

ETHNOMEDICINAL DIVERSITY OF BUNDELKHAND

Dr. Anupma Chourasia¹ & Dr. Amita Arjariya²

1. Government College Mohangarh (Tikamgarh)

2. Maharaja Chhatrasal Bundelkhand University, Chhatarpur, Madhya Pradesh

ABSTRACT :- Ethnobotanical surveys are a key means of preserving indigenous knowledge of medicinal plants and their application within traditional medical systems. The present work was undertaken within the Bundelkhand region of Madhya Pradesh, India, to collect information from the Bundelkhand districts on the diversity and potential use of medicinal plants in the treatment of health issues. Since knowledge of traditional uses of various medicinal plants is limited to mostly traditional herbal healers, it is of extreme importance to compile and document this heritage for coming generations. In the present study, 64 medicinal plant species belonging to different genera and families are used traditionally for the curing of various ailments and illness. Among all the medicinal plants, trees found to be most dominant follow climbers both annual and perennials. The highest number of medicinal plants were recorded plants were mostly used to cure dysentery, diarrhea, fever, skin diseases, wounds, piles, and digestive disorders, etc. The study revealed that the Bundelkhand is rich in ethnomedical diversity. Significant number of peoples are using locally available species for the treatment of human as well as livestock ailments and diseases.

KEYWORDS: Ethnomedicine; Traditional medicine; medicinal plants; Biodiversity.

INTRODUCTION:-

Since time immemorial, traditional medicinal resources, especially plants, have been collected, prepared and administered within indigenous societies, where this knowledge of plant-based medicines has been handed down verbally from generation to generation (Kareti et al., 2021). In many countries around the world, plant-based medicines contribute significantly to the primary health care of the population. According to the World Health Organization (WHO), as much as 80% of the world's population is dependent on traditional medicine

and in India, 65% of the population in the rural areas use herbs to help meet their primary health care needs (World Health Organisation, 2002). The significance of ethnomedicine and ethnopharmacology is increasingly recognized, with traditionally used herbal medicines continually seen as valuable and legitimate alternatives, not only in terms of their clinical applications amongst populations where modern medical facilities are limited, and where the cost of modern pharmaceutical drugs can be preclusive, but also where there is concern over toxicity, adverse effects and at a time in which issues such as antimicrobial resistance and the over prescription and misuse of antibiotics are very much in the spotlight (Thakur et al., 2008). Beyond the application of these traditionally used plants in their natural state, the identification and evaluation of traditionally used medicinal plants has also proved to be a major source of new pharmaceutical agents. It is estimated that plant materials have provided models for 50% of the pharmaceuticals used in modern Western medicine (Manju 2021; Kareti et al., 2023).

In India, more than 43% of flowering plants are reported to be of medicinal importance (Pushpangadan, 1995) and are employed in the treatment of a broad range of medical conditions, including disorders of skin. This use of plants for medicinal purposes stretches back thousands of years and this is documented in the ancient literature (Parveen et al., 2007). However, it is only relatively recently that more formal and organized ethnobotanical studies have been conducted. These were well reported by researchers between 1954 to 1960 (Wagh and Jain 2020), and there is a growing recognition of the importance of such studies as there is a growing appreciation of the risk of losing this traditional knowledge with the socio-economic changes affecting many indigenous populations and in the face of a reducing plant population. Central India is one of those regions in India where the tribal population and forest

dweller from a considerable part of the population (Dubey et al. 2001). An extensive review of the available literature reveals that no detail studies have been carried out so far on the knowledge of the medicinal plants used for the treatment of diseases in Bundelkhand Region of India. Therefore, the aim of the present study was to collect comprehensive data from the Bundelkhand region of Madhya Pradesh, India on medicinal plants commonly used in the treatment of diseases. The study would further serve to contribute to the overall documentation of plant species used in the treatment of diseases conditions.

