hot spots in which the tribal inhabitations are rich and possessing valuable information regarding the therapeutic properties of crude drugs.
• Intensive and extensive field explorations to collect the medicinal plant species in the Nigidi forest range.

• Taxonomic analysis and systematic evaluation of drug yielding plants used for both human health and care purposes.

• Preservation of medicinal plant species in form of herbarium.

• Collection of raw material of certain crude drug yielding plants for preliminary phytochemical analysis.

• Bio-assay experimentation for evaluation of different solvent extracts using In-vitro antimicrobial studies.

• Isolation and chemical characterization of essential oils from certain potential crude drug samples.