

Study of Plant Biodiversity of Chhatarpur District Madhya Pradesh and its Medicinal Use

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Abstract:- Phytodiversity can be defined as richness of plants occurring as an interacting system in a given habitat. The term biodiversity was first used in its long version biological diversity and most commonly used to describe about member of species. Plant diversity is the vast diversification of flora in the biological world and forest is one of the richest riches of this biodiversity. Chhatarpur is rich in biodiversity of plants. The forest area is about 20.08 % of the total area of Chhatarpur. Vegetation is the most precious gift, nature has provided to us, as it is meeting all kinds of essential requirements of the humans in the form of food, fodder, fuel and mostly medicine. Several medicinal plants occur in this area. Ecological studies evaluate any vegetation's level of biodiversity. Designing and implementing biodiversity conservation management requires a thorough understanding of the ecosystem's biological makeup, tree species variety, and dominating communities. To fulfill this need, the study was carried out in the Chhatarpur District of Madhya Pradesh, India. The diversity and ecology of the forest's tree vegetation were the main topics of the paper. Information on 44 plants sps. was obtained which were used by tribal vaidyas to treat various ailments given the table 1. These medicinal plants belong to 30 families. All plants were grown or cultivated in home steads or fields as ornamental plant, shade giving plants, timber yielding plants, home construction plants, medicinal plants, vegetable, fruits etc. The various plant parts used included whole plants, leaves, stems, roots, tuber, barks, flower, fruits & seeds. Traditional and ethnic knowledge generated from such leads has played most significant role in the discovery of novel product as well as newer ideas about conservation of natural resources.

Keyword: - Biodiversity, Chhatarpur, Medicinal plant, traditional knowledge.

Introduction:-

The most important resources in ecosystems that support life on a global scale are forests. Because of their enormous species richness and diversity, forest ecosystems are the most prosperous terrestrial ecosystems. These habitats are distinct from all other terrestrial ecosystems due to their very high levels of biodiversity. Global biodiversity is currently declining significantly, which emphasizes the need for conservation planning. Like other parts of the world, India has little scientific research on the biodiversity of its distinct ecosystems outside of protected areas and reserve forests. Furthermore, only a small number of taxonomic groups and ecological types have had extensive biodiversity assessments conducted. In the district of Chhatarpur, nothing has changed. There is little preliminary information available about the patterns of plant group biodiversity in this forest range. The lack of study makes it very difficult to assess the value of living species, their current state, and the threats that could allow for their long-term preservation (Lohbeck *et al.* 2014). As a result, several species are currently in risk of local extinction. From an ecological standpoint, other ecosystems suffer when forest ecosystems are eliminated or reduced (Palit *et al.* 2012).

The knowledge of medicinal plants has mainly been gathered by the people in the form of tradition and experiences and inherited over the centuries to the future generation. It is extremely important to save this traditional knowledge of biological heritage and explore new resources. The district has rich biodiversity still in the natural form. The climatic conditions of this area support to the survival of flora and magnificent nature. About 10000 plant sps. are traditionally utilized all over the country for health care food and other day to day material requirements. Traditional and ethnic knowledge generated from

such leads has played most significant role in the discovery of novel product as well as newer ideas about conservation of natural resources.

Plants are always considered as a primary source of drugs in traditional and alternative system of medicine in various forms such as crude form, juice, decoction, and crude extracts. About 80% people of the world, particularly in the rural areas of developing countries, continue using traditional resources in healthcare (Poonam and Singh, 2009). Indian subcontinent is renowned for its cultural and plant biodiversity where large numbers of people are still living in tribes. These tribal people possess a pool of undisclosed, ethnomedicinal, and ethnopharmacological information regarding the flora of their surroundings, which may prove to be very helpful in rural community with its advantage. Natural wealth as well as the undisclosed ethnopharmacological information and the tribal cultures have been decreased remarkably at a disturbing rate due to change in life style, unintentional developmental programs, and mounting recent civilization. Negligence by the youth also influences the traditional knowledge (Pandey and Shukla, 2003 and Semwal, 2005). Therefore, it is necessary to discover and document this exceptional, original, and conventional information of the ethnic population, before it disappears with the knowledgeable persons. It is also for the establishment of these conventional principles at the national and international level realizing the recent global trends (Kala, *et al.* 2006).

To evaluate the state, a number of quantitative and phytosociological markers were evaluated. This quantitative description of plant patterns provides a clear understanding of how plants interact with one another and with their surroundings. Additionally, it can provide clear proof of the state of biodiversity (Chase and Leibold, 2003). This study aims to evaluate the biodiversity status of tree species and its medicinal uses in Chhatarpur district.

