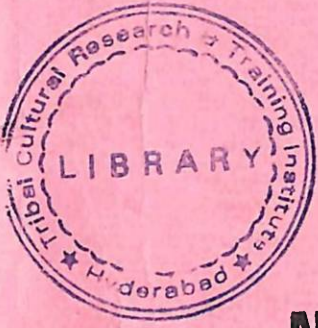


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# **Nutrition Status Among Primitive Tribal Groups of Andhra Pradesh India**

By

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DIETARY INTAKE AND NUTRITION STATUS AMONG PRIMITIVE  
TRIBAL GROUPS OF ANDHRA PRADESH



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# DIETARY INTAKE AND NUTRITION STATUS AMONG PRIMITIVE TRIBAL

## GROUPS OF ANDHRA PRADESH

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### Area and Population :

In Andhra Pradesh according to 1981 Census there are 31.76 lakh tribals belonging to 33 tribal communities. They are spread all over the state. Among these 33 tribal communities 8 groups were recognised as Primitive Tribal Groups as they are considered to be at the Pre-agricultural state of economy with stagnant or near stagnant population and low level of literacy, subsisting mainly by food-gathering, hunting and fishing.

The groups identified are as follows:

- |                |             |             |  |
|----------------|-------------|-------------|--|
| 1) Porja       | (2) Gadaba  | (3) Chenchu | Tribal groups at 1,2,4,5,6,7, and 8 of Northern A.P. and 3 of Central A.P. are taken together. |
| 4) Konda Reddi | (5) Kolam   | (6) Thoti   |  |
| 7) Khond and   | (8) Savara. |             |  |

These groups were recognised as P.T.G's by Government of India in three spells in 1975, 1980 and 1983. The Porjas whose number is 16,479 are mostly found in Visakhapatnam district. The principal crops grown by Porjas are Paddy, Jowar, Ragi, Korra, Sama etc., They also grow commercial crops like Ginger, Nigar, Chillies, Sugar cane and turmeric on a small scale. They also grow vegetables like pumpkins, beans, tomatoes etc., They grow hill redgram in the Podu fields. The Gadabas are found chiefly in Visakhapatnam and Vizianagaram districts whose number is 27732. The traditional occupation of Gadabas was once upon a time are palanquin bearers. They now practice Podu cultivation mostly and partly settled cultivation

and are engaged as casual labourers. 90% of them are engaged in agricultural sector. The Primitive Chenchus whose number is nearly 28435 are spread aover Kurnool, Guntur Prakasham, Mahabubnagar, R ngareddi and Nalgonda districts and still at a hunting and gathering stage of economy. A negligibly small percentage of chenchus are settled cultivators.

Konda Reddies are found living in East Godavari, West Godavari and Khammam districts and numbering about 54685. Some of these are practising Podu cultivation and negligible percentage of them have been practising settled cultivation, also. Those who are dwelling on the banks of river Godavary are eking out their livelihood by catching fish. Kolams who are found in Adilabad district with a Population of 21842. Thotis numbering 1416 constitute another substream of the tribal society of Adilabad district. Khonds who are also known as Samanthas are found in Visakhapatnam district. They register a population of 39408 (81' Census). Savaras are predominantly found in Srikakulam and Vizianagaram districts. Their number is 82101. The total population of P.T.'s is 2,72,098.

SCOPE : The study is confined to the diets and their nutritional status of Konda Reddy's of Khammam, Khonds of Visakhapatnam and Chenchus of Nallamalal forest in Andhra Pradesh.

OBJECTIVES :

- 1) To assess the food consumption of the tribals both quantitatively and qualitatively.

- 2) To estimate the nutritive value of the foods exclusively consumed by the tribals.
- 3) To find out whether the existing dietary patterns are satisfactory or not and to estimate the inadequacies in them.

METHODOLOGY :

The household, including guests and pets, partaking meal from the same kitchens is taken as unit for diet survey. subjects have been drawn from different agegroups for nutritional assessment.

Questionnaire method was employed for the assessment of dietary intake.

The details of quantity of foods consumed and the frequency of meals during the previous day were collected by asking the house-wife to recall them with the help of standardised cups. Consumption unit per day was calculated from this data.

Additional data on availability and usage of universal food mode of cooking, the ages of members of the family, information about the absentees, guests and pets in the family have been recovered from all the surveyed households.

Review of Literature on Nutrition :

Since the first man appeared about one million years ago on the surface of earth, the history of his race has been his constant struggle for survival\*. This survival struggle mainly centred round personal security and securing of food. It is food that helped him to fulfil the Biblical command

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Margaret L. Arnoth "Gastronomy the Anthropology of food habits". The Hague Marton - 1975

"Be fruitful and multiply". Being the most vital and basic component of human multiplication, securing food became the main activity of human beings. In the process of securing food, man is in constant interaction with nature. In general, the type of food provided by nature and the tastes developed by man synthesized into the dietary patterns of the population of particular area.

The dietary patterns offer the starting point for a study of nutrition as nutrition is based on food though it is more than, food. As Martin (1965) puts it "Nutrition is really a process in which food is digested and its nutrients are absorbed and finally distributed to the parts of the body where they are utilised in all metabolic activities". Realising the vital role of nutrition in man's total health and as a contributing factor for his physical, mental and emotional well being it has been pulled from the obscurity of class room and laboratory and incorporated as a dynamic component of modern life. Consequently, developing countries, especially India, made it an important component of the process of planned development.

In India, studies conducted on diet and nutritional status of various sections of populations revealed the inadequacy of traditional diets in providing the required nourishment\*. The studies showed wide spread prevalence of malnutrition and under nutrition and the consequent nutritional deficiency diseases like Kwashiorkor, eye afflictions, rickets, beriberi etc., resulting in physical deformities and premature deaths. The surveys conducted by National Sample Survey and National Institute of Nutrition showed that the typical Indian

diet is cereal based, poor in quality, inadequate in many essential nutrients and therefore imbalanced. Further, it was also found that as many as 70% of the families could not even afford least expensive of balanced diets in view of the meagre money spent by the families on their food.

Among the rural population children and expectant and lactating mothers suffer most from malnutrition and under-nutrition. The studies conducted by Indian Council of Medical Research in recent years, showed that 50% of children in age group of 1-6 years, suffer from one or the other. Vitamin A deficiency is also responsible for the very high incidence of blindness. About 60% of the children in India are estimated to be suffering from nutritional anaemia. Child mortality rate is so high as to account for 40% of all deaths accrued, that too, among children below five years of age. Malnutrition is considered to be the root cause, if not the direct cause of these deaths. Nutritional deficiency is also considered responsible for the stunted growth among Indian children. A comparison of the growth rates of neonates of America and India shows that though the birth weight of the new born in India is comparatively low, his growth rate is almost equal to that of his American counterpart upto six months of age, since both are breast fed. From the sixth month onwards, the infant in India records retarded growth, the reason being that after six months, mothers milk alone can not sustain the growth of the infant with all the required nutrients.

Pregnant and lactating women are nutritionally

the next most vulnerable group. The nutritional status of the mother during pregnancy conditions the health of the new born. Poor nutritional status of pregnant women results in abortions, premature births, low birth weights and neonatal mortality. Nutritional anaemia is considered to be the most important cause of many major problems in pregnancy and high maternal mortality in the country.

Nutrition experts are of the opinion that nine months before birth and three years after birth are the most critical periods in the life of a child as 90% of the brain growth takes place during that periods may cause brain damage which can not be rectified by giving a balanced diet at a later stage. The research findings also showed that these vulnerable sections mostly belong to the weaker sections especially scheduled tribe, Scheduled Castes and slum dwellers.

These research findings and expert opinions impressed upon the planners the need for formulating nutrition programmes as part of the Five year plans to fight the scourges of malnutrition and undernutrition of the vulnerable groups. Consequently programmes like CARE, Midday meal for primary school children (II Five year Plan) Applied Nutrition programme for children and lactating and pregnant mothers, (III Five Year Plan) Special Nutrition programme for children upto 6 years of age and pregnant and lactating mothers and Integrated child Development Services scheme (V Five Year Plan) have been evolved and executed from time to time.





Area wise variation of natural foods available :

In the present paper an attempt is made to study the food, culinary habits, food intake assess the nutritional status of the various primitive tribal groups on the basis of the surveys conducted in the tribal areas of the State by the Tribal Cultural Research and Training Institute, Hyderabad, besides evaluating the Applied Nutrition programme and Special Nutrition Programme on the basis of the performance assessment made by evaluation wing of Finance and Planning Department of Andhra Pradesh and Tribal Cultural Research and Training Institute, Hyderabad respectively. The paper also intends to high light the programme suitability and short comings besides giving suggestions for improving the nutritional status of tribes of Andhra Pradesh.

The diets of these Primitive tribal groups show varied patterns. The tribals in-habiting the hilly and forest tracts of North Western part of Andhra Pradesh in Adilabad district viz. Gond, Pradhan, Kolam, Naikpod and thoti being Jowar and cotton mixed pulses cultivators having general uniform food habits. Jowar is the staple food supplemented with redgram and field beans. Vegetables like gourds, beans, pumpkins are consumed in their respective seasons. Use of oil is limited. Milk and milk products are seldom used. Even in tea they do not mix milk as they drink the decoction (black Tea) after adding jaggery for taste. Jaggery, chillies and tamarind are consumed in large quantities as ingredients of the various curries. Though there is no special waning food for children many of them are introduced cooked rice paste or

gruel mixed with jaggery after the child completes one year. Breast feeding is initiated after delivery and continued up to two years though the child is slowly introduced to solid general diets from the first year onwards.

