1. INTRODUCTION

1.1. General Introduction

Nature has served as a rich repository of medicinal plants for thousands of years and an impressive number of modern drugs have been isolated from natural sources, notably of plant origin. Herbal medicine, based on their traditional uses in the form of powders, liquids or mixtures, has been the basis of treatment for various ailments in India since ancient times.

Plants are fundamental to almost all life on earth providing protection and sustenance to other organisms. Plants have played an integral part in the evolution of human culture, their physical and chemical properties providing not only an invaluable source of food, but also a whole range of material benefits in the form of shelter, clothing and medicine, thus remaining fundamental to their physical, spiritual and social well being. Plants which are nature's precious gift to mankind have health enhancing properties.

Ever since the dawn of civilization, plants have served mankind in a various ways and man has been continuously using them for the treatment of various ailments and as food, fodder, fuel etc. Hence early man's way of life and his diet system and our assessment of his dependence on plants, deserve a critical study for better utilization of plants in the service of mankind.

Plants constitute one of the richest natural resources of the world, on which depends the well being and prosperity of not only mankind but the entire animal kingdom. In ancient times, humans lived in the lap of nature and attributed divine qualities to it.

"IF WE CARE FOR NATURE, WE CAN BE RICH, BOUNTIFUL AND INEXHAUSTIBLY SUSTAINABLE" - DALAI LAMA.

The use of herbs as complementary and alternative medicine has increased dramatically in the last 20-25 years. According to World Health Organization (WHO) traditional medicines are relied upon by 65-80% of the World's population for their
primary health care needs. Over three quarters of the world population relies mainly on plants and plant extracts for health care. More than 30% of the entire plant species at one time or other was used for medicinal purposes. Of the 2,50,000 higher plant species on earth, more than 80,000 are medicinal. India is one of the world’s 12 biodiversity centers with the presence of over 45000 different plant species. In India, medicinal plants origin has been used in traditional systems of medicines such as Ayurveda, Siddha and Unani since ancient times. The Ayurveda system of medicine uses about 700 species, Unani 700 species, Siddha 600 species, and modem medicine around 30 species.

People on all continents have used hundreds to thousands of indigenous plants for treatment of ailments since prehistoric times. Medicinal plants, since dawn of civilization, have been used in virtually all cultures as a source of medicine. There is growing interest in medicinal plants as a re-emerging health aid has due to the rising costs of prescription drugs in the maintenance of personal health and well-being and the bioprospecting of new plant-derived drugs.

India was one of the foremost developed countries in ancient times. Learned persons of Vedic culture were quite aware regarding unimaginable obligation of plants for the very sustenance of animal life. They have also realized that there is no conduct of life where the plant kingdom does nor match its contribution like food, fuel, shelter, fiber, fodder and medicine.

Ethnobotany is considered a branch of ethnobiology, the study of past and present interrelationships between human cultures and the plants, animals, and other organisms in their environment. Like its parent field, ethnobotany makes apparent the connection between human cultural practices and the sub-disciplines of biology.

Ethnobotany is the systematic study of the relationships between plants and people. The term "Ethnobotany" was coined in 1895, by J.M. Harshberger, and used the term for the study of plants used by primitive and aboriginal people. Many 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 relationship between man and plant resources. Power (1874) coined the term "Aboriginal botany" for the study of plants which used by ethnic group of people, who were confirmed to geographical area, particularly in and around the forest resources.
The tribal communities are the storehouses of accumulated experience and knowledge of indigenous vegetation. In the last three decades the studies of ethnobotany in the world is greatly emphasized, particularly in the under-developing countries, her small or large portions of populations still depend on natural resources in particularly indigenous condition and the impact of modern systems of medicine has not reached them.

The study of the relationship between man and his ambient vegetation is called ethnobotany. Powers (1874) used the term 'aboriginal botany' which meant a study of the plants used by aboriginals for medicine, food, textiles, fabrics, ornaments etc. Harshberger (1896) used the term 'Ethno-botany' for the study of plants used by primitive and aboriginal people.

Man-plant relationship can be classified into two groups viz., a) abstracts and b) concrete. The abstract relationship includes faith in the good or bad powers of plants, taboos, avoidances, sacred plants, worship and folklore. The folklore includes not only fables or verses about or having references to plants but also similes and metaphors based on plants. The concrete relationship includes mainly the materials used such as in food, medicine, house building, agricultural operations, other domestic uses, trade or barter, plants in fine arts and culture like painting, carvings and house decoration and acts of domestication, conservation improvement or destruction of plants.

