

CHAPTER-2

REVIEW OF LITERATURE

Review of Literature :

Plants play a key role in the survival of human beings since the development of civilization. Plants have been used for various purposes i.e. for defence, protection and nourishment by human beings with the beginning of civilization. The use of plants for the alleviation of human sufferings is as old as civilization itself. It is a well known fact that nature alone knows what is in its store. In all ages, people throughout the world have attempted to utilize the flora and fauna of their respective region. The curing properties of plants have been achieved through trial and error. The present system of medicine owes much to the past knowledge which has been passed down by our ancestor for remedies, developed by different civilization in different periods of history. The prehistoric people of paleolithic and mesolithic ages were aware about plants, in a sense were good ethnobotanists. Ancient literature is full of reports of the plants used by the people.

The various uses of plants by people found place in ancient Sanskrit Vedic, Greek and Arabic literature. A good number of plants have been described in various religious books, for example in Geeta, in Puranas, in Ramayana, in Mahabharat, in Katha Sarit-Sagar, in Bible and in various other books. The earliest available record about the medicinal uses of plants found in 'Rigveda' perhaps the oldest repository of human knowledge.

The records about the usage of medicinal plants is available since 4500 B.C. (Sen Sharma, P. 1989). Man-plant relationship of various civilizations can be traced with documentation and description of good number of plant's having medicinal properties such as in Assyrian (4000 B.C.) Sumerians (3500 B.C.) ancient Indians (3500 B.C.) Chinese (3000 B.C.) and Egyptians (2500 B.C.) literature. The oldest Chinese literature 'Erh-ya' (3000 B.C.) described various medicinal plants. For example, a drug 'Ma-Huang' was prepared by Chinese from species of Ephedra. 'Egyptian' literature also described various plants with medicinal importance. 'Eberspapyrus' seems to be the oldest record written in 1500 B.C. Schultes, (1960) and Aikman, (1974).

The knowledge of medicinal science reached from ancient Egyptians and Babylonians to Greek. Hippocrates (460 to 372 B.C.), regarded as great medicinal man and was called as *Abu-At-Tab*. by the Hakims. He laid the foundation of medicine in Greece, from where it spread all over Europe. He wrote many books on medicine and introduced the concept of disease as a pathologic process. Dioscorides was also a great physician, wrote 'De-Materia-Medica' in which he described about 600 medicinal plants. So, the available records about the usage of plants as medicine can be traced to the remote past of pre-Rigvedic times. In India, later in 'Atharvaveda' it seems that plants have been used as Charms and Amulets for the cure of numerous diseases. The real foundation of ancient medicinal science was however, laid probably between (2500 and 900 B.C.) of

Ayurved Science. It is called as "Golden period of Indian Culture" A large number of plants have been mentioned in Ayurvedic literature for their medicinal properties and various other uses. Anonymous (1949), 'Charaka Samhita' and 'Susruta-Samhita' are marvellous accounts for usage of plants in curing diseases of man and animals. Charak Lukman Hakim and Susruta were famous medicinemen of our glorious India, written "Charak-Samhita" in (1000 - 800 B.C.), describing about 700 plants as the therapeutic agents, out of which about 500 plants are mentioned in Indian flora. "Charak Samhitas" deals with surgery and "Susruta Samhita" deals with medicine. All the information regarding the plants in these systems were based on the knowledge of cowherds, shepherds and the tribal people by their local names. The twelfth chapter of Sushruta Samhita deals with "Materia and Medica" of the ancient Hindus. For example, *Chondrodendron tomentosum* which was originally used as hunting poison, contain tubercuranine which is useful in surgery as muscle relaxant (Vogel, 1970; Maheshwari, 1987). All these efforts are obvious and made to enrich the Ayurvedic materia medica at different levels of our history. After Vedas, there is no information on the development of this science in India for a period of about 1000 year (Jain, 1985).