In contrast, for the tribals of North East part of Andhra Pradesh living contiguous to Orissa borders such as Savara, Porja, Gadaba, Khond etc., 'Ragi' is the most important of the staple cereals, the other being rice and 'Wooda' (A variety of local small millet). The other cereals consumed are 'Sama', 'Korra' and 'Sorghum.' They eat them either in the form of cooked solid cereals or thin gruel prepared with broken cereal or flour along with chillies, salt or vegetable curry. Pulses like wild redgram, horsegram, cowpea, French beans are also consumed. A variety of green leafy vegetables wild as well as cultivated are liberally consumed. Pumpkin leaves, 'Gongura', 'Thotakura' (spiny and other varieties) tender bamboo shoots etc., are notable among the seasonal leafy vegetables. Eaten vegetables like pumpkin, brinjal, cucumber, and papaya which are usually cultivated in backyards are also consumed in their respective seasons. In times of scarcity, a number of wild roots and tubers are eaten by the tribals as the principal diet. The months of July and August are the months of acute shortage of food both cultivated and wild. The mango kernel and tamarind seeds are preserved for this season. The powdered kernel kept in baskets is washed by keeping it in running water of a hill stream to wash off the bitter taste and sun-dried. It is consumed in the form of 'Roti' (Pancake) or 'Ambali' (gruel) like other cereal powder



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preparations. Many of the tribal families survive on this mango seed powder for about 2 to 3 months in a year, especially during July and August months.

Milk and milk products are not consumed by the tribals as they traditionally believe that it is a sin to deprive the calf of its mother's milk. However, many of them are drinking milk in tea both in their houses and tea stalls whenever they go to nearby towns or weekly markets (shandy) due to their increased contacts with people from plains and borrowed drinking habits.

Indigenously manufactured intoxicants are frequently consumed. Mohwa liquor, usually locally distilled and toddy (salphi) tapped from palms fill the 'cup of joy'. Certain beers prepared by fermenting cooked cereals like 'rice', 'Ragi' and 'Sama' are also drunk with relish and they are believed to have curative properties and cooling effect on the human system. Mango juice is also fermented to prepare an intoxicant drink. Similarly the fleshy fruits of the marking nut are sun dried and soaked in water and the resultant syrup is fermented to distil liquor.

Typical of the food gathering Chenchus who live in small and scattered huts in small forest enclaves right in the heart of Andhra Pradesh, mainly in Mahabubnagar and Kurnool districts is that very few families consume foods cultivated by themselves unlike the other tribal groups. Even growing of vegetables in their backyards is not known to many of the Chenchus except for those living on the fringes of the plains area. Forest and Forest Departments are the

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main sources of their food supply. Being the true sons of the forest, these primitive Tribes collect their varied foods direct from forest as it provides them sustenance in tune with the changing seasonal conditions. As the summer approaches the food gatherer becomes a food earner by working in forest coupes and securing daily wages from Forest Department.

Consequently their diet also shifts from wild roots, tubers, green leafy vegetables, fruits, seeds, vegetables and flowers collected from forests (either eaten raw or baked on open fire boiled in water) to coarses rice or broken rice paid as wages in kind and consumed as cooked rice or gruel. However, even in summer the food\*

\*is supplied with the food earned from outside sources that <sup>could</sup> still be collected from forests such as the fish that surface from the drying ponds besides game secured and tamarind and mohwa flowers collected. However, leafy vegetables are scarce during summer.

Being expert honey collectors, Chenchus also consume honey either mixed with cereal cakes or eaten raw. Honey season commences from March and continues up to rainy season. Protein rich wax and grubs are roasted together and eaten.

Unlike the other tribals who could afford consisting of animal flesh only occasionally by hunting or purchasing in weekly shandies. The chenchus frequently hunt several varieties of small game with snares, traps bows and arrows. Rabbit, Jungle Cat, Deer, Squirrel, mangoose, gaint squirrel Indian monitor, patridge, peacock and parrot are hunted. The meat is either roasted on fire or cooked with chilly powder and salt.

Habitual drinking of intoxicants is common among all tribals, liquor distilled from Mohwa (*Bassia latifolia*) flowers and toddy drawn from Caryota palm (*caryota urens*) or palmyra (*Borassus Flabellifa*) or country date palm (*phoenix acaualis*) are the favourite intoxicants consumed by all the tribals living in areas of their growth. Besides all the tribal groups ferment cereals beers from 'rice' 'Ragi' and 'Sama' and drink them with much relish. The tribes of Godavari and Srikakulam depend largely upon the toddy to satiate not only their thirst but also hunger for about 3 months in a year. Toddy is said to be a rich source of Vitamin 'B' on fermentation.

None of the tribes gives any special food for children. Even the first weaning foods of the infants are the locally consumed cereal based gruel. First pregnancy of a woman is a great event in every tribal family. Husband as well as parents in-law take special care about the women in her first pregnancy about her food. Normally the husband and his parents as well as parents of the women strive hard to provide her the food of her choice.

In other words, the belief system and social norms of various tribes ensure that the nutritional requirements of the women in first pregnancy are adequately provided for, However, the same care will not be bestowed on the women in subsequent pregnancies. There are many food taboos for lactating mothers in tribes which influence their nutrition status.

Both Chenchus and Godavari region tribals possess the necessary traditional hunting equipment such as bows and arrows, snares etc., with which they hunt small game consequently their <sup>food</sup> intake is much higher than other tribals and rural folks. Typical of the rural and urban populations. Milk and milk products and oil are consumed in very large quantities. The tribals deemed it a sin to milk their milch animals and oil plays an insignificant role in their culinary practices.

The chenchus as well as Konda Reddy and other tribes inhabiting the Godavari region depend largely upon their immediate neighbourhood for food. They live in perfect ecological equilibrium drawing their subsistence from various forms of vegetative and vegetitive foods available in his immediate environment. The hills covered with dense deciduous forests have provided them with a continuous supply of edible food in the form of nuts and fruits, tubers and roots, leaves, flowers, honey, meat, fish and birdsthroughout the year to supplement the food produced by Godavari tribes on the hill and flat land fields. Apart from being granary of food the forest provides chenchu and tribes of the Godavari region with various kinds of minor forest produce. For Chenchu as well as Konda Reddi, forest is the main source of income and the Forest Department the largest employer.

However, the forest policies and the increasing pressure on land especially in the Godavari region over the last 3 decades brought about redical changes in the ecosystem of these tribes. The game laws further

aggravated the situation. Traditionally, they live in small settlement with a clear territory for hunting and food gathering. They used to meet their food requirements and fulfill their limited wants within their eco-systems. The increased activities of the Forest Department over the last 3 decades interfered with the unfettered freedom in the use of forest for their needs. The replacement of natural vegetation with timber yielding and quick growing species had violently affected the ecological equilibrium of these tribes. Development of roads and communications and the activities of Girijan Cooperative Corporation, the project area had replaced the barter. The monetisation of the economy and establishment of D.R.Depots in these areas resulted in multiplication of wants of these tribes. The commercialisation of minor forest produce deprived them of their use for personal consumption. However, the sale of minor forest produce fetched them money income, much of which was exchanged for food at D.R.Dept or at the private shops in the weekly shandies. All these changes did not make their dependence on forest are less. The bad management of and under development of their agriculture still leaves them long periods of semi starvation. While the period of shortage of cultivated food starts immediately after the sowing season in July for the Godavari tribes the entire rainy season during which the Forest operations will come to a stand still in the period of food shortage. During this period these tribals largely or entirely depend upon the forest. Dwindling edible forest produce and increasing competition as a result of increased

population led to under nourishment and for these tribes for a few months in the monsoon. It is during this period the evil effects of malnutrition are more pronounced among these tribals.

Locally produced Food Stuffs and the risks involved.

The subsistence economy of all the forest living tribes is agro-forest based. The agriculture is still a gamble in monsoon. The natural calamities like drought, cyclone and even flood have disastrous effects on both agricultural and forest produce. The multiple cropping of the tribals is in a way an insurance against complete crop failure. The mixed sowing is planned in such a way that if the failure of early monsoon damages the first millet crop the delayed monsoon will benefit the second millet crop. However, if the crops totally fail they turn to forest the prolonged dry spell and failure of rains severely effect the growth and flowering of the minor forest produce yielding species. There are however, various wild creepers and tubers which are normally resistant to drought, cyclone and even flood. The ecological changes effected by plantation programme of the Forest Department and opening of the hither-to inaccessible tribal areas for outsiders and consequent changes in cropping pattern are also responsible for swindling of traditional edible wild produce and minor forest produce.



Purchased foods and the risks involved :

As mentioned earlier all the tribes depend on purchased food stuffs. The Girijan Co-operative Corporation and the Forest Department are major suppliers of purchased food to the tribals. The bulk of foods purchased constitutes rice or jowar. These two governmental agencies have also played crucial role in effecting dietary changes of the the various tribal groups. In the interior areas, the Daily requirement Depots of the Girijan Cooperative Corporation are the only supply points for food. The items of food stuffs sold at the D.R.Depot are decided at higher level. As a consequence, the choice for the tribals is limited and are forced to purchase the cereals available to be the superior food. Prestige value is attached to the consumption of rice. Moreover, sufficient quantities of rice is made available by food corporation of India and Civil supplies corporation of the State. Sufficient quantum of the rice is always made available at the D.R.Depots. The Tribals are thus introduced to rice consumption by Girijan cooperative corporation. Most of the tribals now show preference for rice to millets. The D.R.Depots of the Girijan cooperative corporation and the Forest Department supply the well polished rice. The purchased foods have thus substituted the traditional millets in the tribal diet and caused nutritional deficiencies associated with the new foods.