MATERIALS AND METHODS:-

Description of the study area

The Indian state of Madhya Pradesh covers an area of 3,08,285 km² and lies between 22° 97' N latitude and 78° 65' E longitude. Bundelkhand region lies between 23°8'–26°30' N latitude and 78°11' longitude. The Bundelkhand is bounded by the Yamuna in the north, escarped ranges of the Vindhyan plateau in south, the west and Bhandar ranges in the south-east (Figure 1). Bundelkhand region is occupied in central part of India. The geographical location of Bundelkhand is such that it acted as a gateway between the north and south India. The Bundelkhand region comprises of seven districts of Uttar Pradesh viz., Jhansi, Jalaun, Lalitpur, Hamirpur, Mahoba, Chitrakoot and Banda; six districts of Madhya Pradesh viz; Datia, Tikamgarh, Chhatarpur, Panna, Damoh and Sagar. The forest vegetation and its adjoining area is transitional between the southern tropical dry deciduous type and the northern tropical dry deciduous type. The ethnobotanical data was collected from local traditional healers in 25 villages within the different district of Bundelkhand region Madhya Pradesh, using standard ethnobotanical methods. The data collected using scientific standard and results were compared to prior ethnobotanical surveys relating to different type and diseases conditions conducted within India.

RESULTS AND DISCUSSION:-

A total of 250 people between the ages of 18 and 60 years were approached to participate in the present study, of which 180 were able to provide information about the plants used in the treatment of dermatological disorders. Table 1 outlines the data base and basic

information, characteristics of the plants. And of the 180 informants, 90 were male (50%) and 90 female (50%) participants, whose healing practices were revered and trusted in the local community and played multiple roles. A total of 64 plant species belongs to different genera, belonging to diverse families were identified (Table 2 and 3) as used in the treatment of different health disorders. This paper presents the results of a study on traditional healthcare practices of local herbal healers known as and other knowledgeable people of different district of Bundelkhand region. Since knowledge of traditional uses of various medicinal plants is limited to mostly traditional herbal healers, it is of extreme importance for coming generations. Among all led by herbaceous plants, shrubs and climbers both annual and perennials (Table 1). And as presented in Table 2, the plant life-form medicinal plants used for dealing of numerous illness/sickness/diseases. The traditional medicinal plants were mostly used to cure dysentery, diarrhea, fever, skin diseases, wounds, traditional healthcare practices and especially on plants based. The contribution of medicinal plants to the health of rural especially tribal people in the Bundelkhand region is extremely important because most of the population still believe in traditional healthcare systems. In this context, medicinal plant parts application and use for action against different forms of diseases (Table 3).

Experts say that there is a lot of scope of medicinal farming in the region of Bundelkhand. Medicinal plant farming is done by few farmers of the Bundelkhand region. Medicinal plant produced in this region is considered one of the best quality and is very famous as it enjoys demand in many nearby regions. In the region people use it during different seasons to cures as well as treats the health problem in humans. Despite these fact, the produces are not marketed in the significant way which they deserve. In the forests of Bundelkhand region, medicinal plants are grown in huge quantity. For example, as presented in Table 1; all these herbs are a native to Bundelkhand. Although the era of Ayurveda has now returned with efforts of the governments by launching AYUSH programme, but still these herbs of Bundelkhand are not being promoted and they are not getting their dues. The producers of these herbs do not have enough resources to market their produce which can lead them in getting appropriate benefit. Farmers are

cultivated/cultivating medicinal plants in their farms, but there is lack of option to publicise and market, so the farmers stopped cultivating these medicinal valuable

herbs. It is not that the government is not investing in ayurveda; and according to reliable sources, there is the absence of a monitoring.