Material & Methods:-

Description of Study Site: Study was conducted in the Chhatarpur district of the M.P. state of India during the year 2024-2025. Chhatarpur district located at 24.06° & 25.20°N 78.59° & 80.26° E respectively. The district has an area of 8,687 km². Chhatarpur District is bounded by Uttar Pradesh state to the north, and the Madhya Pradesh districts of Panna to the east, Damoh to the south, Sagar to the southwest, and Tikamgarh to the west. Chhatarpur District is part of Sagar Division. The district has extensive forests. About 20.08% of the total area is covered by forests only. Fieldworks and collection of data.

Methodology:-The field trips were organized in such a way so as to cover all the areas of the district at regular intervals in different seasons between 2024 to 2025. As a result, it became possible to record the seasonal variations in the vegetation, including distributional patterns and collect most of the plants in different developmental stages of their life cycle. Plant specimens were collected in sets of four both in flowering and fruiting stages taking due care to collect the healthy specimens. Field observations on phenology, habit, habitat, local uses, frequency of occurrence etc. were recorded in the field note books at the time of collection and the collected specimens were tagged with field book numbers. Processing of voucher specimens for herbarium preparation and identification. The voucher specimens were brought to the laboratory and processed for herbarium specimen preparation. Care was taken to identify the specimens in the field itself while the specimens were fresh. Their identity was ascertained in the Herbarium with the help local flora, monographs, revisions and other taxonomic literature (Roy, *et al.* 1992). For confirmation, the Herbaria, Botanical Survey of India, Allahabad were consulted. Voucher specimens are deposited in Botany Department of Govt. Model College, Chhatarpur (M.P.).