1. In take of purchased foods by the tribals depends upon the money income earned by the tribals by sale of minor forest produce especially of gum and commercial crop like cotton for Adilabad tribes, Tamarind and Adda leaf for Godavari and Srikakulam tribes and honey for Chenchus influences the purchasing power of these tribes.
2. The over all business performance of the Girijan Cooperative Corporation has marked impact on the price structure of the minor forest produce and hence.

The purchasing power of these tribes. Various factors like demand for minor forest produce items in various traditional market centres within the country and abroad, technological changes in the processing and manufacturing industry where minor forest produce items are at present used as raw materials, invention of cheaper substitutes, change of tastes, fresh competition from others, storage and preservation problems influence the money income of the tribes. The overall performance of Girijan Cooperative Corporation over the proceeding year determines the price structure of various minor forest produce items. The price structure of of minor forest produce items.

The price structure of minor forest produce directly influences the money income of the tribals.

#### Culinary Habits :

Primitive Tribal Groups like Chenchus still living in hunting and food collection. Kolams, Naikpods of Adilabad, Koyas, Konda Reddys of Godavari Basin, Bagath as Javaras, Gadabas, Khonds of Visakhapatnam and Srikakulam agency areas live on Podu and settled cultivation

Though Agriculture is the main occupation to most of the tribals, due to primitive type of agricultural practices, non-fertile lands, non-usage of fertilisers, ignorance of Crop protection, generally their food production is not at all sufficient for their daily requirements. So many of the tribals still depend on roots, tubers, leaves and fruits available in the forests. Due to this prevailing situation, there are regional and seasonal variations in their food habits and dietary patterns.

Jowar is the staple food for Chenchus and Kolams Ragi is the main food for the P.T.G's. of Visakhapatnam and Srikakulam agency areas. Same is also grown in these areas. Ragi is the subsidiary food in the areas where jowar is the main diet. Dry paddy is also grown in some areas. Crops like variga, Ganti, Korra etc., are also produced and consumed by the tribals. Mango, Telakapindi, Jeelugu pindi (Pith) are the main foods during the rainy season. Forest Redgram (Konda Kandi in Telugu) is consumed by all tribals in the state. Other pulses like Blackgram horse gram are also consumed in limited quantities now and then. In addition, items like Delligingalu French beans, Konda Sanagalu, Judumulu etc., are also consumed in Visakhapatnam agency area.

Generally tribals grow vegetables like cucumber, tomato etc., in their back-yards. The cucumber leaf is important food item for the tribals in Vizag and Srikakulam agency areas. Potato and 'Karnapendlan' are also grown here. Panasa is one of the main foods during the summer season. More over, seasonal foods like Konda Bringal,

Drumsticks, Kakara, Konda regu and other varieties of leaves are collected from the forests are consumed by tribals.

Different varieties of tubers are collected from the forests in different seasons and consume them. Chenchus collect tubers like 'Chenchu gaddalu', Yelavara-gaddalu'. Nulu gaddalu and tribals of Vizag agency collect the tubers like 'Tella Chennagadda', Nalla Chennagadda, Govinda Gadda, Kalwa Gadda, Tamaragadda, Chenna gadda, Mullerugadda etc., and tribals of Adilabad agency collect tubers like 'Channagadda, Appigadda etc., They collect different types of bitter tubers and roots and they wash them several times till the bitterness is lost and they store these items and consume them as and when they are in scarcity of food. Tribals also consume certain varieties in seeds like, Addaginjalalu, Tandra Kaya, Chinta Pikkalu, Sironji etc., They are consumed either raw or after roasted. Fruits like Mango, Panasa, Tamarind, Tuniki etc., are also consumed in different seasons as per their availability.

Cereals : Different types of Cereals like Jowar, Ragi Sama, Gante, Paddy, variga etc., are consumed by them. Items like Ambali, Gataka, Thopa, Ganji, Roti, Puttu are the main food stuffs cooked by them with these millets.

Ambali : Ambali is prepared with Ragi, Jowar and Mango Kernel. Ambali is very important food item for all the tribals. Ragi ambali is prepared by soaking the flour in water and usually the dough is left to get itself fermented overnight and then mixed in boiling water. This preparation

is very thin in consistency. They take ragi ambali in the early morning before they go to work. They generally do not use any vegetable curry as side dish, but some tribals mix it with the tamarind liquid (rasam) or chillies and onions are used.

Roti : Roti is prepared from jowar, Ragi, or Bajra flours. Water is added to the flour and mixed to get the proper consistency. Then it is divided into small balls and pressed into rotis with hand on a flat stone or wooden seat and roasted over an earthen pan. Some times equal quantities of jowar and ragi flours are mixed for preparing rotis or sankati. In the bhwa season the rotis are sweetened by adding Mohw's flowers. They are consumed with Chutney, mutton or singly.

Thopa : This is popular in Srikakulam, Vizianagaram and Visakhapatnam tribal areas. Two or three items of flours like ragi flour, jowar flour are mixed and add in the boiling water to get the consistency. They add salt and chillies in this gruel and consume.

Gataka or Sankati : This is also prepared with the cereals. The pounded grains are broken in a grinder into small pieces. These broken grains are put into boiling water while stirring with a wooden spoon. The preparation appears like a gruel paste and eaten with a side dish with water and salt.

Puttu : This is prepared with ragi and jowar. The flour is mixed with water and small lumps are prepared. These lumps are kept in the Adda Leaf baskets. The baskets with lumps are kept in a pot containing water and boiled with steam. Some tribals add jagger and eat.

Ganji : Generally 'Ganji' is consumed by tribals as an alternative at the time of drought conditions and during scarcity of cereals. The flour, of all cereals are used in the preparation of Ganji. Soaked flour is added to boiling water while stirring. The gruel looks semi-solid and is consumed with salt and Chillies.

Rabbidi or Dappika : This is prepared out of any cereal flour and vegetables. The flour is mixed with the required quantity of water stirring thoroughly and cooked for about 15 to 20 minutes. Sliced vegetables, chilly powder and salt are added to it and cooked till the preparation becomes thick. It is consumed always singly. This is also called as 'Pindi Pulusu' in Telugu.

Annam : Annam is prepared by cooking the pounded and washed cereals or rice. In this process there is no difference between the plains people and tribals. Annam is a coastly item for tribals. Generally they prepare this during festivals and functions.

Pulses : Different varieties of food items are prepared with pulses among tribals.

Karam Pappu : Pulses are half boiled and after that chillies, onions, garlic and tamarind are added in the boiling pulses. This item is strong and important curry for them.

Kattu : This is a liquid 'Pappu Ganji'. This can be prepared with any pulse . The pulse are boiled in water and after- thoroughly boiled some more water is added. They add turmeric powder, chilly powder, salt to this and consume with rice, gatika, ambali & etc.,

Pappucharu : This is prepared with tamarind liquid and pulses. This preparation is almost similar to the plains.

Horse Gram : This is called as 'Guggillu' in Telugu. They simply boil the horsegram without adding any other items. They consume by mixing with salt and chilly powders.

Wild Pulses : The tribals also eat the wild pulses either raw or after cooked.

Vegetables : Generally the vegetables are cut into small pieces, cooked in water and consume after adding some salt. Now and then salt, chilly powder, garlic, onions, turmeric etc., are added to the cooked vegetables. Rarely the curries are seasoned with oil.

Leaves and Flowers : The tribals in all areas of the state eat certain kinds of flowers and leaves those are available in the forests and their back yards. The leaves are separated from the stems and boiled with excess water. The water is thrown out and the cooked leaves are grained into a paste with chilly powder and salt. When available, tamarind pulp or green tamarind, onions and salt are added to the curry, but seasoning with oil is very rare, Mulla thotakura' 'Gongura' are important in leafy vegetables. They prepare the leafy vegetable curries with pulses also. In Visakhapatnam Tribal areas they would not mix leafy vegetables with pulses. Chenchus eat leafy vegetables like 'Deodar', Tummikura' etc.

Vegetables : The consumption of vegetables among Chenchus, Yrukulas, Yanadis and Koyas is rare. But the vegetables are grown in Adilabad, Visakapatnam and Srikakulam tribal areas. The Malis of Visakhapatnam dist., are expert vegetable growers.

In summer they dry the vegetable and cook. They collect hilly vegetables also from the forests. The vegetables are generally cut into small pieces boil them in excess water and consume with salt.

Chutneys : In the chutneys which they call 'Tikku Karam' or chilly chutney prepared by grinding dry red chillies with onion and salt is the most popular 'Pachimirapa Tokku' is prepared only when they could purchase green chillies. The green chillies are roasted with a little oil and ground into a paste with tamarind, onion and salt. During the times of scarcity, drought they consume chilly chutney with Ganji Cucumber, Bringal chutneys are also prepared.

Bamboo Shoot Curry : Bamboo shoot is available in the forests during the beginning of rainy season. The bamboo shoot is cut into small pieces and keep them in water for a day. Next day the pieces are cooked the water is thrown out Salt and chilly powder are added and then they consume.

Mushroom Curry : The mushrooms are grown abundantly on Mango trees, Bamboo trunks etc., They prepare curries from these mushrooms and the preparation is similar to the curries of other vegetables.