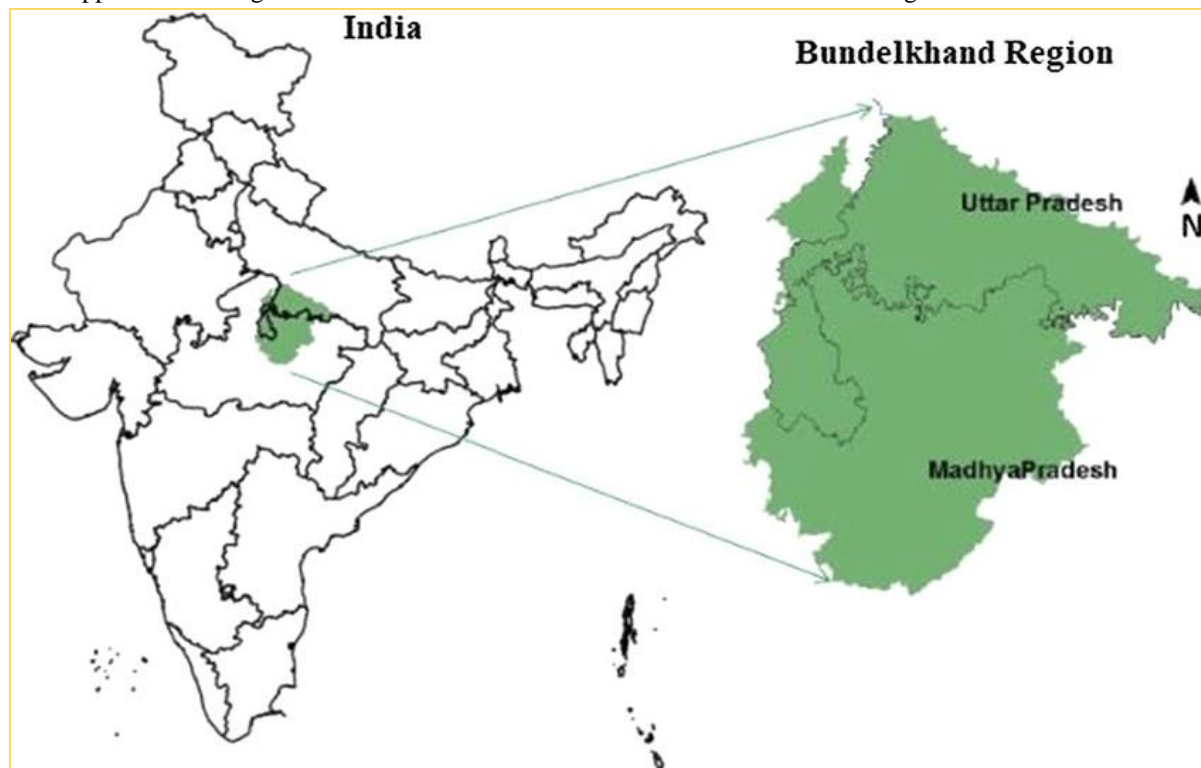


FIGURE 1 : MAP OF STUDY AREA OF BUNDELKHAND REGION IN MAP MADHYA PRADESH, INDIA

Table 1. Catalogue of medicinal plants of Bundelkhand region

S. No.	Scientific Name	Family Name	Type of Habit	Plant Part along with used for particular Diseases
1.	<i>Abuliton indicum</i>	Malvaceae	Herb	Whole plant, for Piles, boils and fever
2.	<i>Acacia nilotica</i>	Mimosaceae	Small tree	Bark and gum, for Pyorrhoea, mouth ulcer, gum and dental care
3.	<i>Achyranthus aspera</i>	Amaranthaceae	Herb	Whole plant, for Asthma, liver disease and scorpion sting
4.	<i>Adhatoda vasica</i>	Acanthaceae	Evergreen shrub	Leaves, for Bronchial asthma, chronic cough
5.	<i>Aegle marmelos</i>	Rutaceae	Small tree	Roots and fruit, for Dysentery, heat stroke and fever
6.	<i>Ailanthus excelsa</i>	Apocynaceae	Large deciduous tree	Bark and leaves, for Diarrhoea, dysentery and malarial fever
7.	<i>Allium cepa</i>	Alliaceae	Biennial herb	Bulb, for Cholera
8.	<i>Allium sativum</i>	Liliaceae	Perennial herb	Bulbs, for Eyelet and nail disorder
9.	<i>Aloe vera</i>	Liliaceae	Herb	Leaf juice and pulp, for Headache, wounds and cuts, burn, and indigestion