The information about 500 plants of medicinal and food value were compiled by Theophrastus in his book "Historia Plantarum" (327-287 B.C.). Even before the publication of Linnaeus "Species plantarum" in (1753) several

important records on Indian plants were published which attracted the attention of western workers towards the floristic wealth of India. The flora of Indian sub-continent is more varied type than any other country of eastern hemisphere. (J.D.Hooker, 1904). The modern theme of ethnobotanical science started with the application of ethnobotany in the year 1896 by John W. Harshberger. Today, ethnobotany is widely recognised and is an interesting research field in which various research activities and research programmes are being carried out in several research institutions throughout the world by various workers on the various aspects of plants. Fewkers (1896); Jones (1941); Schulter (1962); Jain (1967a); De (1968); Whiting (1982); Alcorn (1985); Ford (1978); Jain and Rao (1983) and Maheshwari (1983) etc. are the prominent workers who gave great contribution to the ethno-botanical researches in the world.

Medicinal properties and importance of various plants have been studied for a very long time. The systematic and scientific study of Indian medicinal plants was started by Europeans. "Herbarium Amboionese" was written by Rumphius (1755), which relates about the 'Snake root' plant "*Rauvolfia serpentina*" by the native of Bengal (Jain, 1986). In the early part of 19th century a good number of workers compiled literature, regarding the traditional uses of plants. "A catalogue of Indian Medicinal plant and Drugs" was published by John Fleming in 1810. It was followed by "Materia Medica of Hindustan" in 1813 by Ainslies and "Pharmacographia" and "Flora Indica" by Fluckiger and Handburg (1874) and

Roxburgh's (1874) respectively. The Bengal Dispensatory 'Pharmacopoeia' was published by O'Shaughnessy's in (1841). The work of Irvine (1847) added further knowledge of medicinal herbs. Waring (1868) published another "Pharmacopoeia of India". It was followed by "Supplement to Pharmacopoeia" by Mohidden Sheriff (1869). Dutta's "Material Medica of Hindus" (1877), Dymock's (1883) "Vegetational Material Medica of Hindus" and contribution by Khory (1887) and Dey (1896) are valuable works relating to the medicinal products indigenous to India. The two comprehensive works "Pharmacographia Indica" by Dymock *et. al.* (1889-1893) and "Dictionary of Economic products of India" by George watt (1889-1896) are the most valuable contribution of 19th century. The first ever published document of Indian Medicinal plant is reported by Kirtikar and Basu (1918). The authors were army officers who travelled in different parts of India and collected first hand information about the medicinal plants. This book is published and revised in 1935 in four volumes, due to its great demand. "Indian Material Medica" by Nadkarni (1926) compiled much information about medicinal plants from "Ayurvedic Material Medica" and other sources. A revised addition of Nadkarni's has been published by Nadkarni's son in two volume in 1976.

Anonymous (1948-76) published "Wealth of India" in eleven volumes through council of scientific and industrial research. The study of indigenous drugs gained momentum with the publication of chopra's book on "Indigenous

Drugs of India” in 1933, in which he described about 225 plants of medicinal importance and their products. “Indian Pharmaceutical Codex” was reported by Mukerjee in (1953). Chopra *et. al.* (1965, 69) published about 1200 species in “Glossary of Indian Medicinal Plants”. “Monographs on pharmacognosy of root and rhizome drugs and phamacognosy of leaf drugs” was reported by Chopra R.N. and Chopra I.C. in 1965.

The contact with Greece and Rome and later with Arabia and Persia contributed to the enrichment of “Indian Material Medica” and large number of vegetables and other products came into the use of the treatment of disease (Chopra *et. al.* 1956). More recent work like that of Sharma (1968-69) enlisted 248 botanical drugs which are mentioned mainly in Atharveda and Rigveda. Singh and Chuenkar (1972) published a glossary of such medicinal plants which have been mentioned in Charak-Samhita and Ashtanga Hridayam. Sharma (1971, 72, 73) revised Niganthus and reported number of plants mentioned there in. Satyavati *et. al.* (1976) described “Medicinal plants of India” Atal and Kapur (1982) reported “Cultivation and utilization of Medicinal plants”. Large number of papers and books have added to the wealth of literature on Indian medicinal plants, published under the title “Ethnobotany”. It deals with the documentation and information, that is helpful to identify the correct drug mentioned in Ayurved. With the passing of time more and more plants found entry into native

medicine, taking the number of Indian medicinal herbs to about 1500. Our present knowledge of "Indian Material Medica" account for nearly 3500 species under various crude drugs both of indigenous and exotic origin. Ethnobotany has attracted a good number of scientists of the world, especially where population still depends on natural resources and the impact of modern drug system has not reached to them. (Schultes, 1962; Altschul, 1973 and Stewart 1976).