Roots and Tubers : Roots and tubers are consumed in times of scarcity. They are eaten after roasting over fire or boiling with salt. Some tubers like 'Eathigadda' Chenchu gadda, Yelavaragadda, Appigadda are consumed either raw, after thorough wash or consumed after adding chilly powder salt etc., They rarely prepare curries with these tubers.





Some varieties of roots and tubers are abundantly available in the nearby forests. But they are very bitter in taste. The tribals require lot of patience and labour to make them edible. These roots and tubers are consumed by them only during severe scarcity and drought conditions. 'Chandagadda' is one of the roots consumed by Chenchus and thoroughly boiled and sliced into small bits like potatoe chips and placed in a basket and wash them for about 10 hours, constantly stirring and washing with hands, after which the bitterness is removed and the root become palatable. However it is tasteless. They eat these roots only to kill their severe hunger. Uschinta Kaya is also a bitter fruit It is cooked with leaves, which reduce its bitterness to certain extent and eaten in lean periods.

In Adilabad district the Kolams eat a poisonous tuber called 'Chennagadda'. This tuber contains acidity. The tribals mix the tuber in ashes, clean and boil it in water for 2 to 3 hours. The boiled tubers are throughly washed several times in the running stream for about one week. By the time the tubers are edible to eat.

In Srikakulam agency area, the tribals eat a peculiar tuber called 'uladumpa'. This is kept in water one or two days and the upper skinis removed and cut it into small pieces. Again these pieces are kept in water and washed for three days. On the 4th day the pieces are cooked and eat. In Visakhapatnam district, it is common for the tribals to eat a tuber called 'Chedugadda'. This is kept and washed in water for about 24 hours till the bitterness is lost. They cut the tuber into pieces, cooked and consumed. Like this

the tribals wash' the tubers, in water for several times till the bitterness is lost. Some times they mix these bitter tubers to sweet tubers that the bitterness is reduced

Nara Theega (Tummang): The root of the creeper which will be as long as 6 to 10 feet is found deep in the earth. After digging the root, the skin is removed and cut into pieces. Gruel is prepared (Tummang-jay) by boiling them with water. They drink it after adding salt.

Belli Ka Theegalu (Parov) & Woolu Theegalu (Babo)\* :

The roots of these creepers are available in plenty in the forest after 'Dasara'. They are cooked in water and eaten after adding salt and chillies.

Pondi Teegalu (Vond rayelu)

Donde Theegalu (Marsa)

Kasa Teegalu (Tulba)

Palleru Theegalu (Paro)

Gonc Theegalu (Margidi)

The roots of all these creepers are available after 'Kothamasa for about 2 months. The roots are boiled in water and the skin is removed. They add salt and eat either with rice or alone.

Arika Theega (Cado):

The roots are collected in the month of Dasara. They are cleaned in a water current and boiled. After adding salt and pepper they eat them.

Tubers :

Dulakanda (Kanda) : This tuber is available in the month of 'Dasara'. It is grown in the forest and in the back yards of the houses as well. After scrapping the skin it is cut into pieces and boiled with tamarind water to remove the itch producing juice. It is eaten either with rice or gruel.

Doldumpa (Doldi Petka) : These are available in the months of 'Karthikan' and Palkamma. They boil them in water and remove the skin. The tuber contains some itch producing substances which are eliminated by the following procedure. After applying cow dung to the palms and hands, the boiled tubers are cut into pieces and mixed with cow dung. They are cleaned by washing them in the running waters of a nearby stream. Again the same cleaning process is repeated 3 to 4 times till all the itch producing substances are washed off. They add tamarind water, salt, chillies and then eat.

Sarokanda (Sarugay) : Small pieces of the tuber are burried in 'Podu' fields and hill slopes. When it grown into a big tuber, it is dug out. It is cut into pieces and boiled in water to prepare the gruel. They add salt and pepper to taste and eat.

Pendlan (Ganuga) : This is grown in the back yards of the houses and the podu fields. Gruel is prepared by cutting it into pieces and boiling with water. Some times they mix it with redgram, dal, chillies and salt and eat it.

Kandamulan (Ganu) : It is also grown in the backyards and 'Podu' fields. This is boiled in water to prepare gruel. Sometimes the raw tuber is burnt in the hearth, cut into pieces and eaten.

Chedu Dumpa (Buti) : They are available in the forest between 'Dasara' and Kothamasa. After digging up the tuber, it is cut into pieces, cooked in water and eaten.

Karra Dumpalu (Agragai) : They can be secured after Dasara. After cooking them in water, salt and chillies are added to taste.

Chilagada Dumpalu (Ganugai) : These tubers grow in the forest throughout the year. They are also grown in the backyards in the month of Aviti. The skin is removed after boiling them in water and salt is added to taste.

Pulidumpalu (Petake) : They are dug up after Dasara. The boiled tuber is cut into pieces after removing the outer skin and then soaked in water for a whole night. They are cooked in tamarined water next day and served.

Pandinutulu (Adap) :

Aviti is the best month of digging them in the forest. The raw tuber is burnt in the hearth and eaten. Some of them boil it in water, remove the skin and then cut into pieces. salt and chillies are added to taste.

SEEDS :

Bamboo seeds (Tabagur) :

The seeds are collected from the bamboo clums. They cook the seeds and eat after adding pepper. Sweet gruel is also prepared by cooking bamboo seeds with jaggery. Mango Seeds.

During the month of April they eat the mango fruits after celebrating the 'Mamidi Kotha' festival and store the seeds in a corner of the house. After celebrating the Tenka Kotha (ceremonial first eating of seeds), festival also they eat the mango kernels. The kernels are removed by breaking the outer cover of the seeds and

soaked in water until they become soft. The soft kernel is dried and powder in a mortar. The powder is transferred to a basket and washed in the running waters of stream to remove the bitter taste of the powder.

This powder is used for making Rotis and gruel. To prepare the cakes, salt and chillies are added to the powder and mixed with water to make a paste. This paste is made into thick round cakes. The cakes are wrapped in Adda leaves or some other leaves and fastened with a thread. Then they bake them in the hearth and eat. The gruel is prepared by boiling the powder with water. After adding salt and chillies the gruel is drunk. The powder is stored for future use and also substituted for their staple cereal food during lean months.

Adda Pikkalu (Rado) : The seeds are collected from Adda creeper in the months of Sivarathri and Palakamma. The seeds are red in colour and resemble a rupee coin in shape. They either fry or burn these seeds, and then boil them in water to remove the skin. Salt and chillies are added to taste.

Teedi Pikkalu (Gidingloi) :

These nuts are collected from the forest in the month of Kothamasa. After breaking the outer shell the kernel is taken out and eaten raw.

Tamarind Seeds (Tceteboru) :

The seeds are dried and than ground to flour in a mortar. The flour is cooked in water to prepare gruel.

Teeka Kayalu (Gada):

The fruits are collected from the forests and the seeds taken out. The seeds are burnt in fire to remove the shell. The kernel is taken out and ground to flour. The flour is cooked in water until it becomes a paste and then salt and pepper are added to taste.

Mushrooms :

These are called Kukkulu and they spring up from the decomposed matter in forest areas. Some of them are poisonous while some are edible. They are of varying sizes and shapes. Savaras supplement their diet with the non-poisonous edible mushrooms. The various kinds of edible mushrooms available in Savara country are described below.

Putta Kukkulu (Banumsur) :

These small umbrella shaped mushrooms spring up from the ant hills after rains in the month of Aviti. After cooking them in water, they add salt and pepper to taste and eat with rice.

Guggilam Kukkulu (Sargivapiti) :

These sprout from the decomposing Guggilam tree branches. They are available for about two months starting from the month of Endya and grow in groups to different sizes. After removing the stems, the head portions are cooked with salt and pepper. It is eaten either with rice or gruel.

Neredu Kukkulu (Kurgapiti)

These sprout in the month of Aviti from the fallen Neredu trees. They are thick and larger in size with the diameter ranging from 3 to 4 inches. The stems are removed

after cutting the head portion into pieces; they are cooked in water. They are eaten with rice or gruel after adding salt and pepper to taste.

Gaddi Kukkulu (Mambit)

The spring around heaps of have in the month of Aviti. These are small in size and their preparation and uses are the same as described above.

Bookala Kukkulu (Lakkisarpit)

Aviti Kukkulu (Tarropit)

Dasara Kukkulu (Dasara pit)

Endva Kukkulu (Dobuva pit)

All these spring up from the ant-hills. While the first two varieties are available in the month of Aviti the other two are available in the month of Dasara and

Endva respectively. The first variety is the smallest of all, while the other three varieties are bigger in size with the diameter varving from 2" to 4". The method of preparation is similar to the one described above. In addition to the above described mushrooms, the Savaras also eat Veduru kukkulu or bamboo mushrooms (Urungjampit) and Etha Kukkulu or country date mushrooms (Singineripit) These spring up in the month of Aviti and rainy season from fallen bamboos and date palm trunks respectively.

LEAVES :

Pulloru (Arangda)

These leaves are collected in the month of Kothamasa. After cutting them into peices they are cooked in water and salt and pepper added to taste. Savaras eat them with rice or gruel. The dried leaves are ground into flour and stored for future use. The powder is also used as a substitute of tamarind.

Jana (Susba) : And Bondana (Baredam) :

The two varieties of leaves are collected in the months of Aviti and Kothamasa respectively. After cutting them into pieces, they are boiled in water and salt and pepper are added to taste.

