CHAPTER II

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In this chapter an attempt has been made to review the literature on different aspects of the study. The main emphasis has been given on the “Investigation on rare Indigenous medicinal plants of Some Selected districts of Chhattisgarh”. The literature was broadly reviewed under the following aspects.

2.1 Indigenous and traditional knowledge of medicinal plants

2.2 Distribution pattern and conservation of medicinal plants

2.4 Use of medicinal plants

2.3 Tradition of Natural Remedy

2.1 Indigenous and traditional knowledge of medicinal plants

Wyk (2002) studied several gaps in the scientific literature and some progress has been made towards more complete record of indigenous plants used in the region. The aim of these studies was usually to validate traditional uses rather than to provide information for product development.

Grover et al. (2002) worked on plants mentioned in ancient literature, which have been used traditionally for the treatment of diabetes. They reviewed 45 such plants and their products (active natural principals and crude extracts) that have been mentioned/used in the Indian traditional system of medicine and have shown experimental or clinical anti-diabetic activity. Indian plants which are most effective
and the most commonly studied in relation to diabetes and their complications are: *Allium cepa, Allium sativum, Aloe vera, Cajanus cajan, Coccinia indica, Caesalpinia bonducella, Ficus bengalenesis, Gymnema sylvestre, Momordica charantia, Ocimum sanctum, Pterocarpus marsupium, Swertia chirayita, Syzigium cumini, Tinospora cordifolia* and *Trigonella foenum graecum*. Among these we have evaluated *M. charantia, Eugenia jambolana, Mucuna pruriens, T. cordifolia, T. foenum graecum, O. sanctum, P. marsupium, Murraya koeingii* and *Brassica juncea*. All plants have shown varying degree of hypoglycemic and anti-hyperglycemic activity.

Kumar and Prathapasesan (2003) made attempt to understand the ethnobotany of Shoolpaneshwar Wildlife Sanctuary. Information concerning 50 angiosperm plants used by the local tribals inhabiting that area had been collected during the field trips. Paper deals with the family, botanical name, vernacular name and uses of the plants of all the 50 angiosperms being used by local tribal people residing in the sanctuary area.

Singh et al. (2003) made parasitologic and entomologic cross-sectional surveys during an outbreak of malaria between December 1998 and August 2000 in forest villages near the Mohkhed Primary Health Center in the Chhindwara District of Madhya Pradesh in India. In December 1998, surveys showed that more than 70% of the fever cases were of malaria, whereas 87% of the malaria was caused by *Plasmodium falciparum*. The rate of enlarged spleens in children was 74.5%. In November 1999, surveys showed 58% of the inhabitants were infected with malaria and 80% of these cases were caused by *P. falciparum*. They also noted that chloroquine resistance was in 23% of the cases. *Anopheles culicifacies* was the dominant mosquito species in all surveys (70–85%) and was resistant to DDT. The results indicate that the incidenced of malaria in Chhindwara distrit has increased.
gradually from 0.31 per 1,000 in year 1990 to 6.75 per 1,000 in year 2000. Improved access to treatment facilities, combination therapy and vector control effective insecticide appear to be the most promising methods for controlling malaria in this region.

Tirikey et al. (2004) conducted ethnomedical survey of tribal area of Raigarh districts of Chhattisgarh and found 24 medicinal plants which are used in Indigestion.

Binita and Gupta (2004) worked on 103 different plant species which are extensively used by people of Andro village of Imphal east district of Manipur, north east India and reported that about 22 species are used as timber, 17 as fodder, 28 as fuel, 41 as medicine while 23 are used as food plants. They also reported 30 animal resources of Andro village, 18 species of fishes and 14 animal species as nuisance species and advocated for strong mechanisms and network to work with the indigenous people of the region institutional management as to ensure the utilization of the knowledge for conservation and development of the biotic resources.

Parinitha et al. (2004) conducted ethno-botanical surveys during 1998 and 99 in villages of Bhadra Wild Life Sanctuary area, situated in the Western Ghats region of Karnataka. Results revealed that 60 plant species belonging to 50 genera and 35 families were used for preparing at least 78 herbal drugs by the medicine men. Among the plant species, utilization of leaves of *Centella asiatica*, roots of *Ichnocarpus frutescens* and decoction of leaves of *Bambusa arundinacea* in the treatment of jaundice, diabetes and for expulsion of placenta in humans and animals, respectively, are noteworthy. Apart from the above, a few drugs formulated by the local people are not known to literature. According to a CAMP survey, *Tylophora indica* and *Artocarpus hirsutus* are vulnerable while, *Dipterocarpus indicus* and
Rauwolfia serpentina are endangered and Spondias pinnata is a lower risk category plant. The information collected from these ‘local specialists’ enriches the country wide database on the availability of biodiversity resources and gives full credit to the origin of information at different levels.

Nayak et al. (2004) gathered information on the use of plant crude drugs for various diseases prevalent in tribal communities of eight villages under Thuamul Rampur block of Kalahandi district, Orissa. It deals with 39 plant species under 36 genera belonging to 26 families. The local names, the method of preparation and mode of use of the medicine are mentioned. The tribal communities of the area totally depend on the herbal drug for their primary health care, which is attributed partly to their socio-economic and cultural conditions.

Tag and Das (2004) studied on the ethnobotanical use of plants, covered an area inhabited by Hill Miri and some other tribes of Arunachal Pradesh. Results reported 28 species, which included 5 medicinal, 11 food plants and 12 plants for various other ethnobotanical uses.

