INTRODUCTION

The present day ethnobotanic study begun in 1873 with the work of Stephan Power who used the term “Aboriginal botany”, which elucidated the total aboriginal dependence on plants for food and medicine. The term ethnobotany was first introduced by Harshberger (1895) as “The study of plants used by primitive and aboriginal people”. Before the introduction of the term “Ethnobotany”, the study of traditional botanical knowledge was focused almost entirely on the applications and economic potential of plants by native people. At this time the subject included more identification and cataloguing of plants used by the primitive people. In 1916, Robins Harrington and Feiro Marreco promulgated the broad definition of ethnobotany and considered, it as a study and evaluation of the knowledge of all phases of plant life amongst primitive societies, and of the effects of vegetal environment upon the life, customs, beliefs and history of the people of such societies. Later in middle of the 20th century anthropological and ecological aspects were also included with it. Ethnobotanical study was escalated during 1980's and the subject became multidisciplinary (Cotton, 1996). Since time immemorial man has used various parts of plants in the treatment and prevention of many ailments (Chah et.al. 2006).

Ethnobotany deals with the direct relationship of plants with man. The term has often been considered synonymous with either economic botany or with traditional medicine. Early origins of traditional medicine must have had their roots in ethnobotanical folklore, but today traditional medicine incorporates several well organized, distinct systems of diagnosis and cure. In India alone, three traditional systems of medicine namely Ayurveda, Siddha and Unani are distinguished. Further, ethnobotany includes study of foods, fibers, dyes, and tans, other useful and harmful plants, taboos, avoidances and even magico-religious beliefs about plants (Jain, 1967a, Ford, 1978).
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The basic aspect of any ethno-botanical study is the recognition that humans form biological population and are dependent on culture (Ford, 1978). Ethnobotanical terms include the classification of plants and human psychological disposition towards them. This will then determine how vegetation will be manipulated and what the consequences of human utilization. Cultural beliefs determine the conditions of human existence and the biological properties of human population define the quantity of plants that must be obtained. Together they form the human ecology of ethnobotany (Ford 1978).

Ethnobotany is a rapidly expanding science. In the last three decades, it has considerably expanded, both in its concept and scope. Beginning with study of plants used by tribals for food, medicine and shelter, now it includes studies like conservational practices of tribals, ethno-pharmacology, ethno-pharmacognosy, ethnomusicology, ethno-gynecology etc.

Ethnic groups of various regions of the world are the real custodians of nature’s wealth and experts in herbal medicine. The traditional indigenous knowledge transferred orally for centuries is fast disappearing because of the technological developments and changing culture of ethnic groups. In spite of all these disturbances the indigenous phytocure methods are restored amongst the tribes, as it is a part of their culture. Moreover, the people in ethnic tribes are averse to change the mode of their life and traditions. But this traditional medical knowledge slowly diminishing, so it is to be procured and preserved in various form for future generation. The indigenous groups possess their own distinct culture, religious rites, food habit and a rich knowledge of traditional medicine (Harsha et.al. 2001, 2003).

Traditional home remedies and herbal medicine constitute prominent dimensions of local health tradition and unique heritage of district Bastar, Chhattisgarh. In Chhattisgarh, traditional home remedies and herbal medicines are administered both in remote rural areas as well as in urban areas where allopathic medicine is easily available. The health of the people of the state is determined by medical pluralism. Chhattisgarh, the premier herbal state of India upholds unique local health tradition interlinked with a large number of sacred grooves and rich traditional knowledge base of thousands of folk healers, Baidyas, Guniyas and local
knowledgeable person in tribal area of Bastar. The Traditional Folk Healers of Bastar Chhattisgarh have sustained a wide range of folk healing practices since generations together.

The issues of conservation of medicinal plants and their sustainable use are interlinked with these local treatments. The Government policies and programmes attach great priority on collaboration between allopathic and traditional remedies. The documentation of traditional indigenous knowledge has initiated path breaking ventures to bring about synergy between these two different streams of primary health care approach. A great majority of patients in rural area of this State have recognized the efficacy and wide use of traditional medicine. The community has recognized the potentiality for improving both the streams towards ultimate purpose of promoting health by developing a more holistic approach to health care. Initiatives for value addition, collection, processing, non-destructive harvesting and cultivation of medicinal plants for livelihood promotion and health security in district Bastar of Chhattisgarh have been encouraged.