10.	<i>Andrographis paniculata</i>	Acanthaceae	Annual herb	Whole plant, for Malarial fever, gastric disorder
11.	<i>Argemone maxicana</i>	Papaveraceae	Prickly Herb	Root and leaves, for Skin disease, viral fever
12.	<i>Asparagus racemosus</i>	Liliaceae	Under shrub	Root Health tonic and galactagogue
13.	<i>Azadirachta indica</i>	Meliaceae	Tree	Whole plant, for Diabetes, piles, worms, skin disease, mouth and teeth complaints
14.	<i>Balanites aegyptica</i>	Balanitaceae	Small tree	Stem and seed, for Gastric trouble and wounds
15.	<i>Boerhavia diffusa</i>	Nyctaginaceae	Annual herb	Roots, for Urinary disorders
16.	<i>Bambusa arundinaceae</i>	Poaceae	Woody perennial	Stem and leaves, for Skin allergy (Sheet ubharna)
17.	<i>Bombax ceiba</i>	Bambacaceae	Large deciduous tree	Bark and flowers, for Labour pain and uterine disorder
18.	<i>Caesalpinia crista</i>	Caesalpiniaceae	Prickly climber	Seeds, for Cough and cold and skin disease
19.	<i>Calotropis gigantea</i>	Asclepiadaceae		Shrub Flowers, for Dizziness and vertigo
20.	<i>Carica papaya</i>	Carecaceae	Softwood tree	Fruit and root, for Renal calculi, wounds and cuts, and digestive disorders
21.	<i>Carrissa carandus</i>	Apocynaceae	Small tree/shrub	Leaves and root, for Diarrhoea, dysentery, cold & fever of children
22.	<i>Cassia fistula</i>	Caesalpiniaceae	Small tree	Leaves, bark, fruit and pod, for Constipation, cough, insect bite and repellent
23.	<i>Citrus sinensis</i>	Rutaceae	Small tree	Leaves and fruit, for Pimples, itching and digestive disorder
24.	<i>Coleus aromaticus</i>	Lamiaceae	Perennial herb	Leaves and seed, for Gastric trouble, galactagogue
25.	<i>Cordia myxa</i>	Boraginaceae	Medium sized tree	Stem bark, leaves for Colic pain and whooping cough
26.	<i>Curcuma longa</i>	Zingiberaceae	Perennial herb	Rhizome, for Swelling in body, dysentery, skin disease and Pain reliever
27.	<i>Cyperus rotundus</i>	Cyperaceae	Perennial grass	Leaves and root, for Headache, skin disease and galactagogue
28.	<i>Dalbergia sissoo</i>	Papilionaceae	Medium to large size tree	Leaves, for Jaundice, liver disorder, dysentery and headache
29.	<i>Datura stramonium</i>	Solanaceae	Shrub	Leaves and fruit, for Rheumatism, arthritis and wounds
30.	<i>Emblica officinale</i>	Euphorbiaceae	Medium sized tree	Leaves, fruits, for Colitis, dysentery, burns, menorrhage and gonorrhoea
31.	<i>Euphorbia hirta</i>	Euphorbiaceae	Annual herb	Leaves, for Scorpion sting
32.	<i>Evolvulus alsinoides</i>	Convolvulaceae	Annual herb	Whole plant, for Cooling medicine, cuts and wounds
33.	<i>Feronia elephantum</i>	Rutaceae	Large tree	Leaves, for Leucorrhoea and menorrhage
34.	<i>Ficus bengalensis</i>	Moraceae	Large tree	Fruits, for Cough and cold
35.	<i>Ficus glomerata</i>	Moraceae	Tree	Bark and fruits, for Heart disease, boils and dysentery
36.	<i>Flacourtia indica</i>	Flacourtiaceae	Small tree	Leaves and root, for Jaundice and diuretic
37.	<i>Helectris isora</i>	Sterculiaceae	Small deciduous tree	Roots and fruit, for Diabetes, stomachache and piles
38.	<i>Hibiscus rosa sinensis</i>	Malvaceae	Shrub	Flower, for Bleeding of nose, hypertension
39.	<i>Holoptelia integrifolia</i>	Ulmaceae	Medium to large size tree	Leaves, for Ring worms
40.	<i>Hyptis suaveolens</i>	Lamiaceae	Herb	Leaves, for Worms, blood purifier