Atomic absorption spectrophotometric study of powdered fruits Amala, Beheda, Harda and market samples of Triphala churna (powder) along with a laboratory preparation indicated that the highly toxic elements such as As, Hg, Co and Cd were absent, Pb being within the limits whereas less toxic or beneficial elements were within the limits specified by American Conference of Governmental Industrial Hygienists (ACGIH) Lalla et al., (2004). The microbial studies of these samples showed complete absence of pathogens and presence of non-pathogens in amounts lower than the number specified in BP limits. The raw materials and Triphala churna (powder) samples were investigated in this study and were considered safe for internal consumption.
Samvatsar and Diwanji (2004) identified 31 species of plants used as incense in Nepal. Most of these plants are unrecorded previously. Different parts of these plants are used either in powdered form or in small pieces. Dried plants of 9, leaves and thin twigs of 12, rhizomes and roots of 4, leaves and flowers of 3, resin and wood of 2 and bark of one species are used for incense.

Misra (2004) concentrated on with the traditional use of seeds in different forms, *viz.* raw, seed-paste, powder, decoction, infusion or oil as medicines for ameliorating diseases is still prevalent among the tribal communities inhabiting the forest areas of western Orissa. This investigation highlights manifold uses of 33 species whose seeds are used on a minor scale by the tribal inhabitants of Gandhamardan hill range for the treatment of various ailments.

Temjenmongla and Yadav (2005) studied the anticestodal efficacy of nine plants that are used in the indigenous system of medicine by Naga tribes in north-east India to cure intestinal-helminth parasitic infections. It was tested employing *Raillietina echinobothrida*, Tapeworm of poultry, as a model test parasite. The study revealed that the leaves of *Psidium guajava, Houttuynia cordata* and stalk of *Lasia spinosa* possess a profound anticestodal efficacy as evident by the mean mortality time of *R. echinobothrida* which ranged from 1 to 3.66 hrs, following exposure to 5 - 40 mg/ml concentration of these plant extracts. Moderate activity was recorded for the leaves of *Clerodendrum colebrookianum, Lasia spinosa* and *Centella asiatica*, while *Curcuma longa, Cinnamomum cassia, Gynura angulosa, Lasia spinosa* (stem) and *Aloe vera* revealed a negligible degree of anticestodal activity.

Ramasankar (2005) documented the traditional knowledge on 36 ethnomedicinal plants which are used by tribal communities of the district of Puruliya in West Bengal for treatment of various intestinal disorders, malarial infections and
sexual diseases. He also reported on traditional beliefs, concepts, knowledge and practices among them for preventing, lessening or curing diseases and suggested the need for conservation of these valuable plants, many of which are on the verge of extinction due to rampant deforestation and denudation.

Kadavul et al. (2005) evaluated medicinal value of the bark yielding trees of Pondicherry region and were recorded a total number of 25 tree species belonging to 24 genera under 18 families. Result were also given family-wise in which Moraceae and Caesalpiniaceae showed the maximum of three species in each. Specific diseases treated by bark medicines like asthma, dysentery, ulcers, dysmenorrhoea, diarrhoea and their use as aphrodisiac have also been documented.

Acharya and Rokay (2005) conducted field survey in four different places of Kathmandu valley during the different seasons in 2003-2004. Thirty six medicinal plants belonging to 28 families and 35 genera were reported, each with local names, traditional uses and places of trading. The people used plant species for treating various kinds of ailments such as diarrhoea, stomachache, gastritis, jaundice, bodyache, bleeding, tonic etc. The most popular medicinal preparations are in powder, paste, decoction and juice. Although the people are subjected to the modern facilities, the present results indicate that inhabitants of Kathmandu valley still rely on traditional medicines for their primary health care needs.

Muthuselvan and Arul (2005) were carried out studies on the Irula tribes which is a Dravidian tribe distributed throughout the states of Tamil Nadu, Kerala and Karnataka state of South India. They are scattered in Coimbatore, South and North Arcot as well as Nilgiri districts. They reported various indigenous medicinal plants used by Irula tribes for various diseased treatments in village level and found the
elderly Irulas have a good knowledge about the medicinal plants and cures for various diseases.

Chakraborty and Bhattacharjee (2005) enumerated some common and extensively used ethnobotanical plants during the ethnobotanical survey in the Purulia, district of West Bengal, covering land area of 6259 sq km is the natural treasure of vast number of plants having ethnobotanical importance. They reported 57 plant species belonging to 57 genera and 40 families. The medicinal information have also been collected by personal contact with the aborigines such as Bhumij, Birhores Kherias, Mundas, Oraons and Santals. Plant with botanical name, family, local names, part used, mode of preparation and administration are given. These plants may be useful under rural healthcare system & for herbal drug industry.

Akand (2005) studied the importance of medicinal plant as a natural resource in Bangladesh. In the study area, a total of 77 medicinal plant species were documented in local people’s home gardens and 55 species were documented in Kabiraj home gardens. Among these species, 17 species were found in almost all the gardens. The most frequently found medicinal plant species were: Neem, Ghretakumari, Patharkuchi, Kalpanath, Bashok, Horitoki, Amloki, Tulshi, Bohera, Amloki, Akanda, Apang, Ulatkambal, Shefali, Kismotara, Fonimonsha and Bishporobi. The respondents opinion that these medicinal plants were used as treatment against different kinds of diseases; however, the most common diseases are cough, cold, rheumatism, heart disease etc.