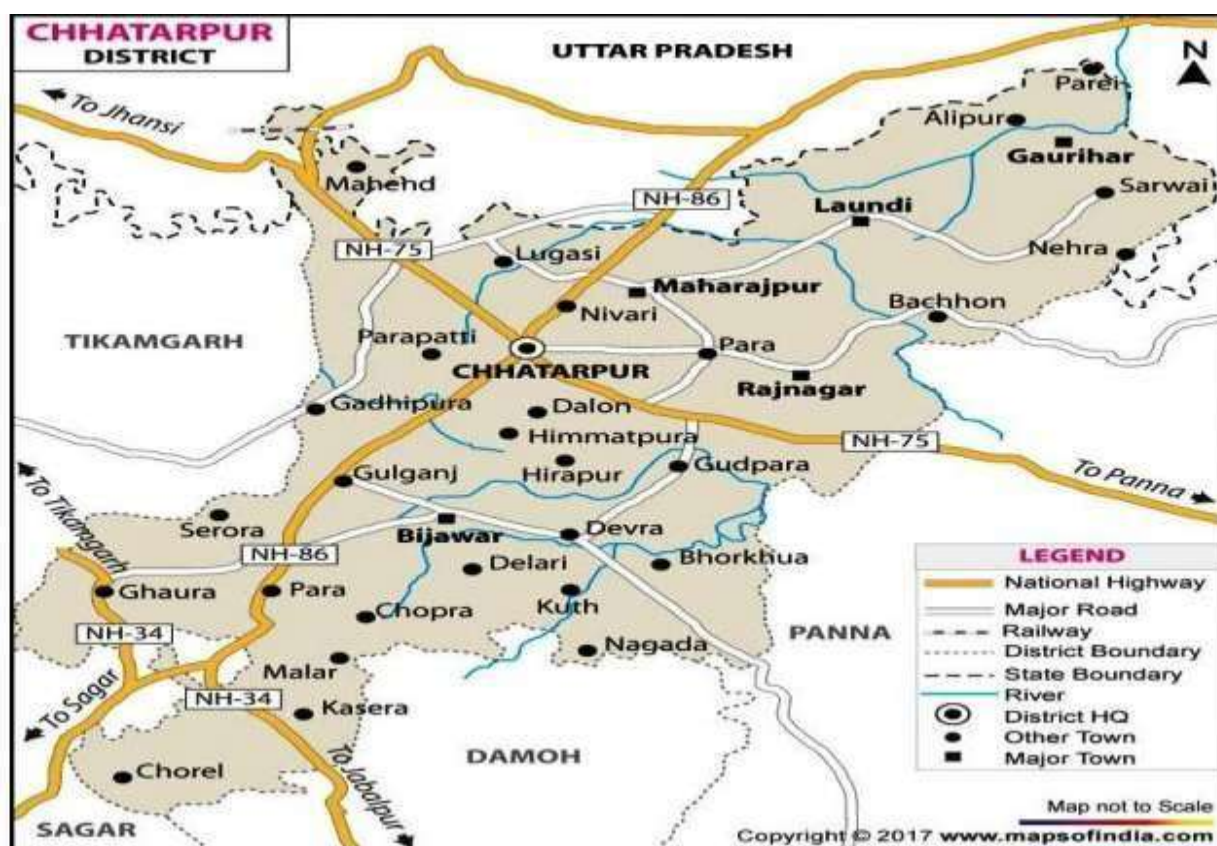


Fig 1: Location map of the Chhatarpur district

Result and Discussion:-

The results of the ethnobotanical survey are presented in table 1. A total of 44 plant species belonging to 30 families are reported. For each species the following ethnobotanical information were provided: taxon name, family, plant parts used, their use in treatment of diseases and habit of plant. Out of 44 plants recorded from study area, highest number of plants belongs to trees (31 sp.), herb (07 species) and followed by shrubs (3 sp.), Small tree (02) and climbers tree (1 sp.) in descending order (Table no. 2 & fig 2).

In this study, members of the family Fabaceae were the most commonly used plants for the treatment of various diseases. Comparison of the plant parts used as a medicinal source indicates that the root predominates followed by leaf, bark, seed, stem, fruit, whole plant, flower, tuber, twig, and latex. The common diseases treated using medicinal plants are stomach ache, joint pain, scabies, lactation, rheumatism, infections, dysentery, diarrhoea, bleeding of nose, skin disease, migraine, snake bites, boils vomiting, fever, skin problems, cold & cough, toothache, stomach ache, wounds, burns, constipation, roundworms, fids weakness, leprosy, night blindness, blood dysentery, indigestion, diabetes, asthma and jaundice. Different types of preparation made from medicinally important plants included decoction, juice, powder, paste, oil and whole plant extract. Some plants were even used in more than one form of preparations. It is evident that in most cases one plant is given alone but in many diseases and the recipe includes a combination of many herbs and plant parts. At the same time it has been shown that one herbal recipe is effective in treating many diseases, indicating that one plant is used for more than one disease. Crude is used alone or in combination with other substances from plants, animals or minerals. Such medicines are prepared under a special method of heating, grilling, dehydration, oil, milk, oil, or animal urine, fermented under a special controlled condition or controlled digestion.

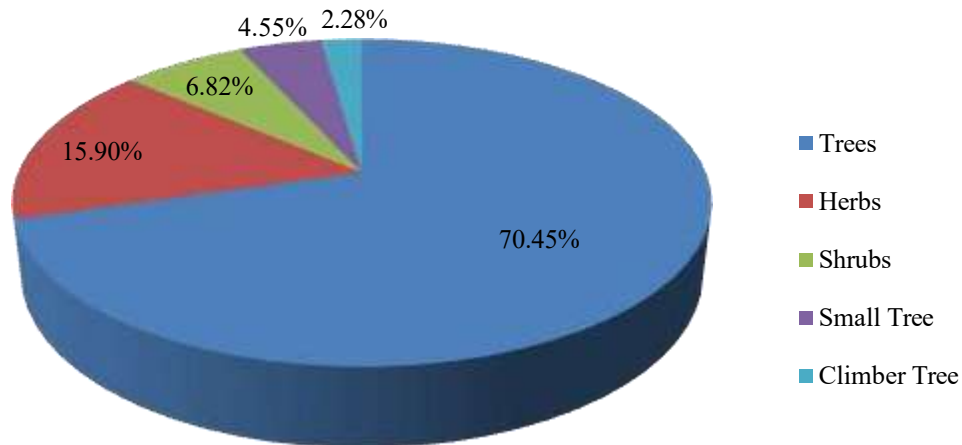
Table 1: List of plants Biodiversity of Chhatarpur district with their family name, part used and traditional medicinal uses