The source of ethnobotany knowledge is many. Archaeological sources viz., ancient engravings, monuments, art forms and excavations provide rich literature on uninvestigated uses of medicinal plants. Contemporary reports of anthropologist, travelers and other also provide valuable hints. Millions of worldwide dried plants specimens maintained in herbaria contain a wealth of notes on their medicinal uses. The use of plants by tribals is the best source which offers significant information. The tribal societies are storehouses of accumulated experience and knowledge of indigenous vegetation. From a practical view point, tapping aboriginal experience is an unrivalled shortcut to laboratory investigation of the properties of the myriad species of plants in the world.

As the scope of study and enquiry in ethnobotany has been extending beyond ordinary realm of botany and has significant input of medicinal science, the work become interdisciplinary. Many lines of interdisciplinary researches have emerged under more specialized titles like ethnopharmacology, ethnomedicine,
ethnogynaecolgy, ethnopediatrics, ethnoagriculture, ethnoagriculture, ethnobiology, ethnotoxicology, ethnonarcotics, archeoethnobotany, ethnomusicology etc.

Studies on ethnobotany in India have opened up fantastic new visits about folk-medicine, because tribal communities in India occupy mainly the forest regions, they are the children of forest and they have been totally submitted to the forest setting since agesforest provides them food, medicine and other material requirements and satisfies their deep rooted sentiment and conditions.

Chaudaru (1986) based on a review study of tribal health disease and treatment noted that quite often it is said that the tribals are so tradition oriented that they do not use the modern facilities. Perhaps there is a need to examine it properly. Since studies have indicated the strong faith in traditional method of treatment. traditional and modern, operate side by side in the same situation. In fact the inadequate nature of modern facilities available in most of the tribal areas is often responsible for the lack of faith in modern treatment.

In India several premier institutions such as Council for Scientific and Industrial Research (CSIR), Central Institute of Medicinal and Aromatic plants (CIMAP) have put in considerable effort to gather information on medicinal plants used from different parts of the country. Some of these institutions are even screening the plants identified by ethnobotanical studies for their phytochemical and biological properties. CIMAP is also involved in developing appropriate agrotechnology for growing medicinal plants.

India with its vastness, multiethnic tribes and diverse vegetation, is one of the greatest emporia of ethnobotanical wealth. In Andhra Pradesh, according to a survey of medicinal plants unit CCRIMH (Central Council for Research in Indian Medicine and Homeopathy, New Delhi), information on 700 medicinal plants are available. Most of this information is fragmented and region specific and it is not uncommon to notice that the same plant has different medicinal uses in different tribes. The state has 33 main tribes and 60 other small tribes according to data available with the social welfare department. A detailed systematic ethnobotanical research in the entire state has not been undertaken so far.

Ellis (1987, 1990) while working on Flora of Nallamalais collected 500 species from this district. Raju and Puliaiah (1995), who worked on Flora of Kurnool district, enumerated 1065 species belonging to 136 families. Thus the district is very much rich in plant wealth.
Literature reveals that more work and more emphasis were given to tribes residing in Nallamalais than the tribes of Yerramalais. Exploration of Yerramalais has not carried out so far and to find out new methods adopted by Sugali tribes to cure various diseases. Ethnobotanical studies of Yerramalais has largely remained unexplored and with the present policy of conservation, protection and utilization of forest plant resources and subsequently development and uplift of tribals, such detailed data at district level is all the more an urgent need. It offers ample scope for ethnobotanical studies.

In the light of above observations and increasing necessity and importance of ethnobotanical research for the welfare of human beings, the present study has been taken up. With this background the present work has been taken up to fulfill the following objectives.

- **Identification** of Sugalis in Yerramalais, who are possessing rich valuable information of medicinal plants regarding their therapeutic properties as drugs.
- Intensive and extensive field explorations to collect the medicinal plant species in Yerramalais.
- Taxonomic analysis and systematic evaluation of drug yielding plants used for both human and veterinary care.
- Audio-Video Digital Documentation of Ethno-medico-botanical information on medicinal plants used by Sugalis, local herbal healers (Natu vaidyulu) and vendors.
- Identification of Polyherbal formulations of crude drugs and their uses by Sugalis.
- Preservation of medicinal plant species in the form of Herbarium.
- Qualitative and quantitative phytochemical screening of selected plants.
- To evaluate the efficacy of the herbal drugs through invitro antimicrobial studies.
- Conservation of endangered plants.
- Establishment of Peoples Biodiversity centers at village level.