Basy (2005) documented the traditional knowledge on 36 ethno medicinal plants which are used by tribal communities of the district of Puruliya in West Bangal for treatment of various intestinal disorders, malarial infections and sexual diseases.
A study was carried out by Jadhav et al. (2005) to collect information on the use of plant crude drugs for various diseases prevalent in Bhil tribe of Bibdod village of Ratlam District, Madhya Pradesh.

Sajem and Gosai (2006) gathered traditional knowledge of medicinal plant that are used by the indigenous Jaintia tribes residing in few isolated pockets of northeast India. They reported 39 medicinal plants species belonging to 27 families and 35 genera. For curing diverse form of ailments, the use of aboveground plant parts, leaf was used in the majority of cases (23 species) followed by fruits (4 species). Different underground plant forms such as roots, tuber, stem, leaf, bark, rhizome, bulb and pseudo-bulb were also found to be in use by the Jaintia tribe as a medicine. Altogether, 30 types of ailments have been report to be cured by using these 39 medicinal plants species.

Acharya and Pokhrel (2006) studied the Bantar, ethnic groups of Morang district which is ethnobotanically very rich. Thy study reported 98 species of plants belonging to 89 genera and 45 families used by Bantar as traditional medicines for human and domestics animals. Ethno medication in most instances involves mantras alongside herbal application. Most diseases are treated by the use of more than one plant species while a single plant species is found to be used in curing more than one disease.

Bussmann and Sharon (2006) collected two hundred fifteen plant species identified them with their vernacular names and documented them on the basis of their traditional uses. However, the area represents only an outlier of the larger Northern Peruvian cultural area, where more than 500 species of plants are used medicinally. Most registered plant species are only used medicinally and only a few species have any other use (construction, fodder, food). The highest number of
species is used for the treatment of “magical” (psychosomatic) ailments (39 species), followed by respiratory disorders (34 species), problems of the urinary tract (28 species), fever / Malaria (25 species), Rheumatism (23 species) and nervous system problems (20 species) etc..

Chetty et al. (2006) studied the pharmaceutical and therapeutic uses of *Plumbago zeylanica*, in fresh root and as well as dry drug (root). They reported fresh root drug preparation of Chitraka swarasam (freshly expressed juice), Chitraka kalkam (paste) and their therapeutic uses. A record on reveals preparation of Chitraka churnam (powder), Chitrakadi vati (tablets), Chitrakadi dutika (pills), Chitraka ghritam (ghee preparation), Chitraka quatham (decoction), Chitraka himam (cold infusion), Chitraka Phantam (hot infusion) and their therapeutic use for the treatment of various ailments.

Reddy et al. (2006) reported ethnobotanical usage of 28 endemic plant species used by the tribes of Eastern Ghats, India. All the species were enumerated with botanical name, family name, vernacular name, habit, habitat and information on ethnic uses.

Samy and Gopalakrishnakone (2007) revealed that many infectious diseases have been treated with herbal preparations. The traditional medicine is increasingly solicited through the traditional practitioners and herbalists in the treatment of infectious diseases. A comprehensive study and documentation of the medicinal and aromatic herbs done by Tiwari et al. (2007). They studied different villages of district Sarguja of northern hill zone of Chhattisgarh district during the year 2002 to 2004 to determine the present status of traditional knowledge regarding medicinal use of various plants. The plants identification, medicinal use mode of drug preparation and consumption of more than 60 species are compiled and presented in this paper.
Lulekal *et al.* (2008) studied the ethnobotany using semi structured interviews, field observations, preference and direct matrix ranking with traditional medicine practitioners. The ethnomedicinal use of 230 plant species was documented in Mana Angetu district southeastern Ethiopia and reported that plants (78.7%) were used to treat human diseases. The most frequently used plant part were roots (33.9%) followed by leaves (25.6%). Most of the medicinal species (90.4%) were collected from the wild. Direct matrix analysis showed that *Olea europaea* L. Subsp. *cuspidata* (Wall. ex G. Don) was the most important species followed by *Acacia tortilis* (Forssk.). Also indicating high utility value of these species for the local community and principal threatening factors reported were deforestation (90%), agricultural expansion (85%) and fire (53%). Documenting the eroding plants and associated indigenous knowledge can be used as a basis for developing management plans for conservation and sustainable use of medicinal plants in the area.

Sumeet (2008) studied ethnomedicinal uses of some plant species by ethnic and rural peoples of Indore district of Madhya Pradesh and reported that due to deforestation, loss of biodiversity and indiscriminate exploitation of wild and natural resources many valuable herbs like *Abrus precatorious*, *Bauhinia variegta*, *Mucuna prurita* etc. are in the verge of extinction. The paper enumerates status, conservation strategies and traditional uses of 86 plant species by ethnic and rural people of Indore district of Madhya Pradesh. The claims were gathered by interviewing traditional healers, especially villagers, of the study area. Attempt was made to verify the efficacy of claims with actual beneficiaries, though it was not possible in all cases due to social customs.

Shukla *et al.* (2008) deal with the indigenous medicinal plants used by the tribes of various regions of Chhattisgarh state. The tribals depend on the herbal
medicines for curing various gynecological disorders. Tribal do not approach doctors (physicians) due to lack of awareness and shyness or hesitation. Herbal healers and their patients who receive the treatment for any gynecological complication enquired the local names, parts used and method of administration. The binomial names are enumerated with utilization of these plants. Further studies were suggested to validate the claims and herbal drug development for treatment of such disorder.