Mulagaku (Kurivola) :

They are available throughout the year. A sort of soup is prepared by grinding the leaves into a paste and boiling the paste in tamarind water.

Gerim (Durod) and Chilleru (Vurbongde)

These are available in the month of Agiti. The leaves are ground into paste and added to boiling tamarind water to prepare soup.

Thunika (Parivol):

The leaves are cut into small pieces and cooked pepper is added and eaten with rice or alone.

Awise :

After cooking the leaves in water, pepper and salt are added to taste and served with food.

Fruits :

The Savara country abounds in various kinds of fruit trees. Some fruit or other is available throughout the year. Some of the Savara favourite fruits are described below:

Mango (Vule) :

Mangoes are available after Kothamasa. After eating the fruits the seeds are stored for the kernels which are used in the preparation of gruel.



Neredu (Kerugath):

They are available after Kothamasa. While the juicy portion of these black fruits is eaten, the seed is thrown away.

Jarunidi (Taran)

These are also available after Kothamasa. They are small in size black in colour, sweet to taste and occur in bunches.

Mosimi (Bansu)

Fruits are available from the month of Visakha, onwards for about two months. They are round in shape, white in colour and sour to taste. Oil is also extracted from the seeds.

Pulleru (Adimunda) :

The fruit will be available after Aviti for about one month. They are very small in size, black in colour, sweet, taste, and always occur in bunches. The juice is sucked and the seed is thrown out.

Tumuka (Taren):

They will be available after Sankranti for about two months. These are round in shape, orange yellow in colour and sweet to taste. After peeling off the skin, the juicy portion is eaten and the seeds are thrown out.

Udika (Ankulla) :

Visakha month is the season for these fruits. They are black in colour and sweet to taste.

Komarangi (Elda) :

Their best season is between Sankranti and Sivarathri. These are small in size, red in colour and sweet to taste.

Maniti (Mantoesi) .

These are black in colour, sweetishsour to taste and are of the size of a melgram seed. The skin is eaten as they do not contain any juice. They are available in the month of Palakamma only.

Bagu (Murega) :

This fruit will be ripe in the month of Sankranthi and its flesh and skin are eaten while the seed is spat out.

Bappa (Soukaya) :

Their season is for about 3 months from Karthikam onwards skin is peeled off and salt and chillies are added to taste.

Sheedi (Volyjang) :

These sweet and red fruits are available in the month of Palakamma. These fruits are either burnt on fire or sun dried before eating.

Dukka Pitralu (Dunge):

There are two varieties - Balbel Dunge and Gatha-Dunge. The later produces itching sensation in the mouth. The former are fried when they are fresh and tender. These are cut into pieces like beans and then fried with salt and chillies. From the dry fruits they extract the seeds and boil them to remove the shell. The kernel is fried with salt and chillies. The Gatha-dunge seed is boiled to remove the shell and the kernel is boiled five or six times to get rid off the itch producing substances. Then they are fried and eaten after adding salt and chillies.



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In addition to the above mentioned fruits, Savaras also collect and eat fig fruits (Luvagur), date fruits (Singgus), Palm fruits and last but not least tamarind fruits (Titgur). Tamarind is an important ingredient of many curries and other eatables prepared by the Savaras. It is the most important minor forest produce exported from this agency area. Plantain fruits are the most nutritious fruits grown in the savara country. They are also offered for sale. Thus while supplementing their diet these fruits balance their budgets also.

The savaras grow numerous varieties of vegetables in their back yards and kitchen gardens. Some of these vegetables and the methods of preparation of a few vegetable curries are described below:

Gourd (Kilajan):

The long creepers bear gourds of various sizes. The savaras eat some of them, sell a few and store some more for future use. They are sliced into small pieces and boiled in water. After adding salt, pepper and tamarind to the boiled pieces, they are fried in oil. If they eat it with solid foods like rice, the texture of the curry would be fluid and vice versa.

Pumpkin (Kuv):

They eat them fresh without storing them for future use. The preparation of curry is similar to the preparation of gourd curry.

Pumpkin leaves (Kodam) and Gourd leaves (Killayelan) are also used for making curries. The leaves are cut into pieces and boiled in water. After removing the water, salt and pepper are added to taste and eaten along with rice.

Green Plantain (Kinta):

After peeling off the skin, the plantains are cut to pieces and boiled. Salt and pepper are added to the boiled pieces and eaten with rice. They also prepare gruel with plantains by boiling the pieces in water and stirring them with a wooden spoon.

Brinjals (Endarajan):

Brinjals are grown from August to November. The method of preparation is similar to the one described above.

Flesh Foods:

Flesh foods are very delicious and like by all tribal communities of the State. There is no taboo on flesh foods. They hunt wild animals from the forests and some times, they hunt days together. They eat fish, birds, orals, and some kinds of insets also.

Roasted Mutton:

Generally small animals like Squirrels, Rates, Rabbits etc., burnt over fire by insurting a wooden stick through body. Cheuchus eat the roasted animals by cutting it in to pieces by adding salt and chilly powder.

Mutton Curry:

Mutton is simply cooked with chilly powder and salt or cooked with a paste of Garlic, onion, tumeric, chilly powder and salt. Alternatively, masala powder purchased from the shandias is added. This type of preparation is popular in most of the tribal areas.

Dried mutton:

The dried mutton of the animals which is hunted is dried and consume during the times of scarcity. The knonds of Visakhapatnam district cut

them raw mutton into pieces (longitude) and dry them for some days on bamboo mats and hang them in their Kitchens. This dried mutton is consumed by them after roasted over fire or seasoned with oil and some times they prepare the 'pulusu' with the dried mutton and consume. Some tribal mix either brinjāla or cucumber pieces and eat.

Fish : The fish also roasted over fire and consumed after adding salt and chilly powder. If the fish is available in large quantity. They prepare curry. Fish is rubbed over some rough surface to remove the scales and cooked in the same way as that of mutton. While dried fishes are soaked for about half an hour in water and paste of chillies, onions, garlic, coriander and copra is rubbed over these pieces. When the fish is cooked well, tamarind pulp is added and cooked for about five minutes. Preparation of 'Fish Soup' which is called 'Chapapulusu' in telugu is also common among tribals.

Ants and Insects :

It is very peculiar to note that some tribals eat ants and insects. Certain kind of insects called 'Use in telugu are eaten by some tribals especially Chenchus. They catch ants with nets, roast them and consumed after adding some salt and chilly powder.

Tribals of Godavari, Visakhapatnam and Srikakulam districts eat a kind of white insects called 'Boḍḍeng'. These insects are available in the barks of wild date palm. These insects are cooked in water add salt and chilly powder and consumed after mixing in tamarind.

liquid. Another kind of insects called 'Teakoru (which are available in the tree barks) are also consumed by the tribals of Vizag and Srikakulam agency areas and Chenchus. These insects look like honey combs. They collect the insects in the early stage, seasoned in oil, add some salt and chillies and consume. They prepare curries also with these insects by adding salt, chilly powder, tamarind liquid, masala etc., Khonds, Konda Reddies, Chenchus are in the habit of eating ants which are available in the leaves of mango trees. They believe that ants are having proteins and good for health.

Crabs : The tribals of Adilabad, Godavari districts eat crabs. The preparation is similar to that of fish. In Adilabad district, the tribals cook the crabs in water dry the crabs and grind them into powder. The powder is added to the flour of jowar and again cooked in hot water and prepare ambali by adding salt. The tribals also eat roasted crabs and prawns mixed. They eat dry fish. Some times they add some vegetables to the dry fish, seasoned it in oil and consume. They add tamarind liquid also to the dry fish. They prepare dry prawns in the same way.

Eggs : Tribals rarely eat eggs. But they eat eggs that are available in the forests. These eggs are kept in funnel shaped adda leaves, roasted over fire and eat after adding salt and chilly powder. Konda Reddies, Porjas, Khonds and Kolams half boil the eggs and .. eat after removing upper layer. They add salt and chilly powder etc. But Porjas could not use salt, chillies etc. and they eat the eggs it is after boiled. Chenchus eat



eggs of peacocks, wild birds etc.

Other Preparations :

The tribals of Godavari, Visakhapatnam, Srikakulam Agency areas eat 'Jilugu Pindi' and Mango Kernels. They extract powder from the Jilugu trees during April and May months. First of all they cut the Jilugu tree into small pieces, the upper bark is removed and dried for about a week. The dried bark is grinded into powder. They prepare ambali or Roti with this powder.

Mango fruits are abundantly available in the agency areas of Khammam, and Coastal Andhra districts during the summer season. The ripe mango fruits are eaten during the months of May and June. This is the main food for them in this season. After the consumption of Mango fruits, the seeds are preserved in their backyards. At the onset of monsoon they find severe scarcity of food. At that time the preserved Mango seeds are broken and the Kernels are stored in baskets till they turn black and they pounded into small particles. This pounded seeds are kept in running stream over night, thoroughly washed and dried. The washing, drying and pounding process continues for one week till the bitterness is completely lost. Then the powder is stored in baskets for consumption. This stuff is used to prepare 'Roti' or 'Ambali' just like any other cereal powder. Most of the tribal families survive on these seeds for two to three months in the year.

Drinking of Intoxicants : The habit of drinking intoxicants is very common to the tribals. Even children and women also drinks very occasionally. Toddy is a part and parcel of their life and is a must in all their social and religious customs.