The Traditional and primitive folk healing practices among tribals of Bastar normally involve medicine derived from plants and animals available within local agro climatic zones. Different studies have conducted by scientists on folk healing practices in different districts of Chhattisgarh. It is evident that folk-logic including cultural, biological, historical, religious, and environmental factors that significantly influence the folk therapy. The concepts of illness and healing are not universal. They vary from culture to culture. One third population of Chhattisgarh is tribal. They have their own value system and cultural interpretation of disease and treatment. They have a very different understanding of why people get sick, and how they can be treated. The Traditional healers of Bastar have been treating and rendering miraculous cure to thousands of patients annually. They claim to treat most complicated patients of bone fracture who have been refused by the hospitals in different cities. The ailments like infertility, cancer, malaria, diabetes, skin diseases are not beyond their expertise. These local practices have evolved a grass root mechanism for sustainable use and conservation of medicinal plants (MAPs) resources, since time immemorial.
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One important current concern of ethnobotanical research is the potential use of plants as medicine, a knowledge that is often exclusive to the specific communities and linked to the local flora. As repeatedly emphasized in different contexts, the importance of plants in our lives, in addition to being a source of food, is their therapeutic potential; every culture in the world developed its own practices of treating the diseased. The fund of knowledge developed over the millennia by thousands of ethnic groups, is largely unrecorded and faces the danger of becoming extinct. Our urgent concern is to preserve, refine and use this information for a more effective management of health.

Forest wealth or forest resources comprising of all plants, plant parts and their products available in the forest areas have direct and indirect relationship with the life of local population, tribals, forest dwellers and many other backward group inhabitant. The sociological systems, customs, cultures and life patterns of these groups are also closely related with forests. They utilized forest products for food, fodder, medicine, fuel, gum, agriculture implements, aromatic oils, basketry works, charcoal, decoration, defense equipment, dye, fencing, fishing, furniture, house building, hunting equipment’s, implements, musical instruments, poison, rope, sale/barter, smoking, socio-religious, timber, tools, utensils etc. for their sustenance, daily needs and many other consumer products for self-sustenance, whereas commercialization or collection and sale of forest products are mostly helpful to the local inhabitants for their economy and day to day needs of livelihood.

Forests are not only the source of major and minor forest products but it also provides and fulfils the basic needs and demands directly and indirectly in life pattern of tribals. They also use an enormous range of wild plants and have developed a unique understanding of the forest resources and passed on these traditions, taboos, totems, folklore, traditional medicinal remedies and knowledge etc. by word of mouth from one generation to other generation. They also have the key to understanding, utilizing and conserving the plant resources. The storage of ethnobotanical traditional knowledge of plants and animals origin in memory is really a God gift for a resource person in each tribal group. Each tribal group has different ethnobotanical knowledge than its neighbors, which is either acculturated or lost with the knowledgeable person of that tribe.
Chhattisgarh has a rich and varied flora due to its diversified topography and variable climatic condition. 20-25 tribes are living isolated or in combination in four different zones like Central, Eastern, Western, Northern and Southern zones respectively. The Gonds constitute the largest tribe amongst the other tribes of the state. District Bastar is located in the southern zone of Chhattisgarh. Gonds, Bhatara, Muriya and Mariya are the main tribes of Bastar and they have unique identification in the country. Bastar is a tribal district where about 70% of the total population is tribals and which constitutes 26.76% of the total tribal population of Chhattisgarh state. Each tribal group has their own culture and each of them is following their own traditional living ways. These tribal groups are having different spoken languages and they differ from each other in their costume, eating habits, customs, art, living ways etc. Some of the tribals are still living in interior forests and they do not like to come to the outer world and mingle with the modern civilization and are unaware of what is happening in the world.