The development of this science of human cultural ecology have been carried out independently in various countries of the world. In this regard, a large number of works has been done on various aspects of plants in different countries like Jamaica (Beckwith, 1927), Western Washington (Gunther, 1945); China (Cheng, 1965); Cambodge (Martin, 1971); Samoa (George 1974); Colombia (Gonzalvez, 1980); Africa & West Indies (Ayensi, 1978, 1981). "An introduction of Ethnobotany" by Faulk (1958) is the first book on ethnobotany of present world. It described multifarious usages of plants in the life of human-beings. William Harshburger (1896) was the first person who described ethnobotany and its purpose. Valery Haurd (1896) reported the drink plants of North American Indians. Castetter (1935) studied some uncultivated native plants as a source of American food. Barrow (1900) was the first scientist who received doctoral degree in ethnobotany in Chicago University. Irvine (1952, 1957), reported some

emergency wild food of West Africa. Liano (1956), reported some beneficial uses of Lichens. The economic plants of Bible introduced by Moldenk (1954). Barrau (1959) reported food plants of marsh dwellers in south pacific Island. Schultes (1960) described the importance of ethnobotanical lore trapping heritage and he further described the role of ethnobotanists in search of new medicinal plants (1962). Von Ries (1962) for the first time worked on Herbaria source of medicinal folk lore. Schultes (1962) and Jain (1964 and 1967) reported some field work amongst the tribals and their surroundings, scrutinizing literature, herbaria and study of archaeological remains. Schultes (1956, 1973) also made some contributions on ethno-narcotics plants and Altschul (1970) on ethnopediatrics and ethnogynocological aspects. Hartwell (1967-1971) provided a large compilation of antitumour plants, from old literature and local folk medicine. Helack (1969) gave a new approach to ethnobotany by coining a term palaeoethnobotany. Effron (1967); Bruhan 1973; Wasson (1969); Prance (1970); Rubin (1975); and Merlin (1984) etc. reported some hallucinogenes and narcotic plants. Turner and Bell (1971) described the ethnobotany of plants of Coastsaltish Indians of Vancouver Islands. Barrau (1958) contributed information related with subsistence agriculture in Honolulu. Penso (1980) wrote the role of WHO in selecting and characterising of medicinal plants of pharmacologically active constituents. Weragoda (1980) did a critical analysis of the future of traditional medicines in developing countries. American ethnobotanist, Lindley (1981) wrote a book

'Flora-Medica'. Alcorn (1981) studied ethnobotany in making policy of a country. Prance (1983) studied the ethnobotany of Amazon Indians. He described several tribes of the area and studied the involvement of plants in variety of arrow poisons, fish poisons and hallucinogenic drugs which are in use in Amazonia. Berlin (1984) reported the contribution of native American plant collectors in the ethnobotany of Neotropics. Dominguez and Alcorn (1985) carried out screening of some ethnobotanically claimed medicinal plants. Bhat *et al.* (1990) studied ethnobotany of central Nigeria. Zordini (1991) gave ethnobotanical notes on 'yacon' *Polymia sonchifolia* of Asteraceae family.

In India, the diversified ethnic culture distributed along vast areas and old history of rituals and observances related to plant world provided a fruitful ground for ethnobotanical investigations. A number of independent ethnobotanical works or surveys have been carried out in different parts of the country by various workers during last few years can be arbitrarily divided into some disciplines and subdisciplines. Search on ethnobotany and related subject was pioneered by Botanical Survey of India. Late Dr. Janki Amal was keenly interested in stimulating ethnobotanical research in India. She studied food plants of certain tribals of south India. Dr.S.K.Jain who is known as "Father of Indian Ethnobotany" has done a very extensive field study throughout India, especially, in the tribal heart land of Madhya Pradesh and gave new methodology for