\*They consume toddy in large quantities in summer due to its availability. . "They consume Mohwa liquor, besides they prepare indigenous beers from cereals such as rice ragi and sama. They believe that these beers are considered to have curative properties and cooling effect on the body.

Toddy : Tribals extract toddy from Jilugu, date and palm trees. Jilugu toddy is more popular in Visakhapatnam and East Godavari agency areas. The extraction and preparation of toddy is almost similar in all areas. During the flowering stage of the toddy trees, they cut the tree at the stock of the flowers into V shape. Then they hang earthen pot just below the V shaped cut. They keep all ingredients in that pot. The fluid of the trees falls drop by drop into the pot from the V shaped cut. The fluid is collected in the pots, like this till it is fermented., and they consume this fermented toddy. Jilugu is <sup>also</sup> very popular in Vizag and Srikakulam Agency areas.

Mohwa Liquor : This liquor is like by all tribals in the state. This is prepared with a flower called 'Mohwa Flower' available in the forests. They collect the Mohwa flowers and they are fried. They keep the flower in the earthen pot and add some water, ammonium chloride, bark of neem tree, bark of white babul tree and sugandhi etc. After adding, the liquid is fermented for 4 to 5 days and drink.



The tribals also prepare another variety of intoxicant called 'Pobbal' or which is also called as 'Pullaneeru' in Telugu. This is prepared with cereals like Rice, Jowar, Sama etc. Konda Reddys, Porjas, Gadabas are more accustomed to this drink.

Special Preparations : During festive occasions special preparations like 'Payasan', 'Kudumulu' etc. are indispensable for the tribals. Pasam (Payasan) is prepared by adding jaggery, copra and pinch of salt to half cooked rice, and cooking the whole for some more time. 'Kudumulu' or cakes prepared from either jowar, Bajra or ragi or a mixture of these cereals. The flour is mixed with some water and pounded with jaggery in a mortar. It is pressed into cakes and steam cooked in an earthen pot at the bottom of which a layer of straw is kept with water just to fill half of this layer. The straw allows free circulation of steam and keeps the cakes from direct contact with water. During summer Mohwa flowers are substituted for jaggery.

The tribals of Adilabad, prepare 'Widalu' during festive occasions. These are prepared with green gram or black gram pulses. Gadabas prepare a preparation called 'Pongadamu (with the flour of rice, jaggery and coconut etc.)

Feeding Habits :

Generally the tribals take 3 meals a day one at about 3.00 AM. one in the afternoon and the other just before sunset. Ambali is usually consumed in the morning and Rotis in the evening.

Child Feeding: Breast feeding usually starts from the second day of delivery and continues till the mother conceives or upto 3 years. Supplementary feeding is started around 9th month.

Feeding of Pregnant and Lactating mothers: The pregnant and lactating mothers also have no special foods. But some choice roots or sweet meats from the shandy are given.

Conclusion: The culinary habits of the tribals in Andhra Pradesh are very simple. They rarely use Masala ingredients, oils etc. There are slight regional variations in the preparations of important foods. The collection and consumption of different kinds of roots and tubers is almost same to all tribals.

It is observed that the tribals use more water in their food preparations. Not only the cereals and even the vegetables and leafy vegetables are cooked in excess water and the water is thrown. Due to this, the minerals and vitamins that are available in the vegetables and leafy vegetables are dissolved in the water, and the required minerals and vitamins are not supplied to their bodies as required. So, it is necessary to educate the tribals in this regard about the importance of nutritive value of the food stuffs and discourage them to use more water in their food preparations.

Though different kinds of foods available in the different areas of the State, there are no much regional variations in the preparations.

Food taboos: Mutton and milk products are restricted in 3 months after delivery. Pregnant woman avoid papaya fruit and twin bananas which they believe to cause abortion and twin births respectively. A change in diet is 'invariable during illness. In case of mild fevers all fatty foods are restricted and the patient is allowed to eat old rice with chilly powder and gradually other foods are given if digestion permits. Brinjal and gongura are always avoided by sick and convalescing, people. In case of diarrhoea, gruel with buttermilk is prescribed, native barks, fruits and leaves are used as medicine. Unripe raw wood apple, Avechakra (Bark) and bell fruit are eaten to cure diarrhoea dysentery. Consumption of bajra is avoided in 3 months as it is believed to make the mother's milk undigestible. For the infant black coloured horsegram is considered good over white coloured horse gram. Regram grown in dry land is preferred over the gram grown on hill. Small sized ridge gourd and bottle gourd are preferred over the big ones as the latter is believed to interfere with digestion of mother's milk, by the infant. Brinjal and green leafy vegetables are avoided by the mother for about 6 months for the fear that the child may pass green stools. Pumpkin is believed to cause vatham (pain). Tamarind is avoided for a month as it is believed to delay the cure of child sore navel. Raw onions are avoided as it is considered to be cold producing. All roots and tubers excepting a wild tuber namely Arika teega (D. Oppositifolia) are avoided for one year. Arika teega is considered to have medicinal value too.

Among the flesh foods, prawns and cock meat are avoided for a year in the year that the child's neck might be deformed likewise. Except hen's meat the flesh foods in general are avoided for 5 to 6 months as they are considered not good for health of the mother and the infant.

Mohwa flowers, mucuna pruticus, papaya fruit are considered galactogogues by the tribal women. Korpa Reddys do not eat beef.

Nutritive value of foods taken by the tribals :

In the tables the proximate composition of miscellaneous foods consumed by tribals was given. It is evident from the table-I that Rajkeera crisps are rich in energy followed by mushroom and black gramcrisps. Bamboo shoots are rich in protein content. Pindi odiyalu made of gingelly seed cake are rich in Phosperous and calcium.

In chedu dumpa the carbohydrates are rich (Table No.2) where as in Pandimukku teega the calcium content is rich and also phosporous and Iron. In Dukka chikkudu the energy content is high and also rich in protein content. In field beans and in Redgram (Hill cultivated) the carbohydrates are very high so also energy and Thiamine content (Table-3) It is observed from the table No.4 that all the cereals and millets which are consumed by tribals are rich in energy and carbohydrates and phosporous. In ragi the calcium phosporous and Iron are rich. Ragi gruel fermented (Table No.5) is rich in Thiamine. It is only in this ragi gruel (fermented) the vitamin content is raised positively due to fermentation after cooking. Where as in rice, Korpa the loss of thiamine and oriceine content which ranges (-) 24 to (-) 100.

Positive aspects in the food taken by Tribals :

1. Feeding of colostrum to infants is practiced among the tribals, which is having antibacterial content.
2. The un-common legume (*Mucuna pruriens*) seeds mature during September/November. The proximate composition of this as reported to be rich in protein (29.1g) and in fibre (10.9 g.) which is consumed <sup>by</sup> Kolams and Gonds of Adilabad region.
3. The *Agaricus* species of Mushrooms is reported to grow on dead bamboo are available during the months of June to September. Kolams are reported to sun dry and store them in powdered form to be used as flavouring agent in various food preparations. The proximate composition of dried Mushroom (*Agaricus* Sp) is reported to be rich in protein (25.12%) ash (7.7%) and fibre (16.9g) (Singde 73). A higher content of protein (47.49) had been reported by Kurtzman (1975).
4. Fermentation of ragi flour for 24 hours increases thiamine by 58 percent and decreases by 6 percent after cooking. However, in cooked product of bajra fermented for 24 hours, thiamine content is reported to be increased by 84 percent (Aliya and Geervani 1981).
5. The traditional food practices of paraboiling the newly harvested millets-sama, Ooda, Korra and paddy seem to have been evolved by the tribals as an effective measure to improve the taste, and cooking quality of the grains as is indicated from their belief that paraboiling makes dehusking easier and the paraboiled rice tastes better and less sticky after cooking.

6. Some of the cooking practices of the tribals like cooking rice and millets together, Korra, and green leaf vegetables together are good in terms of their complementary nutritional value.
7. Dukka chikkudu (a legume variety) has higher protein content and is consumed after special processing. The mineral content of the cereal millets and legumes analysed is found to be somewhat higher as compared with other varieties grown in the state. The Iron and calcium content of the two ragi varieties and horsegram is found to be approximately high.
8. Among the 4 non conventional foods analysed, rajkeera seeds and dried mushroom are fair sources of protein. Dried Mushroom are rich source of Iron. Carya palm with and bamboo shoots are fair sources of energy only.
9. Analysis of nine cereals millet products commonly consumed by the tribals showed that the cereal products. Kept soaked in rice gruel are higher in thiamin content.
10. The Black gram taken by these groups is rich in protein and phosphorus, and a good source of energy.
11. The field beans (dry are ~~rei~~ rich source of energy (355) and the mineral content is also more (3.4 g).
12. The Jindumulu consumed by these groups are rich in phosphorus (423 g) and energy and in niacin (1.3) content also. It has a riboflavin content of 0.13 (mg)
13. Both the varieties of Horse gram (black and white are having much fat content (0. and 2.9. g) and phosphorus 575 mg and 448 mg. The phosphorus content in this is high when compared to other legumes consumed by tribals.
14. In Dukka chikkullu protein content is high i.e. 273 gms. It is rich in energy content (401 Kcal) also when compared to other legumes. The Riboflavin content is 0.10 mg.

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\* Tribal food habits, R. Rajya Lakshmi, Gian Publishing House, New Delhi-110 002.