The present investigation entitled “Ethnobotany in relation to health and livelihood security of district Bastar of Chhattisgarh state” is the task to investigate the existing traditional knowledge of local tribal communities, forest villagers inhabiting in the areas of district Bastar of Chhattisgarh state as well as the status of livelihood promotion through collection conservation and value additions of non timber forest produces (NTFPs).

This study has been done with following objectives:

**Objectives of the present studies:**

1. Survey of the Study Area:
   - Personal survey of people and interview them with a questionnaire to record:
     - (i) Socio economic status of tribals in district Bastar.
     - (ii) Ethnobotanical knowledge of plants.
   - Documentation of local health traditions of district Bastar.
   - Identification of specific health problems amongst the various tribal communities.
   - Botanical identification of medicinal plants.
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- To document specific formulation, methods of medicine preparation and dose administration.
- Herbarium preparation for medicinal plants.
- Livelihood assessment at district Bastar of Chhattisgarh state.
- Brief study on livelihood promotion through ethnobotany.
- Collection assessment and potential market survey of non timber forest produce of Bastar.
- To identify the rare, endangered and endemic medicinal plants.
- To study the important commercial medicinal plants for socioeconomic upliftment of tribals.
- To educate rural people to conserve natural habitats of important medicinal plants.
- Conservation practices of the tribals.

3. Photography of the plants in study area.
4. Photography of the activities related to ethnobotany.
5. Listing of plants of ethnobotanical importance with their medicinal use.

GENERAL DESCRIPTION OF STUDY AREA

Bastar District of the Chhattisgarh state was selected as a study site for the present work. Bastar is one of the tribal districts of the state. Before splitting in to three districts in the year 1999, was one of the largest district in India, the area of the district was even larger than the area of Kerala state and some other countries like Belgium, Israel etc. Bastar district was divided in to three districts namely Bastar, Kanker and Dantewada. Later in new state of Chhattisgarh Bastar incorporated five districts namely Bastar, Kanker, Dantewada, Narainpur and Bijapur. In the year 2007 Bastar became one of the districts amongst the five divided districts of old Bastar.

The district of Bastar is located in the southern part of Chhattisgarh state, situated at the height of 2000M above plateau MSL. In Chhattisgarh, state Bastar district is surrounded by Kanker district in the north Maharashtra state in the west Dantewada district in the south and Orissa state in the east. The total forest area of the
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Bastar is 7112 sq km, which is more than the 75% of total area of the district. Out of the total population, more than 70% are tribals like Gonds, Abujhmaria, Dardamaria, Muriya, Doriya, Dhruya, Bhatra, and Halba etc. The largest and the most important river in the Bastar districts is the Indrāvati, neither the river nor its tributaries dry of in the hot session. As per 2001 census, the population of Bastar is 1302253, out of them 648068 are male and 654185 are female. Majority of population 1172265 lives in rural area.

MATERIALS AND METHODS

The work entitled “Ethnobotany in relation to health and livelihood security in district Bastar of Chhattisgarh State” involves various steps in study like field study in which questionnaire was filled by the tribal’s and personal interview was organized, collection of plant specimen, preparation of herbarium and identification of plants with the help of flora. The study was conducted in the year 2006-2008. The methodology of the present work was adopted from some of the earlier workers like Jain, (1987, 1988), Masih, (1990) and Jain & Singh (1997). The methods of Ethnobiological studies have been summarized by Roy (1989) was also consulted in the present study.

The Ethnobiological information was obtained from Baidyas, Sirhas, Gunias, knowledgeable person, experienced people, medicine men, and heads and local inhabitants of the village, who have knowledge of plants for health and livelihood security. The methodology of the present study has been divided in to following headings.

