



CHAPTER-1
INTRODUCTION

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The term ethnobotany comes from the Greek word *ethnos*, which means 'people', and *botane* which means 'herb', so literally it would be translated as 'the study of people and herb' which usually is generalized as '**the study of people and plants**' it was coined in 1895 by American taxonomic botanist John W. Harshberger as 'the study of the utilitarian relationship between human beings and vegetation in their environment, including medicinal uses' (Harshberger, 1896).

Ethnobotany is the study of the relationship between plants and people 'ethno' – study of people and 'botany' – study of plants. Ethnobotany is considered a branch of ethnobiology. Ethnobotany studies the complex relationship between (uses of) plants and cultures. The focus of ethnobotany is on, how the plants have been used, managed and perceived in human societies and includes uses of plants for food, medicines divination, cosmetics, dying, and textiles, for building tools, currency, clothing, rituals, social life and music.

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.

The use of processed, improved, or otherwise modified plant product and their commerce by man primarily is economic botany.

Ethnobotany is not synonymous also with traditional medicine. Early origin of traditional medicine must have their roots in ethnobotanical Folklore, but today, traditional medicine incorporate 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 food, fibres, dyes, and tannins, other useful and harmful plants, taboos avoidances and even magico-religious beliefs about plants (Jain 1967a; Ford, 1978).

Jain (1987) has classified the plants and human inter-relationship into two groups:

- (1) Abstract
- (2) Concrete

Abstract – The abstract relationship of man with plants faith in the good or bad powers of plants, taboos, avoidances, sacred plants, worship and folklore. The folklores include not only fables or verses about or having references to, plants but also similies and metaphors based on plants.

Concrete – The concrete relationship includes mainly the material use such as in food, medicine, house building, agricultural operations other domestic uses, trade or barter, plants in fine arts and culture like paintings ,carvings and house decoration and acts of domestication conservation, improvement or destruction of plants.

The influence of primitive cultures on vegetation can be beneficial as well as harmful.

The beneficial influence will be through:

- 1) Preservation of vegetation as sacred groves or through various taboos and other restrictions.
- 2) Conservation of germplasm through cultivation of land races.
- 3) Occasional cultivation, introduction and improvement through selection.
- 4) Regularity of agricultural operations or cycles through mythological association with celestial bodies, seasons, etc. The harmful effects are evident through practices like shifting, cultivation and increasing pressures on limited land. The daily demands of the tribals on the forests also cause loss to plant cover.

Ethnobotany can be defined as the total natural and traditional relationship as well as the interactions between man and his surrounding plants wealth. Ethnobiology must have been the first knowledge which the early man has acquired by sheer necessity, intuition, observation and experimentation.

Archeological or paleo-botanical evidence about collection use and cultivation of any plants products by early man for food, house-building etc. (Van Zeist and Casparie, 1983) and references to herbal medicine in ancient scriptures suggest a very long history of Ethnobotany. Yet the word ETHNOBOTANY was applied to such knowledge by Harshberger (1895) less than a century ago, and till a few years ago the only book on the subject was *Introduction of Ethnobotany* by Faulks (1958).

The scope, concepts and implication of ethnobotany have been expanding at a very fast rate (Schultes, 1962, 1963, Ford, 1978; Jain, 1967, 1986, 1987 a, b, 1989). Ethnobotanical studies on various subgroups of the plants kingdom, like on algae, fungi, brayophytes, pteridophytes, lichens etc. are sub-disciplines and have been named as Ethnoalgology, Ethnomycology, Ethnobryology, Ethnopteridology, Ethnolichenology, etc. Studies on special aspects of botany like systems of classification, medicinal uses, paleobotany, ecology, etymology of plants names etc. are also subdisciplines and have been termed as ethnotaxonomy, ethnomedicobotany, ethnoecology, and paleobotany, etc.

But when inquiry in ethnobotany extends beyond ordinary realm of botany and has significant input of another branch of science, like archeology or medicine, the work become interdisciplinary.

During the course of their development and struggle for existence the primitive men in the forest should have looked towards their natural fellow friends – the plants – since the development of civilization there exists an intimate biological relationship between plants and primitive peoples or human beings. For very basic need such as food, fiber, fuel, shelter, medicines etc. man has depended more upon the plants. The curing properties of plants have been achieved through trial and error.

During the civilization development know more and more about plants and their multifarious uses than food such as hut building materials, net making, thatching, medicine, gum, dye, psychotropic drugs, pesticides, cordage, mat, basket, brooms and musical instrument etc. Some interpretations of ethnobotany are as follows.