15. The local variety of Bajra is having high carbohydrates followed by energy 365 (k.cal) and phosphorus 799 mg. and Niacin 3.4 mg.
16. Itallion millets are rich source of energy 371 (K.cal) and also in protein content 11.8(mg.)
17. In Ragi, Iron content is high to the tune of 18.8(mg.)
18. In samai another millet the content of carbohydrate are higher 78 mg followed by Thiamine 0.31 mg.

Nutrition Status :

The caloric intake of P.T.Gs. of Visakhapatnam is deficient to R.D.A. by 6.74% but surplus by 24.35% and 15 15.83% in comparison to All India average diet and chenchu diet respectively. The protein intake is deficient by 2.16% compared to R.D.A. The consumption of Calcium is however is on very highside when compared to R.D.A. and chenchu diet. The intake of vit.A is within the R.D.A. range.

Among the P.T.Gs. of Vizianagaram and Srikakulam districts the intake of cereals is inadequate. The intake of Vit.A. Thiamine and Iron are inadequate. The most severe deficiencies in calories which is about 50% among Children, 42% among Lactating mothers and 28% among pregnant mothers. Nicotinic acid and riboflavine deficiencies come next while deficiencies in calcium and protein are comparatively less.

Among Konda Reddis the intake of protein is less by 20% compared to R.D.A. The deficiency of Vit.A. range from 6% to 30% in comparison to R.D.A. and Vit. 'B' 12% to 56%. Riboflavin 64%, Nicotinic acid by 4.5% and calcium by 46 % and Iron intake is surplus by 20%.

When compared to study conducted by National Institute of Nutrition (National Nutrition, Monitoring Bureau Report of the tribal survey 85-87) it was observed that the tribal groups living in I.T.D.P. areas of different states indicated that the consumption of protein rich foods, like pulses, flesh food and milk was very low. It is revealing to note that the proportion of individuals on diets which are adequate in energy but not in protein is quite high. This could be due <sup>to</sup> relatively lower consumption of pulses and higher intakes of roots and tubers by the tribals.

Among Chenchus the intake of calories is deficient by 2.15% when compared to R.D.A. The intake of Vit.(A) is also by 98.78%. Which is due to non-availability of green leafy vegetables in summer season.



SUMMARY AND ANALYSIS :

A Comparative Study on the food habits and nutrition status on the Primitive Tribal Groups is attempted in this paper. For this purpose a primitive tribe is a community which has been recognised by Government of India under that category for purposes of giving special financial assistance for their development.

In the State of Andhra Pradesh 8 tribal communities have been recognised as Primitive Tribal Groups since 1975 and the groups which are leading a pre-agricultural way of life and with literacy less than 2% have been generally included in this list. The Primitive Tribal Groups live in relative isolation to the forest and hilly areas and their food habits vary from area to area and from group to group because of variations in flora and fauna and around their habitat. The Primitive Tribal Groups have also come into contact with private and Government marketing agencies and in this process they sold the forest produce and purchase food items from outside market agencies. Therefore, the diet of the primitive tribal groups is no more confined to traditional fruits gathered from marketing agencies.

The dietary patterns determine the nutritional aspect of the food while the intake helps us to determine the nutritional status as compared to the R.D.A. (Recommended Dietary Allowances). Various studies have been conducted on diet and nutritional status of various sections of populations on which it was found that the traditional diets were inadequate, some times in quantity but many

times in quality. The prevalence of high afflictions rickets, beri-beri and incidence of physical deformities *child mortality were often found to be result of deficient* diet taken by the expectant and lactating mothers at vulnerable age group of upto 6 years of age.

*It is often belived that the tribal foods are in* plenty and the tribals do not suffer from any nutritional deficiency. It is therefore desirable to study the availability of traditional foods in the present context and their intake besides the intake of food from outside the market.

The comparative study shows that traditional foods include roots, tubers and leaves available in the forest and also millets and pulses grown in shifting cultivation and dry land cultivation fields.

The culinary habits shows same similarities and variations. For example the tubers like chenchu geddalu are boiled in water several times so that the bitterness is lost, They are mixed with salt of chilly powder and eaten. In case of seeds they are eaten either raw or after roasted. The fruits are generally eaten raw while in case of mango, panasa and tamarind even the seed is also consumed by converting them into gruel. This gurel is popularly known as ambali in almost all tribal areas.

Cereals like Jowar, Ragi are also converted into different forms like Roti, Gruel etc. The leafy vegetable are often converted into chutney and mixed with salt, spices ~~of~~ or chillies. A normal diet of the tribal includes



cereal based with chutney prepared from leafy vegetables  
a gruel or roti mixed with cooked pulses or some times  
the cereal base mixed with tamarind liquid.

On the face of it, it appears as if each and every  
flora and fauna in the forest is a food for tribals, but  
in actual practice the food intake of tribals changed  
considerably due to various factors. The declaration of the  
forest as around tribal habitate as reserved forest  
actually resulted in removing shrub jungles for growing  
commercial Forestry. This in turn resulted in reducing  
the food availability in terms of roots, tubers, small  
games etc., on the other hand when the tribal economy has  
changed from food gathering to gathering of minor forest  
produce for commercial purposes, the cash economy started  
playing an important role. The out-side fruits have to be  
imported into tribal areas. In the initial stages the  
merchants who brought these fruits and also some out-side  
material started exploiting the local tribals. Moreover,  
the out-side foods are always costly, therefore the Government  
through its Agencies like S.C.C. has to supply the  
daily requirements to tribals through a network of  
depots. This has further increase the dependence of  
tribals on <sup>an</sup> out-side market. In this process the tribal  
became part of total economy of the State and he being  
at receiving end was always a loser. The pressures of  
high cost economy and depletion of food resources has  
ultimately resulted in lesser intake of and consequent  
malnutrition. This is evident from the results of the  
surveys in the primitive group inhabited areas.

The caloric intake of primitive tribal groups, living in thickly forested areas of Visakhapatnam is deficient only by 76.74% compared to R.D.. Among the Picts the protein intake is deficient by 2.16%. The intake of cereals, vitamin 'A' and iron are inadequate in the P.T.G.'s living in Vizianagaram and Srikakulam districts. The most severe deficiency in calories was found in almost half of the children and Lactating mothers. The Konda Reddis food intake is deficient by 20% in protein content compared to R.D.. Vitamin 'A' and Vitamin 'B' deficiencies are also noticed.

The "Original affluence" among the forest dwelling tribes is only a myth and the modernisation process seems to have added miseries to the tribals, as it is reflected in the nutritional deficiencies and nutritional diseases associated with these deficiencies. clear cut food policy taking into consideration natural foods, requirement of fruits from nutritional angle and foods to be made available within the purchasing capacity of tribals is needed so that the infant child mortality and blindness and tuberculosis, general weakness and physical inefficiency to increase the outputs due to caloric deficiency can be tackled.

#### ACKNOWLEDGEMENTS

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PROXIMATE COMPOSITION OF MISCELLANEOUS FOODS  
 VITAMIN CONTENT OF MISCELLANEOUS FOODS CONSUMED

MISCELLANEOUS FOODS.	Moisture (%)	Protein (mg)	Iron (mg)	Mineral (mg)
BAMBOO SHOOTS PROCESSED AND DRIED.	11.6	29.6	0.4	8.5
MUSHROOM(Dried)	10.5	27.6	2.9	9.5
CARYOTAPERM	10.1	1.8	0.4	2.0
RAJKERA CRISPS	3.2	16.8	7.2	2.0
BLACKGRAM CRISPS	17.2	18.3	0.4	2.0
PINDIV/DIALU (Made of Gingelly seed-cake)	40.8	14.3	7.3	10.2

0.10.1

CONSUMED BY TRIBES (PER 100 g EDIBLE/PORTION MINERAL AND  
D BY THE TRIBES.

Fibre	Carbo- hydrat- es.	ene- gary F. Cal	Calc- ium	Phos- phor- ous.	Iron	Thai- mine	Reba- flav- in	Wia- cin
(mg)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)
6.9	43	294	3	1049	22	0.05	0.01	0.03
9.2	71	298	5	1193	92	0.31	0.30	0.70
5.5	80	332	0	72	51.7	0.12	0.02	0.02
1.0	69	407	116	419	48.9	0.34	0.40	2.00
0.1	62	325	84	570	5.9	0.18	..	1.80
2.8	25	222	965	1598	38.4	0.40	..	2.30

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TABLE NO. 2

PROXIMATE COMPOSITION OF SOME WILD TUBERS MINERAL AND VITAMIN CONTENT IN SOME WILD TUBERS CONSUMED BY THE TRIBALS(Per 100 g Edible portion)

Tubers	moisture	Protein	Fat	Minerals	Fibre:	Carbo- hydra- tes.	Ener- gy K.cal	Calc- ium (g)	Phos- pho- rus mg	Iron mg	Thia- mine mg	Ribo- flavin mg	Niacin mg
ARIKATEGA	73	1.8	1.1	2.4	0.9	21	100	45	53	4.7	0.04	0.02	0.10
CHEUDUMPA	67	3.4	1.1	0.9	0.5	27	132	56	175	6.4	0.04	0.02	0.06
PANDIMUKKU TEGA	79	2.8	0.7	3.2	2.0	15	72	139	177	7.2	0.02	0.02	0.10
PULIDUMPA	74	5.2	4.3	2.0	0.8	19	134	86	15	4.7	0.10	0.02	0.40



TABLE NO. 3

PROXIMATE COMPOSITION OF LEGUMES CONSUMED BY THE TRIBES (Per 100 edible portion) MINERAL AND VITAMIN CONTENT OF LEGUMES CONSUMED BY THE TRIBES.