The information gathered from aboriginals would give a comprehensive database of the wild plant resources, which can be used for further scientific investigations by the biologist and phytochemists. The enquiry into the unknown starts and is the search and research which keep adding new drugs and new foods to the welfare of mankind. Preliminary phytochemical screening provides valuable
information for the pharmacological screening of promising fractions of a particular plant extract. It may also help future workers to select a group of plants having similar constituent of a particular class to isolate biologically active principles. Antibacterial activity of plant extracts give scope for further elucidation of chemical substances responsible for the action. It is ardently desired that these efforts should finally help in large measure, a better understanding of the plant resources of our country.

"Conservation of Natural Resources is the only way of prosperity".

1.2. Physiography
1.2.1. Topography of Research area

Kurnool was the capital of the Andhra Pradesh state from 1st October 1953 to 1st November 1956. The name of the district is said to have been derived from "Kandena avolu" the telugu name by which it is referred to in the literature of the past.

Kurnool district is situated between eastern longitudes of 76°58' - 78°56' and northern latitudes of 14°54' - 16°14'. The district is bounded by Prakasam district on the east, Anantapur and Kadapa district on the south while Ballary district of Karnataka state forms the western boundary. Kurnool district is the third biggest district in Andhra Pradesh and is the second biggest in Rayalseema region with an area of 18,799 Sq. kms, (Fig. 1) which accounts for 6.42 per cent of the total area of A.P state (2,75,068 sq kms) and 26.26 percent of the total area of the Rayalseema region of the state (67,299 sq.kms). At present the district comprises 3 revenue divisions, 54 revenue mandals, 53 mandal Prjaparshads, 821 Grampanchayats and 918 revenue villages.

The district is broadly divided into three areas. The Nallamalais, Yerramalais and Plains. The Nallamalais are located on north eastern and south eastern parts of the district and range in altitude from 350 to 910 m above mean sea level (MSL). The Yerramalais divide the district into two well defined tracts from east to west. The Yerramalais scarcely exceed at any point 606 m in height.

Yerramalais are the parallel range of Nallamalais forest of Eastern Chats of Kumool district. Yerramalais begin at Yamavaram in Jammalalmdugu mandal of Kadapa district and run northwards about 13 kms terminating near Kurnool. The eastern extensions of this range are referred as the Panyam, The Bethamcherla and Upplalpadu hills. Yerramalais receives very low rainfall and they come under the southern thorn forest. Yerramalais consist of Kurnool range. Dhone range, and Adoni range they
include reserve forest like Gani RF, Madhavaram RF, RacherillaRF, Owk RF, Ramallakota RF, Rangapuram RF, Veldurthy RF, Cement nagar RF, Somayajula palli RF, Panyam RF, Peapuly RF etc.

1.2.2. Soil and climate

Soil:

The soils of the Kurnool district are broadly categorized into alluvial, red sandy and black cotton clays soils.

Mineral resources:

The district possess enormous deposits of lime stone suitable for cement manufacture, apart from other important minerals like barytes, yellow shale, white shale, quartz, silica sand etc.

Climate:

Based on the temperature, rainfall and atmospheric disturbances, four climatic seasons are observed in a year.

3. June - September : South-west monsoon season.
4. October - November : Post monsoon or retreating monsoon season.

The average temperature varies from 24° to 28° C. The mean minimum temperature ranges from 17° to 22 ° C and mean maximum temperature varies form 31° to 37 ° C. The highest maximum temperature was 45.6°C on the 10th May 1921 and the lowest minimum was 6.7°C on the 29th December 1902. The average rainfall in the district is 656mm.

1.2.3. Vegetation:

The forest area of the district is 3,41,627 hectares, which is 19.6% of the total geographical area. The district can be broadly divided into three areas. The Nallamalais, Yerramalais and plains. Most of the Yerramalais are showing scrub type of forest and dry deciduous forest.