S. No.	Botanical Name	Vernacular name	Family Name	Parts Used	Ethnobotanical uses	Growth Form
1.	<i>Acacia nilotica</i> Linn	Babul	Mimosaceae	Bark, fruit	Urinogenital disease, mouthulcers	Tree
2.	<i>Acalypha indica</i> Linn	Muktajuri	Euphorbiaceae	Whole plant	Expectorant, bronchitis, pneumonia, snake bites	Herb
3.	<i>Adhoda vasica</i> Linn	Adoosa	Acanthaceae	Whole plant	Bronchitis, cough, anemia, asthma, chest pain	Shrub
4.	<i>Aegle marmelos</i> Linn	Bel	Rutaceae	Leaf, Root, fruit	Stomach troubles, intermittent fever, diarrhoea, blood dysentery	Tree
5.	<i>Achyranthes aspera</i> Linn	Chirchita	Amaranthaceae	Leaf, stem	Otorrhoea, wounds, injury	Herb
6.	<i>Alocasia indica</i> (Lour)	Mankanda	Araceae	Leaf, tuber	Astringent, piles, constipation	Herb
7.	<i>Amaranthus tristis</i> Trin	Chaulai	Amaranthaceae	Young stem, leaf	Anemia, eye troubles, blood purifier	Herb
8.	<i>Andrographis paniculata</i> Wall	Kalmegh	Acanthaceae	Leaf	Asthma, bronchitis, antihelmithic, stomachic	Herb
9.	<i>Argemone mexicama</i> Linn	Peeli kateeli	Papveraceae	Leaf, seeds	Jaundice, expectorant, demulcent.	Herb
10.	<i>Artabotrys hexapetalus</i> Linn	Kanchampa	Annonaceae	Leaf	cholera	Climbing Shrub
11.	<i>Artocarpus heterophyllous</i> Roxb	Kathal	Moraceae	Fruit, root, latex, rachis.	Diarrhoea, glandular swelling	Tree
12.	<i>Artocarpus lakoocha</i> Roxb	Dephol	Moraceae	Bark	antiseptic	Tree
13.	<i>Azadirachta indica</i> , a. juss	Neem	Meliaceae	Leaf, stem	Fever, skin disease, diabetes, liver troubles etc.	Tree
14.	<i>Bacopa monnieri</i> Linn	Kachnar	Scrophullariaceae	Whole plant	Nerve tonic, asthma, snake bite.	Herb
15.	<i>Bauhinia variegata</i> Linn	Mountain Ebony	Casalpinaceae	Bark, root	Leucorrhoea, carminative	Tree
16.	<i>Bombax ceiba</i> Linn	Semul	Bombaceae	Flower	Snake bite, stimulant, aphrodisiac, astringent	Tree
17.	<i>Bryophyllum pinnatum</i> Roxb	Patharachatta	Crassulaceae	Leaf	Kidney stone, headache.	Shrub
18.	<i>Butea monosperma</i> Kuntze	Palas	Fabaceae	Leaf, bark, seed, latex	Antihelmithic, astringent, piles, tonic.	Tree
19.	<i>Calotropis gigantea</i> Linn	Madar	Asclepiadaceae	Leaf, stem, latex	Chest pain, eye troubles, skin diseases.	Shrub
20.	<i>Cannabis sativa</i> Linn	Ganja	Cannabinaceae	Leaf, flower	Diarrhoea, dysentery, nacroctic	Shrub
21.	<i>Shorea robusta</i> Gaertn. f.	Sal/Sakhuwa	Dipterocarpaceae	Leaf, Bark and Resin	treating diarrhea/dysentery	Tree
22.	<i>Adina cordifolia</i> Hook.f.	Haldu or Yellow Teak	Rubiaceae	Leaf, Bark and roots	treat skin diseases, jaundice, chronic coughs, wounds, diarrhea, and stomach infections.	Tree
23.	<i>Wrightia tomentosa</i> Roem. & Schult	Dhudhi	Apocynaceae	Leaf, Bark and root	Its bark, root, and leaves are used to treat snake bites, abdominal pain, fever, and to aid fertility	Small Tree
24.	<i>Lagerstromia perviflora</i> Roxb	Lendia, or Sidi	Lythraceae	Leaf and Bark	treat wounds, fevers, digestive issues, and respiratory ailments	Tree