I. Collection and Compilation of Socio-economic data of the Study area Bastar:

Socio-economic data of the study area was collected from 20 villages of district Bastar. A detail and elaborate questionnaire was developed for Socio-economic and ethnobotanical survey for the health & livelihood security by taking important contents from the proforma developed by Jain, (1987, 1988), Masih, (1990). The sample size used for the present study was 20 tribal family/village, hence 400 families in 20 villages were surveyed in Bastar district for the collection of socioeconomic data. Socio economic data was collected under 11 sub headings.
II. Ethnobotany in relation to health security in district Bastar:

(a) Informants in Ethnobotanical survey:

Ethnobotanical survey was done by following the methodology of Cotton (1996). Ethnobotanical survey in relation to health and livelihood security was conducted in 20 villages of Bastar district and information was collected from 400 tribal’s belonging to 08 different categories on the spot/ during the transit visit.

(c) Documentation of Local health traditions for different ailments:

Local health tradition of tribals in study area Bastar was documented with the help of questionnaire. Information was also collected from all the tribes by conducting interviews and the collected information on local health tradition was documented.

(d) Documentation of traditional knowledge of health security collected from folk healers and Baidyas /Traditional health practioners:

The documentation of traditional knowledge of folk healers and Baidyas was recorded by making personal visits and interviews. The information was collected in village as well as by making transit visit to the forest of the study area. The traditional knowledge of health security was collected disease wise use of local plants. The documentation of the information given by folk healers and Baidyas was documented under 10 headings.

(e) Documentation of drug preparation practiced by tribal’s in Bastar:

The Baidyas and folk healers of the area were interviewed individually for collection of information regarding the preparation of drug and its administration against diseases. Information was documented disease wise use of plant/plant parts for the preparation of drug. The cost of the treatment per episode/per disease was also noted.

III. Ethnobotany in relation to livelihood security in district Bastar:

Tribal People were interviewed during the visits for documentation of plants widely used for livelihood Security. The information of plants was collected under the heads of food, fodder and fuel and Non timber forest produces (NTFPs). Local and nearby market were also surveyed for marketing of collected materials from forest.
Identification and use of Medicinal Plants:

Plant samples and plant parts collected during the survey were preserved as herbarium specimens, and voucher specimen. The plant samples were identified with the help of published, authentic literature. The Flora of British India, Vol. I-VII by Hooker (1872, 1879), Cooke (1967) and Gamble (1935), have been consulted for the identification of plant sample.

IV. Study of Conservation practices of Tribal’s in Bastar:

Conservation practices of tribal’s like Muriya, Bhatara, Mariya, Gond, Halba were observed and recorded during the ethnobotanical studies.

RESULTS

The results of present study have been described under following headings:-

1. BASELINE SURVEY FOR THE COLLECTION OF SOCIO-ECONOMIC PROFILE OF THE TRIBAL IN BASTAR DISTRICT.

Baseline survey for the collection of socioeconomic profile was done in the 20 villages of district Bastar. Total of 2930 families belonging to above villages were surveyed. The data of socio-economic profile was collected under various parameters, with the help of questionnaire, through lively observation and by the interaction with the people of the villages. In all the villages of study area, prominent tribes found were Gond, Halba, Muriya, Mariya and Bhatra etc. Both tribal and non tribal of the villages were considered for the study of socio economic profile. Socioeconomic survey was done under the following heads:-

1. Types of family

In 2930 surveyed families, average 24.54% families were found to belong a nuclear family, while 75.49% families were joint family in both tribal and non tribal population.

2. Religion

Religion of the 2930 family was surveyed and classified in to Hindu, Muslims, and Christians. 99.56 % families were found to belong Hindu religion, while 0.25% and 0.13% families were of Muslim and Christian respectively.
3. Caste
The maximum 83.56% scheduled tribe families followed by 8.22% other backward class, 7.74% scheduled cast, and 0.48% families belongs to other communities were found to live in Bastar.

4. House:
Out of 2930 families 88.40% families had their own house, while 5.54% had their own hut. Only 1.91% of families were found to live in rented house.

5. Land
In present study average 90.26% of families of 20 villages in Bastar had their own land while 9.60% families were found to have leased land (that is land taken in rent for stipulated period). 9.60% of families did not have own land for cultivation, while 90.26% of families were having own land for cultivation. 90.26% of the families had rain fed land. 80% of families out of them had less than (<1) one acre of dry land, while 10% of them had more than (>1) one acre of dry land. 5% of families had 2.5 to 5 acres of dry land, while only 5% of families reported to have wet lands.