Scrub type of forest

Most of the Yerramalai range is dominated by thorny, succulent and xerophytic bushes. The top storey consists of Alangium salvifalium, Albizia amara, Atalantia monophylla, Balanites aegyptica, Chloroxylon swietenia, Ziziphus oenoplia etc. The middle storey consist of Acacia cuesia, A.chundra, A.horrida, A.leucophloea, Cadaba
fruticosa, Capparis sepiaria, Carissa spinarum, Dodonaeo viscosa, Gmelina asiatica, Ziziphus xylopyrus.

The undergrowth consists of Alysicarpus scariosus, Caralluma adscendens var. attenuata, Corchorus olitorius, Polycarpacea aurea, Zornia gibbosa. The grasses are Andropogon pumilus, Aristida adscensionis, Cymbopogon coloratus, etc.

Dry deciduous forest

Deciduous trees are met here and there and these are also gradually degraded to scrub. The valleys show streams in Owk, Maddileti, Racheral, North Dhone, Gani and Lanjabanda forests showing slightly degraded deciduous type of vegetation. The top storey consists of Alangium salvifolium, Cassia fistula, Dalbergia lanceolaria, Diospyros chloroxylon, Gyrocarpus americanus, Hardwickia tinntu, Morinda tomentosa, etc.

The middle storey consists of Cadaba fruticosa, Grewia domine, Bridelia montana, Cardiospermum canescens, Cissampelos pareira, Passiflora foetida, etc.

The undergrowth consists of Andrographis paniculata, Aniscohthilus carnosus, Anisomeles malabarica, Hybanthus enneaspermus, Povonia zeylanica, Waltheria indica, etc.

The aquatic angiosperms like Ipomoea carnea, Hygrophiila auriculata, Limnophila indica, Ottelia alismoides, Pistia stratiotes, Marsilea quadrifolia, etc.

The common succulents like Agave americana, Aloe vera, Euphorbia antiquorum, Opuntia stricta, Sansevieria roxburghiana, etc. The epiphytes like Cassytha filiformis, Dendrophthoe falcata, Striga angustifolia, etc.

1.3. Ethnology of the Tribal People

1.3.1. Tribal people

South India, Andhra Pradesh state has the largest concentration of Scheduled tribes. Tribals, the distinct ethnic group, usually confined to definite geographical areas and speak common dialect. They form a considerable percentage of total population in certain regions of India.

Tribal people of India mostly live in the forests, hills, plateaus and naturally isolated regions. Though they are differently termed, the most popular is Adivasi, while the constitutional name is Anusichit Janjati (Scheduled tribe). There are altogether 550 tribal communities all over India are present. According to 2001 estimates (Source: Ministry of Welfare, Government of India, annual report 2001), The scheduled tribe
The population in the country is 80.66 million constituting about 9.55 per cent of country's total population of 100 million. It is estimated that the predominant tribal areas over about 15% of the total geographical area of the country.

Andhra Pradesh with 33 tribes and 60 other small tribes has a tribal population of 4.75 million which constitutes 7.15 per cent of the state's total population of 66.35 million. The tribal population of Kumool District is 78,834 which forms 2.88% of the total population of the state. The main tribes of Yerramalais are Yanadis, Yerukalas, Sugalis and a few Chenchus. Each tribe has its own habitats and environment set up, dialect, socio-cultural traditions and historical way of life. A brief ethnographic account of each tribe is given below.

The Sugalis

Lambadis are known as Sugalis in Telugu speaking areas. Sugalis are one of the biggest, major tribal populations of Yerramalais. There are many speculations on the origin of Sugalis. Various etymological meanings of the word Sugali or Banjaras are given in Gazetteers. The name Banjaras is the corruption of Sanskrit word Vanachara (wanderers in the forest) indicating the nomadic nature of the tribe. The word Lambada might have been derived from the word Lavana meaning salt, since their forefathers were traders of salt. Recent research reveals that there are striking similarities between Roma Banjaras (Gypsies) and the Sugalis. The link between these two communities is not only linguistic but also cultural in terms of dressing and in performing certain ceremonies. There is a general belief that these people migrated to south India along with Mughul armies during their invasion in seventeenth century.