Ganesan (2008) conducted survey in different districts of Tamil Nadu during the period of 2000-2004 for oral care medicinal plants. About 114 plants species, distributed among 97 genera belonging to 51 families were recorded. Most of the plants are used to relive toothache (29.82%), as toothbrush (25.43%), mouthwash/gargle (16.66%), against common dental diseases (14.03%), mouth related stomatitis/ ulcer/ gingivitis (12.28%) and gum bleeding / disorders (10.53%).

Qureshi et al. (2009) worked on the traditional uses of some important plants by local women in southern Himalayan Mountains, Pakistan and reported 28 important plant species belonging to 25 families which were used medicinally and various other purposes by the local women. Mostly, plants like Viburnum foetens Decne., Bergenia ciliata (Haw.) Sternb. Berberis lycium Royle, Geranium wallichianum D. Don ex Sweet and Skimmia laureola (DC.) Sieb. & Zucc. ex Walp. are used by the local women for medication, health care and other purposes. Geranium wallichianum D. Don ex Sweet is most commonly used as tonic by women especially for body strength and other internal body disorders while Bergenia ciliate (Haw.) Sternb., is used as anticancerous plant and for internal wounds. Skimmia laureola (DC.) Sieb. & Zucc. ex Walp. is another widely used plant for respiratory disorders in children by the local women. People have strong faith in herbal
medication by ethnomedicinal plants and women are leading men in applying the recipe for medication by these plants.

Swarnkar and Katewa (2009) Studied the antimicrobial activities of some tuberous medicinal plants from aravalli hills of Rajasthan. The plant tubers were dried and extracted with methanol and cold water to yield 26 extracts. The extracts were tested and confirmed for their antimicrobial activities against *Escherichia coli*, *Staphylococuus aureus*, *Klebsiella pnuemoniae*, *Pseudomonas aeruginosa* and a fungus *Candida albicans* using agar diffusion assay.

Kunwar, et al. (2009) investigated of medicinal properties and ascertained safety and efficacy of traditional remedies in in Far-west Nepal. A field study was carried out in Baitadi and Darchula districts of far-west Nepal. Group discussions, informal meetings, questionnaire surveys and field observations were employed for primary data collection. Voucher specimens were collected with field notes and codes and deposited at Tribhuvan University Central Herbarium (TUCH), Kathmandu. Only 50% of species surveyed shared common uses with *Ayurvedic* medicine. This implies that these herbal remedies are part of an independent health care system in the Nepal Himalaya, which is indigenous and influenced by Ayurveda. The folk uses of some of the species were contradicting to those of Ayurveda and phytochemical bioassays. A detailed phytochemical study on those species would be an important line of research.

Mishra and Broker (2009) made an ethno medicinal survey among the Gond tribal community residing in the Korba district of Chhattisgarh State, India. To know the perception of health and disease, 200 Gond people have been contacted who received treatments by these traditional healers. About 45 medicinal species were recorded, which are used to cure common ailments such as headache, stomach-ache, fever, joint pain, T.B., stone, paralysis, gynecological disorders etc. by the Gond
Community. It was also reported that medicinal species used for these purposes are *achyranthus aspera*, *adhatoda vasica*, *asperagus racemosus*, *bambusa angustifolia*, *cassia fistula*, *datura alba*, *semecarpus anacardium* etc. However bark, root and tuber were the most frequently used plant part for the preparation of medicine.

Sharma (2009) worked on ethnomedicinal uses of herbal plants resources in northern hill zone of Chhattisgarh state. Total 25 important plant species are enumerated which have ethno-medicinal value. Tribal and rural people of northern hilly zones used to treat their ailments by using this fresh plant material. Data of medicinal uses of plant are arranged by botanical name, local name along with family and their mode of application.

Indayan *et al.* (2009) studied nutritive value of some indigenous plant rhizome resembling ginger. Rhizomes of certain ginger like species, *viz Alpinia officinarum* Hance, *A. galangal* Wild. *A. zerumbet* (Pers.), *A. calcarata* Rosc. and *Kaempferia galanga* Linn. have high medicinal value belonging to family Zingiberaceae. These rhizomes also have a good nutritive value (350.9 cal per 100g) and are quit rich in protein and carbohydrates, but low in fat. Rhizomes of *A. officinarum*, *A. zerumbet* and *A. calcarata* have high iron content with a moderate and balanced content but richest in carbohydrates. *A. calcarata* is lowest in Mn, Ni and K but richest in Ca and Na. Study shows the biologically important metals Cr, Mn Cu, Zn, Ca and Na to be sufficient in rhizomes of *K. galanga*. All these studied material have a moderate to good antimicrobial activity.

Rana *et al.* (2010) Investigated traditional knowledge of medicinal plants being used by the Manipuri tribe in Bangladesh. They reported 32 plant species belonging to 26 families and 29 genera were found to use for curing 37 ailments. The study revealed that 72% plant species investigated were used to cure more than one
ailment. About 75% medicinal plants were taken orally followed by externally (9%) and both orally and externally (16%). They were mainly used to treat dysentery (10 species) followed by fever and rheumatism (5 species each); asthma, constipation, wounds and skin diseases (4 species each); cold ailments, cough and diarrhea (3 species each); The study thus underscored the potentials of the ethno-botanical research and the need for the documentation of indigenous healthcare knowledge pertaining to the medicinal plant utilization for the greater benefit of mankind.