Source	Interpretation of Ethnobotany
Powers (1873)	The term ‘Aboriginal botany’ was introduced for the study of all forms of vegetation which aborigines used for commodities such as medicines, food, textiles and ornaments.
Harshberger (1985)	The term ‘Ethnobotany’ was introduced for the use of plants by the aboriginal people.
Vartak&Gadgil (1980)	Ethnobotany is a branch of economic botany, a section of which deals with the role of plants in the life and culture of aborigines and tribal people
Mudgal & Jain (1983)	Ethnobotany deals with studies among the tribals and rural people for recording their unique knowledge about plant wealth and for search of new resources of herbal drugs, edible plants and other aspects of plants.
Jain (1986)	Ethnobotany deals with the direct relationship of plants with man.
Manilal (1989)	The term today has come to denote the entire realm of direct relationship between plants and man.
Arora (1997)	Ethnobotany in wider context denotes the entire realm of useful relationship between plants and man.

The prehistoric man has used plants as food and for curing his ailments. A variety of uses of plants are mentioned in the ancient Indian Sanskrit literature like Rigveda (ca 4000-

5000), Atharvada (1500 B.C.), Upanishads (1000-600 B.C.), Mahabharata and Puranas (700-400B.C.), etc. These include uses of plants in worship, as medicine, food, fuel and for tools of agriculture. A specific mention of the different varieties of Rudraksha exists in Lakshmipurān and Shivpurān. Uses of about 1200 plants drugs along with their action and specific therapeutic applications are mentioned in Sushruta Samhita (ca 500 B.C.) Charaka Samhita (ca 100 A.D.) and Ashtanga Hridaya Samhita. In fact, many more references to plants are seen but their identity has not yet been established.

The overall survey of the uses of wild plants in the Indian Subcontinent has revealed that nearly one third of about 1500 higher plants species are used by tribals for themselves and for their domestic animals and birds.

This close relationship of plants and primitive societies of world (the ethnic people) gave birth to a new inter-disciplinary science called 'Ethnobotany'. The knowledge about plants that has come through generation is main subject of this science which has received much attention now a day in certain parts of the world.

The first individual to study the emic perspective of the plant world was a German Physician Leopold, Glueck, working in Sarajevo at the end 19th Century. His published work in 1896, on traditional medicinal use of plants done by ethnic people in Bosnia, has to be considered the first modern ethno-botanical work.

Although Harsberger's definition still provide root of the ethno-botany, but to describe the field in broader sense ethno-botanist have given their definition time to time.

Jain (1967) – the real sense ethnobotany include study of food, fiber, dyes, gums, other useful and harmful plants, taboos, folk songs, avoidances and even socio-religious beliefs about plants.

Ford (1978) defined ethnobotany as the totality of the plant in a culture. It is the study of plant – human inter-relationship embedded in a dynamic ecosystem of natural and social components.

Martin (1995) defined ethnobotany as the 'it is a part of ethnoecology which concern with plants'.

Cotton (1996) - Ethnobotany is considered to encompass all study which concern the mutual relationship between plants and traditional people.

Turner (1996) - Ethnobotany is the 'Science of peoples' interaction with plants'.

Ethnobotany is a rapidly expanding science. In the last nearly 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 it now includes studies like conservational

practices of tribals, ethnopharmacology, ethnomusicology, ethnopharmacognosy, ethnogynaecology, etc. The literature on the subject is piling up at a very rapid pace.

Prior to the coining of the term ethnobotany, usage of plants by human beings founds place in Sanskrit, Greek and Arabic literature, ethnographies, travelogues, herbals, etc. Later, systematic compilation work like *Food and Drinks through ages 2500 B.C. to 1937* (Anonymous,1937), *Indo-European Folk Tales & Greek legends* (Halliday,1932), 'Plants used against cancer a survey' (Hartwell,1967-71), 'Economic plants of ancient North China as mentioned in Shing ching' (Keng,1974) 'The economic plants of the Bible'(Moldenk,1954), *Flora and Fauna in Sanskrit literature* (banerjee,1980), *Glossary of vegetable drugs in Vagbhatta* (Godbole et al.1966), 'Food and Drinks in ancient India (Ray,1933), *Glossary of vegetable drugs in Brahttrayi* (Singh & Chunekar,1972).

An introduction to Ethnobotany (**Faulks, 1958**) is the first book on ethnobotany. It deals with (1) the goods and services obtained from vegetation for food, drink. Inhalants, fumitories, masticatories, shelter ,fuel, equipments, medicine, transport, rituals, disposal of wastes, control of pastes along with means of production consumables (2) physical and psychological troubles caused by vegetation i.e. food and drinks spoilage, diseases and paste of plant and animals, irritants (3) influence of man on vegetation by way of destruction, conservation etc.(4) relationship of vegetation with human civilization i.e. selection of economic species, organized production etc. It includes most of the topics of Economic Botany in general. The knowledge of plants that has come orally through generations and which normally forms the significant subject matter under ethnobotany was not discussed in this book except a few instances in historical prospective.