Sugalis with fair complexion, and dolichoccephalous with oval faces, black or brown eyes, straight nose and long silky hair (Fig.12). 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 petticoats and light fitting bodies of some material with several rows of bead necklaces, while their arms covered with bracelets upon the elbow. The settlements of the Sugalis are clusters of crude huts called Thanda, located at some distance from the established villages. The huts are oblong or square like in rows with a street in between. Each thanda has a chief known as Naik (Head man).

The Sugalis eat all kinds of meat including fowls and pork. Both female and male are addicted to heavy drinking, toddy is their favorable beverage. The principal deity is of the Sugalis is Lord Krishna. In addition, they worship the local deities such
as Sevalai maharaj, Malleamma, Peddamma, Polaramma for the survival of cattle as well as themselves from measles and other diseases. The Sugali have new opportunities to work for their socio-economic detriment. Most of them have taken to pastoralism. agriculture and various types of labour. They have good agricultural lands and cultivate rice, groundnut etc., their women collect forest produce and sell firewood out of sheer economic necessity. The literacy rate is good in the children of Sugali, some of Sugalis are well educated and working as Doctors, IAS, IFS, and MROs.

They have well developed culture, established permanent settlements near the forest areas called Thandas. In Yerramalais they are 65 Thandas (village of Sugali tribes) distributed in the 20 mandals out of 53 mandals of Kurnool district. (Table.2). Thandas like Aliabad Thanda (Peapully mandal), Gummithi Thanda (Oravakal mandal), Bugganipally Thanda (Bethamcherla mandal), Sugalimetta Thanda (Panyam Mandal), Dasiriddody Thanda (Dhone Mandal), Gudambai Thanda (Orwakal mandal) are dominated by Sugali tribes.

Yerukulas

Yerukulas, one of the major scheduled tribes of Andhra Pradesh, inhabit more or less a compact area in the plains speed over Kurnool district. They are medium statural with built bodies dark brown to dark skin, dark brown hair with dark brown eyes. The settlement of the erukula is known as Yerukula geri. They get their livelihood from making baskets.

Yanadis

Yanadis are believed to have been derived from the Chenchus of Nallamalais. Yanadis are short structured red with dark skin colour, platyrhine nose, long head, prominent chin, thick lips and scanty hair both on head and body. The settlement of Yanadis is known as Gudem. They get their livelihood hunting pigs, squirrels, rats, collecting honey etc.

1.3.2. General features of Sugali Tribe

Sugalis have intimate knowledge of the season, flora, and fauna and the geography of the forest in which they live. This knowledge enables them to make use of natural products of the environment to the maximum extent possible. Sugalis collect forest produce like flowers, fruits, tubers, beedi leaves (Diospyros melanoxylon), Nannari roots (Hemidesmus indicus), gums, dye, resin, wax, honey, firwood, hey and medicinal herbs (drugs). They are very fond of wild edible fruits such as Phoenix sylvestris.
Sugalis are having bountiful knowledge of medicinal plants. Sugalis have their own well developed system of medicine which is said to be effective. The attitude Sugalis towards disease is practical treatment combined with superstition. They have great faith or some sort of superstitious belief in some plants. The effect of their medicine is primarily based on the faith in their system. Generally, they keep their medicine as a secret since they fear that it will not work if it is revealed to anyone else. They use several medicinal plants for their diseases and animals. Herbalism a traditional medicinal or folk medicine practice is based on the use of plants and plant extracts is common in Sugalis. Multiple herbal therapies is common practice in Sugalis, they use two or more medicinal plants to treat a particular disease. They use all parts of the plant to treat diseases. Sugali use all parts of the plants as external applications like poultices, leham, pasuru, or orally or fumigation (animals). The plant products are combined with cow, goat milk or cow urine. Every Sugali elder person has the knowledge of medicinal plants. They purely rely on forest medicinal plants for their emergency medical care, because their thandas are for away from the Primary health centers. Every Sugali (male) wear a seed in the thread that ties the waist, to treat first aid to scorpion bite. Mostly Sugalis treat the disease with medicinal plants, if the disease does not comes down then only they go for rural headquarters for the treatment. They are the real custodians of medicinal plants. Due to rapid urbanization and infiltration of non-tribals and cultural diffusion and because of the influence of modern culture on the younger generation, their traditional system of medicine and cultural heritage are on the verge of extinction. Hence, an attempt has been made in this investigation to document their information on herbal remedies before it is completely lost.