ethnobotanical studies. The efforts made by Dr.S.K.Jain in the field of ethnobotany are quite inspirable and attracted the attention of scientist in India and abroad by carrying a lot of work in this field, Jain (1962; 1963a, b; 1964a,c; 1967a,b; 1968a,b; 1981a; 1986; 1988); Jain and De (1964, 1966); Jain and Tarafder (1963, 1970); Jain and Rao (1983); Jain *et. al.* (1973, 1984, 1989); Jain and Sinha (1988); Jain, Sinha and Saklani (1989) etc. Jain (1981b) published a book "Glimpses of Ethnobotany". It is the first book dealing with Indian ethnobotany. It has compilation of research articles on field studies in different phytogeographical areas of India. It describes 300 uses of 1500 plants. Jain *et. al.* (1986) have reported a book containing about 2000 ethnobotanical references called as "Bibliography of Ethnobotany". Ethnobotanical work is being termed under various titles such as herbal drugs, herbal medicinal agents, traditional medicines etc. Several branches and aspects of ethnobotany were recognised by Jain (1986). "The method and approaches in ethnobotany" and "A manual of ethnobotany" are two books written by Jain (1987, 1989) by doing compilation of the work of paper first and second training course and workshop on ethnobotany held at National Botanical Research Institute (NBRI) Lucknow organised by society of ethnobotanist. The real milestone in this context is the publication of "Dictionary of Indian Folk Medicine and Ethnobotany" by Jain (1991a), which deals with 250 families, 1174 genera and 2352 species of indigenous medicinal plants of India.

Jain (1964, 1988, 1992) reported some field work amongst the tribals and their surroundings. Tribals are distinct ethnic groups which are culturally homogenous and unifying a social organisation and confined to a definite geographical areas. They form a sizeable percentage of total population in certain regions of India. A number of folk medicines preserved with tribal and rural people living in deep virgin forest, offer considerable scope for such studies. According to Chakravarty (1975) a large number of indigenous herbal drugs are used as remedies for curing number of ailments all over India, especially by the rural folk. These plants with recorded medicinal properties may include more than two thousand species. Thus considering the importance of ethnobotanical investigation a number of ethnobotanical surveys have been carried out in different parts of the country by various workers. Some notable work of this field by different workers is as under, Ahluwalia (1952); Gupta (1960, 1962); Ahuja (1965); Jain and Tarafder (1970); Shah and Joshi (1971); Jain *et. al.* (1973); Banerjee (1977); Rai Chaudhuri (1978); Sharma and Dhakre (1978); Rath (1971 & 1979); Shrivastava *et al.* (1980); Singh *et. al.* (1980); Kapoor and Kapoor (1980); Perry (1980); Arora (1981, 1987); Bhargava (1981); Jain *et al.* (1981a; 1983; 1986; 1989a; 1989b); Manilal and Kandya (1990); Gangwar (1990).

Ethnobotanical investigations carried out by various workers in different parts of the country can be studied under following headings :

Ethnobotany of any specific geographical region :

Thothari (1974) reported some plants of Andaman and Nicobar islands. Shrivastava and Mehrotra (1992) reported a new term ethno-oceanobiology which deals with the uses of some marine plants used by the tribals of Andaman and Nicobar.

Puri (1983) surveyed different areas of Assam to verify the claims of ethnomedicinal uses of plants. Tiwari *et. al.* (1980b) described the value of folklore medicines and treatment in Kamrup district of Assam.

In Andhra Pradesh, Banerjee (1977); Hemadri *et. al.* (1980) studied various ethnomedicinal plant of the state. Venkanna (1990) studied medicinal plants of Krishra district of Andhra Pradesh. Reddy *et. al.* (1997) reported ethnomedicine for Ephemeral fever and Anthrax disease in cattle from the Hills of Cuddapan distt. of Andhra Pradesh.

In Arunachal Pradesh, Hajra (1981) reported 76 species of plants for folk lore herbal medicinal remedies used by tribal population for their food and medicine.

In Bihar Goel *et. al.* (1984); Gupta (1963); Tarafadar and Choudhri (1981); Hemborn (1991) have reported herbal folk medicine of the state.

Jha and Verma (1996) reported 58 plants, inhabiting Rajamahal hills of Santhal Paragana division of Bihar.