The Nature and Status of Ethnobotany (**Ford, 1978**) dedicated to Volney H. Jones contains 17 papers on various issues of ethnobotany. While the concept of ethnobotany has been elaborately dealt with in some of papers, others are mostly of Anthropological origin. The empirical knowledge about the plant wealth finds little space in this volume too.

Glimpses of Indian Ethnobotany (**Jain, 1981**) is the first book dealing with Indian Ethnobotany. It has a compilation of articles on field studies in different phytogeographical areas of India. The subject has also been dealt in general including historical perspectives of plants in folk life, songs proverbs and tales. The book contains tribal uses of more than 1500 plants in different parts of our country, mostly recorded during field studies in villages and forests.

Shivpuri is the northern district of Madhya Pradesh State with beautiful landscape consisting of small hills and deciduous forests. Shivpuri has a total area of 10,278 square kilometers and a population of 1,726,050 (Census 2011)

The economy of Shivpuri is agriculture based and 83.38% of the working population is engaged with agriculture works. Rice, Wheat, Barley, Jowar and Bajra are the most common crops of the district.

The Shivpuri district is inhabited by a large number of Sahariyas. The population of Sahariyas is about 227802. Which is about 13.19 percent of the total population. (Census 2011) The traditional occupation of Sahariyas is working in forest and agriculture. The name Sahariya probably means inhabitants of the jungle. They have faith in good and bad powers of plants, taboos, sacred plants and worship them on folklore.

Shivpuri is a district of Madhya Pradesh State of the Union of India. The town of Shivpuri is the district headquarters. Important towns of the district are Badarwas, Karera, Khaniyadhana, Kolaras, Narwar, Pichore and Pohri.

The Narwar town of the Shivpuri district has historical importance which is situated just east of the Kali Sind River at a distance of 41 km. from Shivpuri. It is famous for mediaeval forest of Narwar.

Raghogarh in Guna district of Madhya Pradesh is the gate way of Malwa and Chambal region. It is located on the north-eastern part of Malwa plateau. Western boundary of Raghogarh is well defined by Parvati River. Parvati is the main river flowing along the western boundary touching Raghogarh district of Madhya Pradesh, Jhalawar and Kota districts of Rajasthan. Kota is located in north and the cities Vidisha, Bhopal and Rajgarh lies to the south of the Raghogarh. The nearest transport hub is Guna. Now a day's Guna is connected with most of the cities of the State of Madhya Pradesh and many major cities of India by train route as well as by roads. Late Shri Madhav Rao Scindia was Lagislative before Shri Jyotiraditya Scindia who had made Guna one of the developed districts in the Madhya Pradesh.

Raghogarh is existed about a distance of 180 km. in the north of Bhopal, the capital of the State of Madhya Pradesh. Although it lies in Guna district and is about 30 km. from Guna town, which is the district headquarters.

As per the 2011 India census Raghogarh has a total population of 160397 the Raghogarh tehsil of Guna district is inhabited by large number of Sahariyas. The total number of Sahariyas is 15775 which are about 9.83 percent of total population.

The tribal people of India mostly live in forests, hills, plateaus and naturally isolated regions, and are differently termed as Adivasi (original settlers), Adim Niwasi (oldest ethnological sector of the population), Janjati (Folk communities), Adim Jati (Primitive cast), Aboriginal (indigenous) Anusuchit Janjati (Scheduled tribe), Vanyajati (Forest caste), Vanvasi (Forest inhabitants), Girijan (Hills man) and several such other names signifying either ecological, or economics, or historical, or cultural characteristics. Among these terms, the most popular name is Adivasi, while the constitutional name for them is Anusuchit Janjati (Scheduled Tribes) (Jain 1987).

The Sahariya tribe has been as “Primitive Tribal Group” (PTG) in Madhya Pradesh and Rajasthan.

Chambal and Gwalior division of Madhya Pradesh occupy quite a considerable forest area where a number of tribal are living. Sahariya tribe is dominant and inhabiting most of the district of these divisions. The Sahariyas are found in almost every multi-ethnic village of districts like Gwalior, Guna, Shivpuri, Morena and Sheopur. Sahariyas are also found scattered in neighbouring district of these divisions.

Sahariya is the major tribe in both Shivpuri and Raghogarh regions. In Shivpuri the Sahariyas are living since a long time and they prefer to live near forest areas. In Raghogarh the Sahariyas are comparatively less in number and most of them are migrated from Guna, Shivpuri and Sheopur regions. They earn their livelihood as labourer in forest and agriculture working. In Shivpuri a number of clans of Sahariya tribe are residing in different blocks. These clans are Parmar, Devaria, Piper Barodia, Mohania, Pallia etc. In Raghogarh only a few clans are residing in different villages. These clans are Bajulla, Karoria, Sonaria, Piper Barodia etc. The economic status of Sahariya tribe in both regions is similar but Sahariyas living in Shivpuri are mostly dependent on forest produce for their source of income and they have good knowledge about medicinal plants. They have a long cultural heritage.