6. Drinking water facility
In present study 93% of the families in Bastar were found to depend on public tap & hand pump for drinking water, while only 7% families had their own tap or well at home as a source of drinking water.

7. Toilet facility
Average 6.27% families had toilet facility at their home, while 94.86% families had no facility of toilet in their home.

8. Fuel facility
It was noted that 98.67% families were found to depend on fire wood as a fuel for cooking. Only few villagers like Manjhapara, Bhumka, Hirri, Phupgaon, Pathraguda and Bajarpara where family were found to use kerosene as well as fire wood, however the percentage of kerosene using family was noted 1.33%.

9. Irrigation facility
In surveyed villages only 1.12% of families had irrigation facility like pump sets. The 10% families had well water for irrigating their vegetable and crops, remaining families had no irrigation facilities. Electricity connection was available to 50% of villages and in these 50% villages only 30% of families had electricity connection in their house.
10. Transport facilities

An average of 83.14% families had bicycle as a means of transport, while 75.01% families still uses bullock cart as a means of transport. 6.85% of families hardly had any facility of transport either bicycle or bullock cart.

11. Entertainment facility

Average of 4.8% families had television and 20.6% families had radio as electrical appliance as an entertainment facility.

12. Tribal knowledge of home remedies:

An average of 73.63% families was found to have the awareness and belief that it can be very useful for reliving from PHC complaints. Among 2930 families it was noted that only 7.44% of families had knowledge of home remedies. Only 7.44% families were found to receive the knowledge of home remedy from elders of the family.

In present study, it was noted that 3.85% families had knowledge of home remedies for cold, 3.7% for cough, 3.15% for fever 3.1% for diarrhoea 2.85% for dysentery, 5.15% for small cuts and wounds, 4.5% for headache, 3% for pain during menstruation cycle, 3.6% for white discharge, 3.05% for excessive menstrual bleeding and 1.1% for other complaints.

7.44% of the families had derived the knowledge of home remedies from their elders.

13. Usefulness of home remedies:

An average of 12.94% of families was found to use home remedies for above ailments, while 11.47% of families had received complete relieve from home remedies, 19.6% of families availed outside treatment while 19.81% were found to receive complete relieve from outside treatment.

14. Cost of outside treatment:

For above surveyed diseases minimum cost of treatment per episode including cost of raw materials and additive was Rs. 19.33, while minimum cost of treatment per episode for outside treatment was observed Rs. 73.33. Average cost incurred for home remedies per episode was reported Rs. 27.25, while average cost incurred for outside treatment was Rs. 96.41.
15. Livestock

All the studied families in the Bastar district were having cattle, goat, sheep, cock, hen and buffalo as a livestock.

16. Major Crops Cultivated

Paddy was found largely cultivated (90%), while least cultivation was done of vegetables (10%). Maize, millets and pulses were cultivated by 41%, 42%, and 20% of the families respectively

17. Plants used in Social religious ceremony:-

The 27 plant species were noted to be used in social religious ceremonies like Amus Tihar, Matitihar, Jatra, Navakhani and Marriage ceremonies.