In Gujrat state various workers carried out the ethnobotanical observation on various aspects of plants.

Joshi *et. al.* (1982) recorded medicinal uses of 82 plant species by the tribals of Dangs in Dang district of Gujrat. Shah *et. al.* (1981) reported detailed account of the ethnobotany of Saurashtra in Gujrat state. Vara *et. al.* (1982) has given medicinal uses of about 42 species of plant being used for the treatment of jaundice.

In Haryana, folk medicine have been described by Lal and Yadav (1983); Koeltz (1979); and Lal and Lata (1980) have reported ethnobotanical studies on Bhat community of Punjab. Jain, (1984) studied Morni and Kabsar tribal communities of Ambala district.

In Himachal Pradesh, ethnobotanical surveys have been carried out by Ahluwalia (1952) in Kangra and Kapoor (1953) in Chamba division.

In J & K various workers have made ethnobotanical observations e.g. Kapoor and Sarin (1977); Kaul and Atal (1983); Dar *et. al.* (1984) and Kaul *et. al.* (1985). Virendra Singh (1994) reported some ethnomedicinal plants used in the treatment of worm infestation from Kashmir Himalaya.

In Kerala, Pushpangandan and Atal (1984) carried ethnomedicobotanical investigation in Kerala. Thiruvananthapuram and Raidhaikrishnan *et. al.* (1996) reported less known ethnomedicinal plants and their conservation in Kerala. Razi and Subramanium (1978) and Yoganarasimha *et. al.* (1982) have reported a number of medicinal plants of Karnataka.

In Meghalaya, Rao (1981) reported 31 medicinal plants and their medicinal uses by tribes of Meghalaya. Ved Prakash and Mehrota (1991) collected information about 20 plants of ethnomedicinal importance used by Garo tribes of Meghalaya.

In Orissa, information about medicinal plants and their uses have been recorded by various workers. Panigrahi (1963); Pal and Benerjee (1971); Mudgal and Pal (1980); Paul and Mudgal (1985); Rath (1981); Trivedi *et. al.* (1982); Das and Mishra (1987) reported about 25 plant species used for the treatment of various disease of domestic animals by tribals. Brahman and Saxena (1990) reported 200 plant species used as folk medicine in Gondhamardan hills of Orissa.

Aminuddine and Girach (1996) reported 24 plants used by the tribe Paudi Bhuinya of Bonai hills in sundargarh district of Orissa for treating various ailments.

In Rajasthan, Mishra and Billore (1983), Sebastine (1984), and Sinha (1988) made some important ethanobotanical studies in this state.

In Tamilnadu, Janaki Ammal and Prasad (1984) recorded some ethnobotanical information among konikkors of the state. Ramachandran and Nair (1981) reported ethnobotanical observation on Irulars of Tamil Nadu. Deb, (1968) studied the medicinal plants of Tripura state.

In Maharashtra, Malhotra and Moorthy (1973); Majumdar *et. al.* (1978); Kamble and Pradhan (1980); Saxena and Vyas (1983) and Vartak and Ghate

(1990) have described various medicinal plants of this state. Vartak *et. al.* (1981) reported 26 wild medicinal plants from western Maharashtra and Goa. Kulkarni and Kumbhajkar (1996) reported 51 plant species for pest control in food material in Mahadeokali tribe of Western Maharashtra.

In North Western Uttar Pradesh, studies in the ethnobotany includes those by Shah and Joshi (1971) in Kumaon region. Gupta (1960, 1962), Uniyal and Malhotra (1981) reported some ethnobotanical studies in Garhwal region. Singh and Meheshwar (1992) reported 30 medicinal plants among Tharus tribes of Gorakhpur district of U.P.. Singh *et. al.* (1990) reported the studies of gymnosperms of Garhwal Himalaya of Uttar Pradesh. Singh and Anand (1994) reported 38 plants among the Gond tribe of U.P. for indigenous phytotherapy. Negi *et. al.* (1996) studied 57 plant species of Garhwal Himalaya of U.P.

In West Bengal, Choudhuri and Pal (1978) reported uses of about 25 plants for medicinal purpose by Lodh tribe of Midnapore district.