Vijendra and Kumar (2010) studied the traditional knowledge of traditional herbal healers of Chhindwara and Betul districts of Madhya Pradesh, India regarding use of plants for the treatment of various diseases prevalent in the tribal pockets. Information collected from traditional tribal healers, medicine men etc has revealed that plant/plant parts of 77 species from Chhindwara district and 50 species from Betul district of forest origin are utilized as paste, powder, juice, decoction and extract for the treatment of various diseases of local people of the area. The knowledge of plants used by traditional herbal healers for various ailments would be provide immense help to replace synthetic drugs.

Focho et al. (2010) surveyed eight villages for ethnobotanical studies in the Mount Cameroon area, Southwest region of Cameroon to determine the uses of the different species of the Annonaceae with the help of show-and-tell/semi-structured method and personal interviews during field trips. Results revealed that 28 (68.3%) of the 41 species of Annonaceae present in that area are widely used by local people and 28 diseases are cured using 20 species. They also reported that barks and leaves of these species are the most commonly used plant parts.

Shukla and Chakravarty (2010) documented traditional knowledge of medicinal plants that are in use by Raj-Gond tribes residing in Korba district of
Chhattisgarh. Raj-Gonds believe that any disease is caused due to magico-religious elements, malnutrition and environmental imbalance. Raj-Gonds usually approach Baiga and Vaidhraj, who are the traditional healers. These healers also diagnose the disease through magico-religious methods. They identify the involvement of spirit, demons or deities. They disseminated the information on various herbs including derivatives or parts of the herbs they use, preparation of the drug for use, dosage, etc. The study warrants evaluating medical efficacy of these traditional medicines and documenting oral traditional knowledge, which persists among tribal communities.

Sankaranarayanan et al. (2010) studied ethno botany along with the ethnic groups (Villupuram district) in the South Western Ghats of India and reported 46 plant species belonging to 31 families. In this assertion, the information collected from the traditional healers was used to compare with already accessible literature on the ethnobotany of India. The conventional ethno medicinal plants were mostly used for fever, dysentery, skin diseases, poison bites, wounds, piles and rheumatism. The medicinal plants used by traditional users of Villupuram district are arranged alphabetically followed by botanical name, family name, local name and major chemical constituents, parts used, mode of preparation and medicinal uses.

Dahare and Jain (2010) an ethanomedicinal investigation was conducted in tahsil Multai, a region by the Korku and Gond tribes. A large number of traditional herbal healers exist belonging to the tribal community and are utilizing local plants in ethno-medicinal practices prevalent in the area. They documented total 47 medicinal plant species belonging to 29 families and 45 genera. The study thus underlines the potentials of the ethnobotanical research and need for the documentation of traditional ecological knowledge pertaining to the medicinal plant utilization for the greater benefit of mankind in different regions.
Das et al. (2010) documented pharmaceutical and scientific communities have recently received attention of the medicinal plants and various publications having therapeutic worth of natural compounds to validate claims of their biological activity. Profound use of commercial antibiotic and synthetic pesticides for human and crop protection is harmful to human health, ecosystem and environment. Attention has also been drawn to the antimicrobial properties of plants and their metabolites due to the growing incidences of drug-resistant pathogens of both clinical and agricultural importance. They concluded that Medicinal plants have their intrinsic ability to resist pathogenic microorganisms and this has led the researchers to investigate their mechanisms of action and isolation of active compounds. This has enabled exploitation of medicinal plants for the treatment of microbial infections of both plants and humans by developing new antimicrobial agents. This novel search entails extensive research and it is therefore imperative to follow standard methods to authenticate claims of antimicrobial action. Das et al. (2010) reviewed the methods being employed earlier and recently in use related to investigations of the antimicrobial efficacy of medicinal plant extracts.

Ahirwar (2010) surveyed and studied some important medicinal plants used against different types of disease by the people of village communities, mostly belonging to schedule tribe of Tikamgarh district of Madhya Pradesh. During the survey, 116 plant species of angiosperms were enumerated. Their local names, botanical names, families, plant part and their utilization are described through research paper.

Ribeiro et al. (2010) studied to organize a database of medicinal plants including their applications and associated procedures in Canhane village, district of Massingir, province of Gaza, Mozambique. The data were collected through intensive
structured and semistructured interviews performed during field research. Taxonomical identification of plant species was based on field observations and herbarium collections. Results revealed that 53 plant species have been reported, which were used to treat 50 different human health problems. More than half of the species were used for stomach and intestine related disturbances (including major diseases such as diarrhea and dysentery). Additionally, four species with therapeutic applications were reported for the first time, whose potential can further be exploited. The great majority of the identified species was also associated with beliefs and myths and/or used as food. In general, the community was conscientious and motivated about conservational issues and has adopted measures for the rational use of medicinal plants.

Jain et al. (2010) carried out a study during 2002-05 in Sitamata Wildlife Sanctuary which is situated in Chittorgarh and Udaipur district of Southeren region of Rajhasthan. It reveals large number of threatened species, occurring wild in various habitats of the Sanctuary. A list of 39 rare and threatened plant species belonging to 36 genera and 24 families have been reported along with their local name, family, ecology, population and their present status.