II. ETHNOBOTANY IN RELATION TO HEALTH SECURITY IN DISTRICT BASTAR OF CHHATTISGARH STATE -

In present study ethno botany in relation to health security was investigated in 20 villages of Bastar district. Information regarding the plants used as a medicine was collected by gathering information with help of questionnaire. Beside this information was also collected by personal interview with the knowledgeable person of the villages. 400 tribals (twenty from each village) were selected for the collection of information through interview. The interviewed tribals were belonging to dominating tribes of Bastar like Gond, Muriya Mariya, Halba and Bhatra. Information was also collected from Baidyas, medicine men known as Sirahas and old persons of the community. The name of medicinal plant, vernacular name and its method of use against the disease were noted by making dialect in their own language. All the five prominent tribals of the Bastar had a great similarity regarding the use of plants as a medicine. Difference was occurred in terms of drug preparation and its administration. The plants used as a medicine by tribals were found in forest of vicinity. During the present study field transact was also conducted along with the Baidhyas, Sirahas and old knowledgeable parson of the village. Photographs of medicinal plants were taken in their habitat and a twig of plant was collected for herbarium preparation and identification of plants was done with help of flora.
In present study information of 118 plants was given by the tribals of the village, Baidyas, Sirhas and medicine man, regarding the use against various ailments. These 118 plants were belonging to 47 families of dicotyledons like Rutaceae, Combrataceae, Anacardiaceae, Labiatae, Malvaceae, Leguminosae, Myrtaceae, Moraceae, Asclepiadaceae, Apocynaceae, Euphorbiaceae, Sterculiaceae, Solanaceae, Scrophulariaceae, Convolvulaceae, Amaranthaceae, Acanthaceae, Vitaceae, Oleaceae, Costaceae, Lythraceae, Plumbaginaceae, Meliaceae, Sapotaceae, Verbenaceae, Nyctaginaceae, Alangiaceae, Menispermaceae, Ebenaceae, Rubiaceae, Celastraceae, Hypoxidaceae, Rhamnaceae and 05 families of monocotyledons viz. Liliaceae, Zingiberaceae, Dioscoreaceae, Araceae and Poaceae. The highest number of plants were found to be used for jaundice, while the minimum number of plants were used for tuberculosis, swelling in body, stomach pain, red discharge and respiratory disorder.

Amongst the noted plants 37 were herbs, 27 were shrubs, 36 were trees, 17 were climbers and 1 parasite. More than one part of the plant was found to be used as a medicine. The roots of 36 plants, stem of 14 plants, leaves of 40 plants, bark of 29 plants, seeds of 19 plants, fruits of 16 plants, flowers of 13 plants, Rhizomes of 04 plants, fruit pulp of 04 plants, leaf pulp of 2 plants, and 22 whole plants were observed to be used as medicine. The medicine was prepared from different parts of the plants and used as a raw or in dry state or powder or mixture or liquid or in paste.

Maximum number of plants used as a medicine by tribals belongs to family Liliaceae. There were eleven plants found to be used for jaundice, seven for piles, five each for dysentery and snake bite, four plants each for joint pain ear ach, cough, cold, cuts and wounds, three plants each for diabetes, malaria, and milk secretion, paralysis, toothache worms and two plants each for fracture, body ach, chest pain, male impotency, weakness, respiratory diseases, eczema (Bemchi), etching, scorpion bite while one plant each was noted for diseases like tuberculosis swelling, stomach pain, white discharge, weakness, easy delivery, eye problem, and kidney stone.

Roots were found to be used use for curing body ache, eye problem, cuts & wounds, Dysentery, Ear ache, Epilepsy, Easy Delivery, fever, Head-ache, Hydrocoel, itching, kidney Stone, milk Secretion, onset of pregnancy, stem for Dysentery,
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fracture, Rhizomes for joint pain, and dysentery. More then one plants or combination of two or three plants were also found to be used by the tribals against various diseases to provide health security.

**DOCUMENTATION OF DRUG PREPARATION METHOD AND ADMINISTRATION, PRACTICED BY TRIBAL IN BASTAR:**

In present study survey was done for documentation of drug preparation and its administration method. The information regarding the drug preparation and administration was collected from 200 Baidyas, Sirahas, Medicine man, knowledgeable tribal women of 20 villages in Bastar district. The information was collected with the help of questionnaire and personal interview. The drug was found to prepare from independent plant or from plant parts in combination. In some of the drugs other ingredients like honey, camphor, salt and fresh milk, butter milk, curd, Ghee, coconut oil, Jaggery and Sugar and molasses was also mixed for the drug preparation. Most of the drugs were prepared by using traditional methods like pastels and mortals. Tribals didn’t found to have any modern facilities for drug preparation like grinder mixer, juicers, pulverizes and distillation unit. Drug preparation and administration method for 39 diseases have been documented.