In the eastern part of India important contribution on ethnobotany have been made by Jain and Brothakur (1980); Bhattacharyajee *et. al.* (1980); Bennet (1983) and Chandra (1989) etc.

More than three thousand plants used as medicine, food, fodder, fibre or house-building, musical instruments, fuel, oil seeds, narcotics, beverage, in material culture and for magico religious purposes by various tribes in different parts of India have been studied by various workers.

Ethnobotany of some food, drinks and fibre yielding wild plants has been studied by many authors :

Famine foods of Marwar (King, 1869), meals and food habits of rural Indians (Behura, 1962), wild plant foods of Bastar (Jain, 1964d), famine food of Rajasthan desert (Bhandari, 1974), less known foods of Andhra Pradesh (Pal & Banerjee, 1971), jungle leaves (Chaudhari *et. al.* 1977), wild edible fruits (Gaur, 1977), nutritive value of tribal beverages (Sengupta, 1956), alcoholic beverage in tribal India (Roy, 1978), a tribal drink in Tripura (Dev-barman 1976) and De (1965) has studied some wild fibre yielding plants of Bengal.

Tribals have great importance in ethnobotanical researches. The traditional societies and cultures are disappearing gradually and with them goes their traditional information on plant lore with the changing atmosphere. In certain region such as western Ghat, Assam etc., sacred forest groves and trees are being located in the remote tribal areas are living museum of plants and resources to carry out relevant research. These groves supply fresh medicinal plants to villagers (Vartak *et. al.* 1984). De (1962) reported some medicinal plants of Bhagirath valley. De Laz lo and Hanshaw, (1954); Lal and Lata (1980) reported plants used by primitive people to affect fertility. Tiwari *et. al.* (1982) described preparations used for obstetrics and gynaecological disorders. Tarafder, (1983a,b) reported some important plants used for antifertility, conception and abortion.

Saklani and Jain (1989) described sixty plants used for food and medicine by about 150 tribes of north eastern region of India. Pal (1981) surveyed different areas of Bihar, Orissa and West Bengal and collected information about 25 plants used for the treatment of various diseases of domestic animals by the native tribes. According to Thothathari *et. al.* (1989), about 2000 species are newly identified as drug yielding plants and are well known for their uses in about 400 drug industries of various Indian system of medicine like Ayurveda, Unani, Sidha and Homeopathy. It is only 12% of the present flora.

The Ethnobotany of certain ethnically distinct primitive or interesting human societies has been studied by different workers. Santhals of Bihar (Bodding, 1925), Korkus of Maharashtra (Kamble and Pradhan, 1980), Mikirs of Assam (Jain and Borthakar, 1980), Khasi and Jaintia of Meghalaya (Kharkongor and Joseph, 1981), Garo of Meghalaya (Rao, 1981b). Bhils of Rajasthan (Joshi, 1982), Boro of Assam (Baruah and Sharma, 1984), Abujmarhia tribes of Bastar district of Madhya Pradesh (Maheshwari and Dwivedi, 1985), Bharia tribe of Patalkot valley of Chhindwara district of Madhya Pradesh (Maheshwari and Dwivedi, 1988; Prasad *et. al.*, 1990), Nicobarese of Andaman and Nicobar Islands (Dagar and Dagar 1991), Lodhas of West Bengal (Pal and Jain, 1989), Tharus of Uttar Pradesh and Bhils of Madhya Pradesh (Maheshwari *et. al.* 1986a,b), Oraon tribe of Bihar (Jha, 1987a), Bhotia tribe of Kumaun Himalaya of Uttar Pradesh

(Kalkoti and Pangtey, 1988). Onge tribe of little Andaman (Dagar and Dagar, 1989), Shariya tribe of Madhya Pradesh (Pandey *et. al.* 1991), Bodo tribe of Orissa (Aminuddin & Girach 1991). Iruglar tribe of Tamil Nadu (Lakashmanan & Narayan 1990). Aminuddin & Girach (1993) reported ethnobotany of the Bhunjia-tribe of Sanabera Plateau.