Kumar and Paul (2010) highlighted 22 medicinal plants used to cure mouth problems such as mouth ulcers, bleeding gums, toothache, pyorrhea, etc. amongtrible people of Kangra valley. During ethno-botnical survey, they collected 22 medicinal plants belonging to 20 angiospermic families. Important ethno-medicinal uses of medicinal herbs, local name, and part utilized and mode of treatment has been recorded.

Ahamad et al. (2010) they studied ethno-medicinal plants of Deoband tehsils of Saharanpur district, Uttar Pradesh. An ethnomedicinal survey was done during
2005-2006 in villages of study area and reported 74 plants species under 69 genrea belonging to 42 families were found of ethnomedicinal values.

Dey and Nath, (2010) studied on ethnomedicinal plants of Ajodhya hill and its surrounding tribal villages through questionnaire, personal interviews and conversation, and reported total number of 56 plant species used by the aboriginals to treat different ailments of human beings and livestock were enumerated. The major ethnic groups present in this area include Santhali, Bhumijs, Mundas, Oraon, Birhor, Mal Pahariya, Kharia and Ho. During the investigation, a well developed system of ethnomedicinal practices was found to exist among the tribals. The family Fabaceae was having maximum number of medicinal plants (7) used by the tribals followed by Euphorbiaceae and Rubiaceae (4 each). The major plant part used was constituted by roots followed by leaves and stem. Gastrointestinal ailments, fever, cough and cold related ailments, skin diseases and sexually transmitted diseases were the four major disorders treated by the use of medicinal plants in this area. 14, 10, 6 and 6 plants were found to be useful in the treatment of gastrointestinal ailments, fever, cough and cold related ailments, skin diseases and sexually transmitted diseases respectively.

Sahu (2011) reported first hand information gathered on 20 plant species traditionally used by Gond and Baiga women of Achanakmar wildlife sanctuary, Bilaspur for the treatment of various diseases and disorders related to gynaecological problems. Valuable information about the medicinal uses of certain plants against various diseases of the Gond and Baiga women were obtained through personal interviews and collection.

Kumar et al. (2011) studied three different altitudinal zones, tropical (300 to 400 m), subtropical (900 to 1100 m) and temperate (2000 to 2400 m) zones of Garhwal Himalaya. They reported 61 plant species that were regularly used by the
local inhabitants for curing various ailments such as digestive disorders, dysentery, wounds, swellings, cold, scabies, rheumatic, cholera, malaria etc. Of the recorded plants, 14 were trees, 10 shrubs, and 37 herbs. Twenty-seven species were common to the tropical and sub-tropical zones (trees = 5, shrubs = 4, and herbs/grasses = 18), one shrub occurred both in the sub-tropical and temperate zones, and none of the species were common to both the tropical and temperate zones. A total of 32 families were recorded, of which Lamiaceae was the dominant family (with 8 species).

Studies were based on the results of an ethnomedicinal research work conducted by Marwat et al. (2011) in Dera Ismail Khan District, Khyber Pakhtun Khwa, Pakistan, during May 2006 to March 2007. During field survey, questionnaires were used to interview local inhabitants, older people including men and women both, who were familiar with traditional uses of indigenous plants. They recorded total 40 new medicinal folk recipes of 26 plant species, belonging to 19 families. These folk recipes are used as traditional phytotherapies in the area.

2.2 **Distribution pattern and conservation of medicinal plants**

Tiwari et al. (2002) surveyed Bilaspur, Jashpur and Bastar of Chhattisgarh state was to study the distribution pattern of medicinal plants. Medicinal plants species are found in higher concentration in mixed forest as compared to Sal forest, whereas in Teak forest density of medicinal species was extremely low.

Vidhyarthy and Gupta (2004) studied the increasing demand of medicinal plants that has resulted in the rapid dwindling of natural resources and there is an urgent need of systematic and conservation and sustainable production of medicinal plants. Also suitable propagation techniques are to be developed, like tissue culture etc. It is essential to have an interface between traditional trends and modern concept
of production, marketing and technology of this important resource. Creating awareness and proper networking on the medicinal properties of these indigenous plants, through dissemination of research data with extension activities will go a long way in conserving nature’s priceless gift.

Tiwari et al. (2004) studied forest division i.e., Bilaspur, Jashpur and Bastar of Chhattisgarh state and studied the distribution pattern of medicinal plants and their potential sites 137 species from fifteen selected study sits are discussed here in respect to their density, abundance and diversity.

Ghosh (2004) suggested that one of the greatest challenges is the conservation of locally endemic species. It is therefore vital to conserve existing remnants, which may harbor relic populations of local endemics. Tropical forest biotas are highly vulnerable to habitat fragmentation because of greater species with small populations. Long-lived tree species are living dead as they are likely to be functionally extinct in fragments well before their populations have actually disappeared. Restoration and management of ecosystem fragments should be given special emphasis and appropriate measures should be taken to stop fragmentation.

Bhakat and Pandit (2004) studied repository of medicinal plants, the sacred groves which are unique traditional Indian way of in-situ conservation of biodiversity. The study for the first time records 56 species of medicinal plants growing in these groves. It also mentions the threats to the sacred groves. Revealed the results with 18 sacred groves of Purulia district of West Bengal and also highlights the role played by these groves in medicinal plant conservation.

Siddique et al. (2005) reported that around two hundred medicinal plants of ethnobotanical importance are used by village doctors especially village Kavirajs in
Barind tract for medicinal purpose. Study aims at the identification of endangered medicinal plants by questionnaire survey and also preservation and perpetuation of this knowledge of the local plants possessing medicinal properties for the benefit and further fruitful investigation on modern scientific lines.