Legumes	Moisture (%)	Protein (g)	Fat (g)	Minerals (g)	Fibre (g)	Carbo-hydrates (g)	Energy (g)	Calcium (g)	Phosphorous (mg)	Iron (mg)	Thiamine (mg)	Ribo-flavin (mg)	Niacin (mg)
Black gram	5.7	23.8	2.7	3.3	3.2	61	365	126	408	7.2	0.11	..	0.1
Cowpea	7.4	22.1	0.9	3.9	3.8	62	343	304	345	12.1	0.12	..	0.1
Black variety	7.5	20.3	1.4	3.2	4.4	63	345	61	223	10.4	0.13	..	1.7
(dry)	8.4	20.3	2.4	3.4	2.4	63	355	62	264	6.1	0.14	..	1.1
White variety	6.6	20.3	2.9	3.7	2.4	64	364	78	355	11.8	0.23	..	2.5
Red variety													
Jadumulu	10.7	22.0	2.1	3.4	1.1	61	350	20	423	8.0	0.12	0.13	1.3
Black variety	9.6	22.2	3.0	3.6	3.4	58	349	263	515	38.6	0.31	..	3.5
White variety	9.9	22.8	2.9	3.5	3.3	58	348	351	448	38.5	0.22	..	3.0
Dry land	7.8	20.3	2.7	3.5	5.8	60	345	118	286	4.6	0.42	..	1.5
Cultivated													
Hill Cultivated.	4.7	20.3	2.6	3.5	5.0	64	359	77	203	7.2	0.43	..	1.3
Dukkachikkudu	6.8	27.3	8.6	3.4	0.2	54	401	30	346	8.8	0.13	0.10	1.6

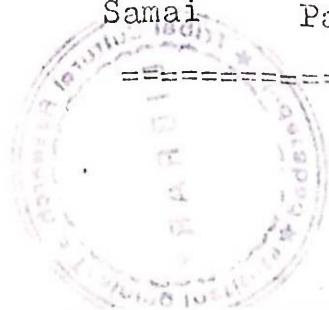


TABLE 4

PROXIMATE COMPOSITION OF CEREALS AND MILLETS CONSUMED BY THE TRIBALS (per 100g edible portion)

Cereals/ Millet	Particulars	Mois- ture (g)	Protein (g)	fat (g)	Miner- als (g)	Fibre (g)	Carbo- hydr- ate	Energy	Calcium (mg)	Phos- porus (mg)	Iron (mg)	Thia- mine	Niacin (mg)
Bajra	L.V.	9.5	8.4	3.1	1.7	1.2	76	366	27	707	6.5	0.30	3.4
	H.V.	10.2	10.0	3.6	1.6	1.4	73	354	20	714	7.2	0.31	3.5
Italian Millet	Paraboiled	9.8	11.8	3.1	1.1	0.2	74	311	20	460	8.7	0.31	2.3
	Raw	12.5	11.2	2.6	1.3	0.3	72	357	21	616	10.2	0.23	2.3
Jowar	White variety	13.4	8.4	2.9	1.9	0.3	73	352	28	161	5.2	0.23	2.2
	Red variety	14.8	7.0	2.9	1.6	0.3	73	346	95	773	6.6	0.30	3.
Varagu	Paraboiled	11.8	7.0	3.2	1.1	0.2	76	350	22	161	5.8	0.34	3.4
Sanwar Millet	Paraboiled	10.5	10.9	1.2	1.3	0.3	76	358	20	544	8.6	0.34	2.2
Ragi	Pella	8.8	7.4	1.8	2.9	2.0	77	352	302	656	19.3	0.40	1.2
	Funcca	15.0	7.0	1.8	2.9	2.0	72	331	307	479	18.8	0.31	1.0
Rice	Burada	10.5	7.0	1.4	2.3	2.1	77	347	264	501	8.6	0.32	1.0
	Raw	11.1	6.3	1.0	0.6	0.2	81	357	14	118	11.0	0.22	0.9
	Paraboiled	11.5	6.5	0.8	0.9	0.2	80	351	15	378	7.3	0.25	3.3
	Red rice	8.5	6.3	0.7	1.2	0.3	83	364	21	250	6.1	0.26	3.3
Samai	Paraboiled	12.4	7.0	1.1	1.3	0.2	78	350	21	390	8.8	0.31	2.1

L.V = Local Variety, H.V = Hybrid Variety.



EFFECT OF PROCESSING ON THIAMINE AND NI

CEREALS AND MILL STS.	Before cooking:		After co
	Thiamine,	Niacin.	Thiamine/1
RICE	0.15	1.2	0
COMBINATION OF RICE AND RAJRA.	0.22	2.1	0.01
COMBINATION OF KORRA AND RICE.	0.41	2.0	0.02
KORRA RICE	0.33	1.5	0.01
KORRA RICE (Paraboiled)	0.35	2.6	0.05
ODARICE (Para boiled)	0.40	1.5	0.10
JOWAR RICE	0.21	2.5	0.02
RAGI GRUEL(fermented)	0.40	1.1	0.60
BAJRA GRUEL(fermented)	0.30	3.7	0.05

TABLE NO. V

NIACIN CONTENT OF THE CEREALS AND MILLETS CONSUMED BY THE TRIBES.

Cooking:	Vitamin content (Mg. 100% product with conje kept over night.		Thiamine/Niacin		Thiamine/Niacin		Loss or gain	
	% loss/gain		Thiamine/Niacin	Niacin/Niacin	Thiamine/Niacin			
0.6(-)	100(-)	50	0.25	0.5 (+)	66 (-)	56		
0.6(-)	95(-)	75	0.30	0.9 (+)	36 (-)	57		
1.4(-)	95(-)	30	0.35	1.4 (-)	14 (-)	30		
0.4(-)	97(-)	40	0.25	1.1 (-)	24 (-)	20		
1.9(-)	86(-)	27	0.26	2.2 (-)	25 (-)	15		
0.4(-)	75(-)	40	0.20	0.7 (-)	50 (-)	53		
0.9(-)	90(-)	64	0.30	2.2 (-)	43 (-)	12		
1.5(+)	50(+)	36	..	.. ..	.. ..	..		
2.2(+)	33(-)	24	..	.. ..	.. ..	..		

Nutrient	R.D.A.	Tribes of Khammam	Chenchūs	Tribes of visakhapatnam Dist.	Khammam % of deficiency or surplus to R.D.A.	(Chenchus) % of deficiency or surplus to R.D.A.	Visakhapatnam % of deficiency or surplus to R.D.A.
Calor. (K.Cal)	2800	1081.95	298	2611.25 (-) 602	(-) 1718.07 (61.36)	(-) 602.00 (21.5)	(-) 188.75 (6.74)
Protein (Insp.)	55	43.69	62.98 (+7.98)	53.81	(-) 11.31 (20.56)	(+) 7.98 (14.51)	(+) 1.19 (2.16)
Calcium (Insp.)	1.0	0.54	0.84	1.43	(-) 0.46 (46.10)	(-) 0.16 (16.00)	(+) 0.13 (13.00)
Iron	20.30	24	47.56	36.36	(+) 4(20) (-)6 (-)20	(+)27.56 (-)37.80 (-)17.56 (58.53)	(+)15.36 (76.80) (+)5.36 (17.87)
Vit.A	3000 to 4000	2799.60	48.67	3459.27	(-)200.40(6.48) (-)1200.40(30.01)	(-)2951.33 98.38 (-)3951.33 93.78	(+)459.27 15.31 (-)540.73 (13.52)
Thiamine	1.2	0.873	1.52	1.73	(-)0.127(12.70)	(+)0.52(52.00)	(+) 0.73 (73.10)
Riboflavin	1.5	0.537	1.54	1.59	(-)1.127(56.35) (-)0.963(64.00)	(+)0.48 (24.00) (+)0.04 (2.67)	(-)11.27 (+)10.00
Vit. B <sub>12</sub> (mc)	90	9.549	15.07	11.75	(-)0.451(4.51)	(+)5.07 (50.70)	

TABLE NO. VII

Sl. No.	Diets	RDA	KONDA REDDY	KHONDS	CHENCHUS
1.	Cereals	400	190.11	384.50	564.95
2.	Pulses	35	25.31	77.50	82.00
3.	Oils of Fats	57	4.33	54.00	0.511
4.	Leafy vegetables	114	1.40	82.00	6.46
5.	Vegetables	85	78.26	82.00	38.97
		5			
6.	Roots & Tubers	85	2.46	79.50	80.80
7.	Flesh foods	85	34.48	35.50	43.84

OFFICE OF THE CHIEF OF POLICE,

DEPARTMENT OF PUBLIC RELATIONS

<u>% DEFICIENCY OR</u> <u>SURPLUS AMONG</u> <u>KONDA REDDY</u>	<u>% DEFICIENCY OR</u> <u>SURPLUS AMONG</u> <u>KHONDA</u>	<u>% DEFICIENCY OR</u> <u>SURPLUS AMONG</u> <u>CHENORUS</u>
(-) 52.47	(-) 3.88	(+) 41.24
(-) 70.22	(-) 1.18	(-) 3.53
(-) 92.40	(-) 5.20	(-) 99.10
(-) 90.77	(-) 28.07	(-) 94.33
(-) 7.93	(-) 3.53	(+) 4.67
...	...	...
(-) 97.11	(-) 6.47	(-) 4.94
(-) 59.44	(-) 58.25	(-) 48.42

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