Some work has also been done on medicoethnobotany with special reference to certain diseases. Biswas (1956) studied herbal plants in the treatment of leucoderma. Das and Sharma (1958-59) reported the traditional methods of treatment of leprosy among Mikris. Jain (1967b) reported on healing of bones by plants. Hemadri (1981) reported some plants used against rheumatism. Khan and Chagathai (1982), Sharma *et. al.* (1985), Tarafder (1986), Oomachan *et. al.* (1986), Siddiqui *et. al.* (1989) have reported their findings on skin disease; whereas, Shiv and Lata (1980), Oomachan and Khan (1981); Billore and Audichya (1976); Kishore *et. al.* (1982); Reddy (1988); Sankarnarayanan (1988) have reported their findings about plants used as contraceptive. Hemadri (1981) reported some plants used against rheumatism. Sahu (1982) studied plants used against various disorders among tribal woman. He reported 34 plant species used among the tribals of Madhya Pradesh for venereal diseases and antifertility. Vora (1982) and Oommachan *et. al.* (1990) reported some plants used against jaundice in Bhavnagar district of Gujrat and tribes of central India. Rath (1981) reported

about 20 plants species used by aboriginal tribes in the state of Orissa with special reference to eye diseases.

Beside these, some plants have been described by various workers regarding veterinary medicine (Pal, 1980; Issar 1981 and Manondar 1990).

Ethnobotany of plants which have been used by tribals for Arts and crafts studied by various workers. Guha (1939) have reported the bark cloth of Garos. Kaufmam (1961); Jain (1965a) and Parmar (1978) have studied certain plants used in making musical instruments for tribals. Plants used for bows and arrows described by Mani, (1964). Plants used for fish poisoning was observed by some workers (Joshi 1986; Pal and Saren, 1986).

Individual plants, plant groups genus and family of plant also have attracted the attention of some workers of this country : Hassan, (1967) studied on *Peganum harmala* whereas Neher (1968) studied on ethnobotany of *Tagetes*. Mishra and Dixit (1973) studied on ethnobotany of *vajradanti*. Jain *et al.*, (1973) studied on ethnobotany of *Bauhinia*. Jain and Banerjee (1974) studied on ethnobotany of *Coix*, whereas Arora (1977), Shah and Kapoor (1977) studied on *Acorus calamus*. Mudgal and Jain (1980) studied on *Coptis teeta*. Chandler *et al.* (1982) studies on *Achillea millefolium*. Kaul and Atal (1983) studied on ethnobotany of *Holarrhena antidysenterica*. Khan *et. al.* (1984) reported medicinal plants of Rubiaceae. Lal *et. al.* (1985) reported ethnobotanical uses of Lichens. Singh (1969); Kapoor and Sarin (1977) studied on medicinal ferns.

Sharma and Vyas (1985), Sinha and Roy (1986) and Bhattacharya *et. al.* (1990) studied on some aspects of medicinal ferns. Janaki Ammal and Prasad, (1984) studied ethnobotany of *Costus speciosus* : Mudgal *et al.* 1984 studied ethnobotany of *Betelvine*.

Nomenclature and vernacular names of certain plants have also been studied by various authors. Jain (1963c) studied origin and utility of some vernacular plant names. Manilal, (1980) described Malayalam plant names in Hortus Malabaricus. Many workers have studied ethnobotany of plants relating to worship (Dymock, 1889; Reddi 1968; Pal 1970; Kapoor *et. al.* 1971). Some workers observed on taboos or magical belief related with plants among different tribals (Jain 1963; Bhoumic and Chowdhury 1966; Pal and Roy Choudhary 1982; Purohit *et. al.* 1987). Plant in Indian epics and other religious books was reviewed by Moldneke (1954), Banerjee (1980), Agarwal (1981), Gupta (1989) and Sen Sharma (1989). The ecological aspect of ethnobotany including conservation and management of plant resources as well as preservation of forest in the form of sacred groves has been studied by Gadgil and Vartak (1976), Hajra (1981), Ramakrishanan *et. al.* (1981).

Rai Choudhari *et. al.* (1977) reported herbarium as a source of ethnobotanical research. Works on ethno-pharmacological researches have been carried out by many workers : De Suze, 1978; Shah and Mitra, 1974; Fransworth *et. al.*, 1985; Dominger and Alcorn ,1985; Jiu, 1966; Joshi and Sabnis, 1989.