A comparative study of Ethnobotany of Shivpuri and Raghogarh regions will provide very useful and interesting results such study may provide indications for regional variations in usages of a single plant species and uses of different plant species for a similar purpose.

Comparative ethnobotany is an important avenue to study the effects of ecological and cultural constraints on plant use patterns among the culturally identical or distinct groups. Comparative ethnobotany has always been an essential avenue contributing to the understanding of plant use patterns and factors that affect the use of plants among

different populations inhabiting different environments (Ladio *et al.*, 2007). During the last two decades, there have been a number of comparative ethnobotanical studies stretching out from many regions of the world.

In order to document plant species used for different purposes in two different study areas 100 informants were identified and interviewed.

During the present study a comparative ethnobotanical study was undertaken to document plant species used for medicine, food, fodder, insecticide, insect repellent, cordage, mat, basket brooms, gum, resin, house building and material agricultural implements, oil, musical instruments dye, socio-religious ceremonies.

A number of villages of Shivpuri and Raghogarh are inhabited by Sahariyas. A perusal of the available literature reveals that a few regions of Central India have been explored to locate plant species and enumerate their ethnobotanical utility. S.K. Jain, T.R. Sahu, Ashok Jain.

Comparative ethnobotanical study of two or more geographic regions has not been done by any worker in Madhya Pradesh. To fulfill the above gap in our knowledge the present work, therefore was undertaken to compare the ethnobotanical data of Shivpuri and Raghogarh regions.

The present study shows that Sahariyas of both regions have extensive acquaintance with the plant world. They share a similar overall use pattern and the knowledge of certain important plant species. The factors affecting the similarities and differences in plant use are also studied in relation to social and natural conditions.

During the present research work a total number of forty villages of Shivpuri and twenty villages of Raghogarh were visited to collect the ethnobotanical data. During the field visits 60 informants from Shivpuri and 40 informants from Raghogarh were interviewed. The field work was carried out from January 2012 to October, 2015.

In the past, the research objective of most ethnobotanical studies only focused on documenting vernacular names and traditional uses of plant species with little emphasis on scientific methods. Prance and Collaborators (1987) first introduced the quantitative method into the ethnobotanical study.

In the last two decades many researchers formulated different indices in ethnobotany. These indices have been applied to ethnobotanical data gathered from various types of interviews or questionnaires in order to evaluate cultural preference and importance of different plant species to societies. In the present study quantitative analysis of ethnobotanical data have been done. For quantitative analysis different quantitative tools

like Informant Consensus Factor (ICF), Fidelity Level (FL %) and Importance Value (IVs), Preference Ranking Method, Direct Matrix Ranking Method were employed to analyze the collected data.

Phytochemicals are chemical compounds which are naturally found in plant. They are responsible for the color and organoleptic properties of the plant (Liu 2004). It is also referred to that those chemicals that may have biological significance but are not established as an essential nutrients in plants (Brow and Arthur 2001). Phytochemicals could be available as a dietary supplement, but the potential health benefits of phytochemicals are derived from consumption of the whole plant (Rao and Rao, 2007).

The medicinal plants are important source for curing human diseases and play important role in healing because of the presence of phytochemicals in them. The phytochemicals are bioactive chemicals of plant origin. They found in different plant parts like leaves, bark, roots, flowers, fruits and seeds etc.

The qualitative analysis of phytochemical is very essential for identifying compounds present in the medicinal plants.

In the present study qualitative analysis was undertaken to investigate the phytochemical constituents of leaves of ten medicinal plants viz. *Bauhinia variegata* Linn. (Caesalpiniaceae), *Calotropis procera* (Ait.) R.Br. (Asclepiadaceae), *Catharanthus roseus* (Linn.) Don. (Apocynaceae), *Lantana camara* (Linn.)Var. (Verbenaceae), *Mangifera indica* Linn. (Anacardiaceae), *Moringa oleifera* Lamk. (Moringaceae), *Ocimum sanctum* Linn. (Lamiaceae), *Pithecellobium dulce* (Roxb) Benth. (Mimosaceae), *Solanum nigrum* Linn. (Solanaceae), *Tinospora cordifolia* (Willd.) Mier.ex Hook. f. and Th. (Menispermaceae),

The qualitative analysis was conducted in ANALITIKA ECO LAB City Centre, Gwalior. The result of qualitative analysis shows that the leaves of analyzed medicinal plants contain various phytochemicals like alkaloids, carbohydrates, phytosterols, glycosides, phenols, flavonoides, proteins, diterpenes.