**III. ETHNOBOTANY IN RELATION TO LIVELIHOOD SECURITY IN DISTRICT BASTAR OF CHHATTISGARH STATE.**

Livelihood security of tribals of Bastar has been described in two headings.

(a) **Food, Fodder and Fuel plants required for life security.**

Ethnobotanical study in relation to livelihood security was conducted in 20 villages of Bastar district. The livelihood security was investigated for Tribal people viz. Halba, Muriya, Mariya, Gond and Bhatra. In present investigation, it was observed that livelihood security of the tribal people was largely dependent on forest produces. All the villages selected for the study were forest villages and twenty residents of different age group and sex from each village were selected for filling the questionnaire. Beside this Ethnobotanical information was also collected by face to face dialect during interview. The questions were also asked to obtain the information of their dietary and their dependence on forest produces.
In present study, tribals of Bastar were found to use 127 plants for their security of life to various purposes like food, vegetables, medicines, fodders, fuels, fish poisons, dyes, fibres and for wide socio religious ceremonies. The plants used by the tribals were trees, shrubs, herbs and climbers for livelihood security. The plants were used for various purposes like food as cereals (07) plants, fruits (11) vegetables (15) pulses (04), fibres (05), beverages (06), oils (07), dyes & tannins (06), hut construction & agriculture (07), fuel (03), insecticides (03), fish poisoning (02), toothbrush(05), fish catching instruments (02), utensil & broom (05), Fodder (08), social ceremonies (27) edible mushrooms (05). Majority of the plants (110) were found as wild plants and (10) were cultivated plants and (07) were both wild and cultivated, which they purchase from local Hat and Bajars.

(b) NTFPs collection and marketing for livelihood security.

Tribals of Bastar district were found to collect variety of plant produces from forests, for their livelihood security. Those collected plant produces were non timber forest produces (NTFPs). In present study 44 plants producing NTFPs were noted to be collected by tribals in 20 villages of Bastar district.

Plant and plant produce collected by the tribals from the plants were seeds of 11 plants, fruits of 11, roots of 03, Rhizomes of 04, flowers of 04, secretory products from 03 plants, while 04 whole plants. Lakh and cocoons were also collected by the tribals from the forest. The collection period of plant produces was found different for different produces. Maximum number plant produce was found to be collected in summer months, while some plants were collected during winter months like January and February. Normally no collection work was found to be done during the rainy month. The processing and storage technique was found different for different plant produce. The common methods used by tribals for processing the plant produce were drying, boiling, steam boiling, shed drying and frequent rinsing.

The largely collected NTFPs for livelihood security were Mahua, Amla, Bhuileem, Satavari, Harrha, Baheda, Bel pulp, Bhelwa bija, Char guthali, Dhawai full, Ghotfar, Tikhur, Kahava chali, Karait, Karanji, Karukanda, Keokanda, Kosa phokla, Kumliful, Kosum, Nagarmotha, Phutu, Farasaful, Peng bija, Ramkanda, Saragilasa, Saragibija, Sahad, and Tori etc.
All these NTFPs plant produce collected by tribals were also found to be used in medicines for treatment of various ailments. Some of the NTFPs were noted to be of animal origin like silk from cocoons and lakh cultivated on kusum plants. Variety of edible Mushrooms (Phutu) were also found to be collected by tribals. 44 different types of NTFPs were found to be collected through out the Bastar district. In present investigation 99 potentially rich villages were identified, where the NTFPs collection was found more than the other villages.

Beside collection of NTFPs, 69 potential market place in Bastar district, where marketing of NTFPs was found maximum were also identified for the sell of plant produces. 18 NTFPs of plant origin and 02 of animal origin were found to be largely collected and marketed in 69 potentially rich markets of Bastar district. Charota, Emli ful, Amla, Mahua flower were found to be largely collected NTFPs and collection was noted more then 1000 quintal, while other NTFPs like, Harrha, Char, Nagarmotha and Bibidang were collected less than a quintal.