25.	<i>Amoora walichii</i> King.	Laal chini	Meliaceae	Leaf and Fruit	The fruit are eaten, and used in folk medicine	Tree
26.	<i>Terminalia tomentosa</i> Roth	Asan	Combretaceae	Bark, Leaves, and Gum	wound healing, liver support, and digestive health	Tree
27.	<i>Dillenia pentagyna</i> Roxb	Karkat	Dilleniaceae	Leaf, Bark, Fruit and root	diarrhea, inflammation, and skin issues	Tree
28.	<i>Bischofia javanica</i> Blume	Kot semla.	Phyllanthaceae	Leaf, Bark, and Fruit	treating inflammation, diarrhea, ulcers, burns, sore throats, and tuberculosis.	Tree
29.	<i>Sterculia villosa</i> Roxb	Hairy Sterculia	Sterculiaceae	Leaf and root	skin ailments, inflammation, rheumatic pain, gastric trouble, and urinary disorders	Tree
30.	<i>Careya arborea</i> Roxb	Kumbhi	Lecythidaceae	Leaf and Bark	ulcers, coughs, skin diseases, skin eruptions, and wound healing	Tree
31.	<i>Terminalia bellerica</i> (Gaetn.) Roxb.	Bahera	Combretaceae	Seed Leaf and Bark	digestive (constipation), respiratory (cough, asthma), liver, and skin disorders	Tree
32.	<i>Toona ciliata</i> Roem.	Tooni	Meliaceae	Bark and Flower	bark is traditionally used to treat diarrhea, dysentery, ulcers, and skin diseases	Tree
33.	<i>Terminalia alata</i> Heyne ex Roth	Asan /Saj	Combretaceae	Bark and Fruit	treat diarrhoea, skin diseases (leucoderma), inflammation, and wounds	Tree
34.	<i>Aegle marmelos</i> Correa	Bael/stone apple	Rutaceae	Leaf, fruit, Bark and Seed	treating chronic diarrhea, dysentery, gastrointestinal disorders, and diabetes	Tree
35.	<i>Madhuca indica</i> Gmel	Mahua	Sapotaceae	flowers, seeds, and bark	skin diseases, rheumatism, bronchitis, and neurological disorders	Tree
36.	<i>Butea monosperma</i> (Lamk.) Taub	Palash	Fabaceae	Leaf, Bark, root and flower	anthelmintic, antibacterial, and anti-inflammatory properties.	Tree
37.	<i>Tectona grandis</i> Linn.	Teak	Verbenaceae	Leaf, Bark, seeds and flower	skin conditions (scabies, leprosy), respiratory issues (bronchitis), inflammation, headaches, piles, and diabetes	Tree
38.	<i>Anthocephalus cadamba</i> Miq	Kadam	Rubiaceae	bark, leaves, roots, fruits	treating fever, skin diseases, diarrhea, diabetes,	Tree
39.	<i>Lagerstromia speciosa</i> (L.) Pers	Jarul, Arjuna	Lythraceae	bark, leaves, roots, fruits	Diabetes, obesity, kidney diseases, abdominal pain, and mouth ulcers	Tree
40.	<i>Albizia procera</i> (Roxb.) Benth. gum	White Siris	Fabaceae	bark, leaves, roots	treats rheumatism, stomach aches, and hemorrhages	Tree
41.	<i>Ficus bengalensis</i> Linn	Bargad	Moraceae	Root, fruit, latex	Dysentery, diabetes, boils	Tree
42.	<i>Mangifera indica</i> Linn	Aam	Anacardiaceae	Leaf, Flower, Fruit	Tonic, diuretic, rheumatism, burus, diabetes	Tree
43.	<i>Saraca asoca</i> Roxb	Ashok	Caesalpinaceae	Leaf, bark	Cardiotonic, blood dysentery.	Tree
44.	<i>Psidium guajava</i> Linn	Amrud	Myrtaceae	Leaf	Mouthsores, anthelmintic, infantile diarrhea, digestive	Tree

Table No. 2 Habit wise analysis of documented plants (%)

Sr. No.	Type of Plants	No. of Species	% (Percentage)
1.	Trees	31	70.45%
2.	Herbs	07	15.90%
3.	Shrubs	03	6.82%
4.	Small Tree	02	4.55%
5.	Climber Tree	01	2.28%

Fig. 2. Habit wise plants (%)


The paper attempts to provide comprehensive information on diversity distribution and uses of medicinal plants in the studied area. The rich biodiversity may be due to mild climatic condition and diverse habitats, along with human habitats with diverse culture and communities that utilize the diversity for the treatment for various ailments. Utilization of species of medicinal plants indicated a high degree of threat to these species. If indiscriminate use of medicinal plants and their various parts continues many sps. may ultimately disappear from their natural habitats, especially medicinal plants with multiple uses (Khan *et al.*, 2008). A commendable but insufficient conservation initiative of medicinal plants is being done by central and state govt. which needs to strengthen.

Conclusion:-

Phytodiversity can be defined as richness of plants occurring as an interacting system in a given habitat. The term biodiversity was first used in its long version biological diversity and most commonly used to describe about member of species. Plant diversity is the vast diversification of flora in the biological world and forest is one of the richest riches of this biodiversity. The phytodiversity characteristics of the tree vegetation in the Chhatarpur district of Madhya Pradesh, India, are reflected in the study. The range of tree species, their distribution, and their dominance status are all implied by this study. In the Chhatarpur district, mosses, ferns, native grasses, sedges, climbers, shrubs, and trees make up the vegetation. The medicinal plant used by tribals has been used by them for treatment of diverse ailments by traditional knowledge. Many of these plants are becoming endangered. Scientific studies should be conducted on these plants.

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