Dhuria et al. (2005) carried out a study on 10 sites of natural forest & man-made forest to assess the distribution pattern of medicinal plants in different types of forest in the state of Chhattisgarh. Mainly three types of forest were reported sal dominated, teak dominated & mixed forest, comprising the wealth of medicinal plants in the natural habitat. The study investigated that higher concentration of medicinal plants was noticed in mixed Sal forest followed by Sal dominated forest whereas number of medicinal plants was very low in Teak dominated forest.

During the critical study of specimens collected from Jabalpur district, Kumar et al. (2006) observed that 28 specimen were wrongly identified due to oversight. These misidentified specimens, reprinting 28 species are additions to the flora of Jabalpur.

Sharma and Tiwari (2006) studied the distribution pattern of medicinal plants in forest division of northern hilly zone of Chhattisgarh state. They reported that larger areas are covered by sal forest. Mixed forest area of district was lesser as compared to sal forest. Medicinal plants are found in higher numbers in sal forest. Species like Satavar (*Aspargus racemousus*), Kali haldi (*Curcuma caesta*), Tikhur (*Curcuma angustifolea*), Keokand (*Costus speciosus*), Kali musali (*Curuligo orchoides*), Safed musali (*Chlorophytum sps.*), Kasturi bhindi (*Ambralte sps.*), Kalmegh (*Andrographis peniculata*), Akarkara (*Spilanthes acmella*) and Akarkara (*Spilanthes acmella*) are common in both type i.e., Sal and mixed forest. However above species are in higher number in Sal forest. In mixed forest, Amla (*Emblica officinalis*), Palash (*Butea frandosa*),
superra) were found predominantly, sarghanda (Rauwalia serpentine), Kewanch (Mucuna puriens) were recorded in very low number in Sal forest.

Dwivedi et al. (2008) enumerated status, conservation strategies and traditional uses of 80 plant species by the tribes of Madhya Pradesh. The claims were gathered by interviewing tribes of the study area. Attempts were made to verify efficacy of claims with actual beneficiaries although this was not possible in all cases due to social customs.

Pattanaik et al. (2008) made an ethno botanical survey among ethnic community (Didayi) in Malkangiri district, Orissa. A total of 53 medicinal plant species belonging to 34 families and 52 different species are described under this study.

Kala (2009) studied native uses of ethnobotanical species in south Surguja district of Chhattisgarh state in India with the major objective of identifying different food and medicinal plant species and also to understand their ongoing management and conservation. Study revealed that 73 ethnobotanical species used by tribal and nontribal communities were documented, of these 36 species were used in curing different types of diseases and 22 were used as edible food plants and suggested sustainable harvesting and management issues of ethnobotanical species are discussed in view of their conservation and management. Due to destructive harvesting practices, damaged existing populations of many ethnobotanical species viz., Asparagus racemosus, Dioscorea bulbifera, Boswellia serrata, Buchnania lanzan, Sterculia urens and Anogeissus latifolia.

Kozuharova (2009) made efforts to create a stable and vigorous collection of rare and endemic plants from the Pirin mountains on a plot located at Dobrinishte.
village (the north-east foothills of the Pirin). Some threatened plants from the Pirin mountains well known for their medicinal properties were included in the *ex situ* collection. Here we share our observations on the pre-adaptation of adult plants and our experience in growing seedlings. Adult plants were transplanted from their native populations in the summer of 2005 and they developed amazingly well. A total of 88.2% of the transplants survived until the next season and 31.7% of the survivals bloomed the next year. Many of these set seed for the following seasons. Good germination and early stage development was observed for *Leontopodium alpinum* but later many of the young seedlings did not survive. *Linum capitatum* demonstrated poor germination without treatment other than stratification. Good germination occurred in *Sideritis scardica*, *Stachys recta*, after treatment with gibberellic acid. Germination of *Hypericum linarioides* was poor. In total 462 seedlings of the studied plant species were prepared for planting in the garden.

*Arts et al. (2010)* worked on promoting propagation and conservation of some selected plant species from Western Ghats of Maharashtra state. Harvesting, grazing, shifting cultivation and uprooting of plant species for the purpose of food, fodder and medicines by tribal and local people are found the major cause for their threats. An extensive survey of western Ghats region was carried out from *ex-situ* conservation point of view and taxonomic, ecological and conservation aspects of selected ethno-medicinal rare, endemic plant species were studied and reported *Ceropegia L.*, *Dioscoria L.*, *Gloriosa L.* became rare due to habitat destruction and local consumption of tubers for food and medicine by rural communities. The endemic species of genus *Smithia*, *Pinda*, *Pimpinella*, *Momordica* and some important medicinal species of genus *Chlorophytum*, *Rubia*, *Rauvolfia*, *Abras*, *Hemidesmus*, *Mundulea* and *Cullen* were identified with the help of standard literature and was
studied. Seeds and propagating material were collected and propagated and found
Propagation through seed shows successful results.