The total value of NTFPs was found maximum for lakh (143 lacs), while minimum value of NTFPs was found to obtained for Aama guthali and Karanji bija. The 20 NTFPs were found to be collected in larger quantity (27,080 quintals) in one session and the total value of these NTFPs in local market was estimated approximately 391 lacs /seasons in Bastar district.

There were 19 weakly markets in Bastar district. Market days were different for different markets. Some of the markets were big some of them were moderate and some were found to be very small markets, where the tribals of near by villages come for marketing. There were different markets for the sell of different NTFPs; similarly, the number of traders in each market found to register for the sale of different products; however there were some markets where all the types of NTFPs were found to be sold.

IV. CONSERVATION PRACTICES OF TRIBALS IN BASTAR

Tribals know the value of plants hence they adopt the sustainable use of forest resource. They always protect the diversity of plants found in their surrounding and they never cut the plants which are used in their socio religious customs. To promote
the conservation of plants tribals have involved many of the plants in their festival and religious ceremonies. During the collection under ground parts, tubers, rhizome and bulb, they leave some part of it for regeneration and avoid repeated collection of the plant parts from same place. Whole plant or branches or fruits or flowers are avoided during the collection. Tribals never cut the main trunk of the plant, they collect useful parts only. They collect non timber forest produce. Plant products are collected by the tribals without making harm to main plant. Besides using traditional practices of plant protection and conservation, a very popular way of conserving medicinal plant in Bastar is known as Devkots and they are very good example of conservation of plants in Bastar.

**CONCLUSION:**

Following conclusions have been made on the basis of present investigation:-

1. Socio-economic survey of the district Bastar has provided a bulk of information regarding their life style, social status and economic condition of the tribals living in the Bastar. The results of the study also determined the facility and awareness regarding the outer world they have.

2. The socio-economic data of the present study may become very useful for the Government and non Government body for the improvement of the condition of tribals in Bastar.

3. An ethnobotanical study proved that there is an urgency of orally preserved knowledge of tribals to document properly before it is lost forever in the fast growing modern world.

4. In present investigation ethnomedicinal use of 118 plants were documented, however, more documentation is needed to explore the knowledge of many more plants.

5. The documentation of ethnobotanical knowledge about plants can be used for health care programmes and upliftment of tribals.

6. The drug preparation and administration methods for 39 diseases in district Bastar was documented, this reflects strong means of health security for tribals in Bastar.
7. The drug preparation and administration methods are worth information for the medical practitioners for easier and cheaper treatments.

8. The drug preparation and administration methods are very useful for the pharmaceutical company for the drug designing to prepare drugs in cheaper rates.

9. Use of ethnomedicinal plants by tribals for various diseases proved a full proof system of successful treatment is available with the tribals of Bastar.

10. The knowledge and expertise of Baidys and medicine man regarding preparation of drug and treatment can be patented, as it is found to be rarest information.

11. The traditional herbal treatment knowledge required to be popularized amongst the rural people as in remote villages; there is hardly any health care centre available for the treatment.

12. The raw material for the drug was found, easily available and affordable to tribals from the forest and drug has higher efficacy and without any after effects.

13. There were 127 plants found to be used by the tribals for their livelihood security, this confirms that tribals have great repository of knowledge of plants and their use.

14. Non timber forest produce (NTFPs) was found to be major source of income for the tribals. Total–44 NTFPs are collected by the tribals to sell in local markets for their livelihood security.

15. NTFPs collection was found to be a big source of raw material for pharmaceutical company as well as for small cottage industry based on NTFPs.

16. The cultivation of plants yielding NTFPs can be promoted in the Bastar for uplifting the economic condition of tribals in Bastar.

17. The knowledge of conservation practices can be utilized in conservation of vital plant resources in Bastar.
18. Sustainable use of resources by tribal is promoting sustainable development in Bastar.

19. Conservation practices of tribals are contributing towards the conservation of rich biodiversity of Bastar.

20. Present investigation reveals various other aspects of tribals life like their beliefs, festivals, religious rituals and their love, affection and care for plants, as they are well known to the fact that plants are essential for their survival and existence.
REFERENCES