With the development of civilization, people come to know more and more about the uses of plant in different fields of life. The knowledge of "Wonder herb" was kept alive by the tribals and aboriginals of our country. The total number of scheduled tribes in India is 563, out of which about 60-70 are inhabited in different district of Madhya Pradesh. More than 50% of the total population of India lives in M.P. at various places. They form about one fourth population of State in certain parts such as in Mandla, Bastar and Balaghat districts living in remote tribal areas and in deep virgin forest, provide great scope for such studies. This state is also rich from floristic composition or vegetational point of view. Some important works has been carried out in Madhya Pradesh by some of the leading workers, (Jain 1963a, 1963b, 1963, 1967, 1981b) Maheshwari and Dwivedi (1985); Rai, (1985); Saxena (1986); Roy and Chaturvedi (1986); Prasad and Pandey (1987); Oommachan *et. al.* (1989), Maheshwari *et. al.* (1985, 1990); Pandey and Shrivastava (1989); Bhattacharya *et. al.* (1990).

Saxena and Shukla (1971) have surveyed medicinal plants of Patalkot, Chhindwara and gave information about their uses. Bhatnagar *et. al.* (1973) surveyed the rural area of Barari of Gwalior district and suggested the use of 'Sadabahar' plant against breast cancer. Some floristic and ethnobotanical studies in Chambal and Gwalior divisions have been made by Kaushik (1973) and Jain (1978). Jain and Mishra (1988) studied various allergic ailments like asthma, bronchitis, dermetitis etc. in relation to plants. Chaturvedi (1984) made some

ethnobotanical studies from Chanderi area of Guna district. Ethnomedicinal studies of certain rare medicinal plants of Bhopal are evaluated by Khan *et al.* (1982).

Maheshwari *et al.* (1986 and 1988) studied Bhil tribe of Jhabua and Chhindwara districts. Mishra *et al.* (1984) gave an account of Euphorbiaceous plants used in medicine by tribals of M.P.. Conservational aspects of medicinal plants of Jabalpur (M.P.) were studied by Oommachan *et al.* (1989, 1990 and 1991). Multifarious uses of plants by the forest tribals of Madhya Pradesh evaluated by Oommachan *et al.* (1988). Some folk medicines or remedies practised by tribals of Bastar have been discussed by Hemadari and Rao (1989). Rai (1988) studied plants used against skin diseases and liver disorder in Tamiya and Patakot of Chhindwara district. Koppula *et al.* (1989) surveyed Bastar district and reported 23 plant species used in folk remedies. Oomachan and Masih (1989) made some ethnomedicinal observations on certain forest plants of Jabalpur district of M.P. Bhattacharya (1991) gave detailed account of about 33 plant species, used by different tribes of Chhindwara district. Shukla *et al.* (1984) studied the medicinal plants of Jabalpur district. Pandey and Biswas (1991) reported ethnobotanical studies on wild edible plants of Satna district of Madhya Pradesh. Khan *et al.* (1994) reported that bark of leguminosae family plants used as a source of medicine.

Sagar district of Bundelkhand region of M.P. is rich in medicinal plants, inhabited by tribal and rural people provide a good opportunity for such studies. Ethnobotanical survey of this region was done for the first time by Saxena (1977), Saxena and Vyas (1981), Sahu *et. al.* (1982, 1983) and Bhalla *et. al.* (1981 & 1992). They just started to correlate phytochemistry, pharmacology, antimicrobial and ecophysiological trials with ethnobotany and started experimental science for mankind. Jain (1991) worked on various aspects of ethnobotany of plants of Noradehi Sanctuary in Sagar district. Malaiya, (1992); Dixit, (1994), Malaiya, (1997) have also worked on some medicinal plants of this region. Being the most tribal communities dominated state, Madhya Pradesh has the top priority in this field of science. In spite of this very little work has been done in this field. Realising this need the present work was undertaken on certain selected sites of Sagar district of Madhya Pradesh by studying the ethnomedicinal aspects of Genus *Calotropis*(Linn.) R.Br. represented by two species viz. *C. gigantea* and *C. procera*.