Murthy et al. (2010) studied micro propagation of *Ceropegia spiralis* L., a
species threatened by over exploitation due to its medicinal importance and habitat
destruction in Southern Peninsular India. They revealed that the multiple shoots
(14.37±0.12) induction was more successful using nodes as explants on MS medium supplemented with BAP 2.22 μM induced multiple shoots after fourth subculture. *In vitro* flowering was observed on 0.5 MS medium with 3% sucrose supplemented with IAA 11.54 μM. The thin cell layers were obtained from nodes and internodes of plant and were cultured on the medium supplemented with BAP 13.32μM + NAA 0.537μM induced 17.34±0.55 shoots showing extensive growth. Later on the organogenesis was also induced on the medium containing BAP 13.32μM + 2, 4-D 1.130 μM. *In vitro* tuber formation was carried out by culturing both individual and multiple shoots on MS medium with 3% sucrose supplemented with BAP and different auxins at different concentrations, individually and in combination. Shoots developed were rooted best on 0.5 MS with NAA 10.74 μM. Optimum shoot and root multiplication was obtained within 8 weeks. *In vitro* plantlets were successfully weaned and transferred to soil with 90 % survival rate.

Sahu et al. (2010) studied the pockets of Malkangiri with a view to assess the floristic wealth of the district, through extensive and intensive field survey. A sum total of 381 species belonging to 275 genera and 92 families were collected, identified and incorporated. Out of these, 373 species represented angiospermae (304 species of dicot and 69 species of Monocot families), 7 species of pteridophytes (7 species of Ferns belonging to 7 genera) and 1 species of gymnosperms. The ratio of Monocot to dicot families, genera and species are 1:4.25, 1:4.13 and 1:4.40 respectively. Present
exploration enumerated 235 herbs, 51 shrubs, 69 trees and 26 climbers. Out of total 84 families of angiosperms, the dominant families in ascending order are Fabaceae, Poaceae, Acanthaceae, Cyperaceae, Mimosaceae, Amaranthaceae and Scrophulariaceae.

Herbal drug technology is used for converting botanical materials into medicines, where standardization and quality control with proper integration of modern scientific techniques and traditional knowledge is important (Patra et al. 2010). Herbal medicines are gaining more and more attention all over the world due to their long historical clinical practice and less of side effects. This paper reviewed the traditional methods in the quality control of herbal medicines, including traditional chromatographic methods and comprehensive methods such as fingerprint and multi-component quantification; hyphenated techniques, like HPLC-MS, GC-MS. In a few word, the analysis and quality control of herbal medicines are moving towards an integrative and comprehensive direction, in order to better address the inherent holistic nature of herbal medicines.

Gavali and Sharma (2010) briefly presented the extent of the traditional knowledge available in Gujarat, its contribution in biodiversity conservation and threats of its erosion under changing life-style. Indigenous knowledge has been acquired over ages and treasured by the local communities and the tribals, particularly those living in and around the forests and agro-ecosystems. Very little of this knowledge has been documented which coupled with alienation of younger generation from traditional lifestyles, further poses threat to its erosion.
2.3 Tradition of Natural Remedy

Today's healthcare systems rely largely on plant material. Much of the world's population depends on traditional medicine to meet daily health requirements, especially within developing countries. Use of plant-based remedies is also widespread in many industrialized countries and numerous pharmaceuticals are based on or derived from plant components. Similarly, cosmetics and other household products may contain plants of medicinal or therapeutic value. Chopra et al. (1995) reported more than 80 percent of the people in South Asia rely on herbal remedies as a principle means of preventing and curing illness and several traditional medicinal systems are based on the use of plants.

2.4 Use of medicinal plants

Viswanathan et al. (2002) revealed that 68 medicinal plant species and 81 preparations are used for curing 48 ailments in Tamil Nadu, India. Pramono (2002) demonstrated that the use of plant substances for medication was lesser toxic compared to that of synthetic chemical compounds. While there is a general concern about the negative side effects of synthetic compounds, the medicinal plants substances are considered to be lesser dangerous.

Oudhia (2001) reported that the water hyacinth (Eichhornia crassipes) was used to Chhattisgarh, India as a medicinal plant. The main use of this weed is in goiter treatment and also as a styptic treatment of wounds in this region. Maiti and Mishra (2000) documented 13 plant species as anti venom property that were used by various tribal communities like Munda, Sava, Santal and Lodha.

Ali-Shtayeh et al., (2004) made an ethnobotanical survey in the west bank to evaluate the relative efficacy of the plants used to treat skin diseases and prostate
cancer. A total number of 102 informants, 30 years and older and either native born or had been living in the west bank for more than 30 years, were interviewed using a previously prepared questionnaire. Of about 165 plant species mentioned by the informants, 63 (38.1%) were mentioned by three or more informants. On the basis of their primary uses, 21 of these plants were reported to relieve skin disorders, 17 for urinary system disorders, 16 for gastric disorders, nine for cancer and prostate disorders, eight for arthritis, five for respiratory problems, and five for other ailments. Indices on fidelity levels (FLs), relative popularity level (RPL), and rank-order priority (ROP) were calculated. Plants were classified in two groups: 'popular' (RPL=1) or 'unpopular' (RPL<1). The following plant species were classified as popular in this study: Teucrium polium, Matricaria aurea, Urtica pilulifera, Paronychia argentea, Petroselinum sativum, and Salvia fruticosa. The remaining 57 species were classified as 'unpopular'. Fifty-nine plants were claimed to be effective against cancer and prostate disorders, which include Arum dioscorides, U. pilulifera, Allium sativum, Viscum cruciatum, and Allium cepa.

As in clear from the above account, an attempt has been made to bring the knowledge traditional medicinal plants under one umbrella. The data has been compiled based on the interaction with several traditional healers of a number of tribal areas as well as survey of literature.