41.	<i>Jatropha gossypifolia</i>	Euphorbiaceae	Under shrub	Roots, leaves and Seed, for Leprosy, eczema, joints pain and skin disease
42.	<i>Mangifera indica</i>	Anacardiaceae	Medium to large size tree	Seeds, for Bronchitis
43.	<i>Moringa oleifera</i>	Moringaceae	Small tree	Leaves, fruits and seed, for Joints pains and health tonic
44.	<i>Murraya koenigii</i>	Rutaceae	Perennial shrub	Leaves, bark and Seed, for Vomiting, dysentery, gum and teeth care
45.	<i>Musa paradisiaca</i>	Musaceae	Large herbaceous plant	Fruits, for Diarrhoea
46.	<i>Nelumbo nucifera</i>	Nymphaeaceae	Aquatic perennial	Root, flower and seed, for Cholera, Sleeplessness, piles
47.	<i>Oxalis corniculata</i>	Oxalidaceae	Annual herb	Whole plant, for Mental stress, headache and fever
48.	<i>Pongamia pinnata</i>	Papilionaceae	Small tree	Leaves and seed, for Boils, worms and skin disease
49.	<i>Psidium guajava</i>	Myrtaceae	Small tree	Leaves and fruit, for Mouth ulcer, throat sore and diarrhoea
50.	<i>Pterocarpus marsupium</i>	Fabaceae	Tree	Stem bark and gum, for Tuberculosis and asthma
51.	<i>Punica granatum</i>	Punicaceae	Large deciduous tree	Stem and root bark, fruit and seed, for Diarrhoea, dysentery, piles and anaemia
52.	<i>Rauwolfia serpentina</i>	Apocynaceae	Under shrub	Root and leaves, for Hypertension, dipperession, snakebite, diarrhoea and dysentery
53.	<i>Ricinus communis</i>	Euphorbiaceae	Evergreen shrub	Leaves and seed, for Weak eyesight, swelling in testis (hydrocoel)
54.	<i>Saraca asoca</i>	Caesalpiaceae	Small evergreen	tree Bark and roots, for Menstrual disorder and renal calculi
55.	<i>Sida cordifolia</i>	Malvaceae	Annual herb	Leaves, for Ulcer and dysentery
56.	<i>Solanum nigrum</i>	Solanaceae	Annual herb	Whole plant Joints pain
57.	<i>Solanum xanthocarpum</i>	Solanaceae	Annual herb	Roots and flower, for Dysentery and cough
58.	<i>Terminalia bellerica</i>	Combretaceae	Tree	Fruits, for Constipation, fever and appitizer
59.	<i>Tinospora cordifolia</i>	Menispermaceae	Climbing shrub	Leaves, fruit and Seed, for Gout, leucoderma and fever
60.	<i>Tridax procumbens</i>	Asteraceae	Herb	Leaves, for Toothache and bruises and cuts
61.	<i>Withania somnifera</i>	Solanaceae	Under shrub	Roots, for Joints pain, boils and dysentery
62.	<i>Wrightia tinctoria</i>	Apocynaceae	Small tree	Stem bark and seeds, for Stomachache and rheumatism
63.	<i>Zingiber officinale</i>	Zingiberaceae	Perennial rhizomatous herb	Rhizome, for Stomachache and cough
64.	<i>Zizyphus oenoplia</i>	Rhamnaceae	Small thorny shrub	Bark, leaves and Root, for Wounds and throat sore

Table 2. Plant life-form medicinal plants used for dealing of numerous sickness.

S. No.	Habit of plant	No. of plant
1.	Climber (annual)	05
2.	Climber (perennial)	09
3.	Herb	41
4.	Large tree	11
5.	Medium tree	10
6.	Shrub	6
7.	Small tree	14
8.	Under shrub	04

Table 3. Medicinal plant parts application and use for action against different forms of diseases

S. No.	Type Plant parts	No. of diseases
1.	Gum & latex	03
2.	Flowers	10
3.	Fruits	18
4.	Leaves	31
5.	Roots	29
6.	Stem	06
7.	Stem bark	19
8.	Seeds	23
9.	Whole plant	11

Traditional knowledge of herbal medicines is gradually being lost, although some traditional herbal healers (Vaidyas, Ojhas) are still enous system of healthcare systematically and effectively. Primitive people have acquired knowledge about medicinal properties of plants by trial and error, and have made an outstanding contribution to the origin and evaluation of many herapies in the Bundelkhand region (Saxena and Tripathi 1989, 1990). Documentation of indigenou knowledge and evaluation of the use of plants for a variety of purposes assume greater significance, not just to retain it, but also to keep it alive and make it available for future economic and cultural changes that are taking place across the traditional community of the region.

CONCLUSION:-

Ethnobotanical data were collected from local traditional healers using semi-structured questionnaires, interviews, and group discussions in 25 villages of different district

of Bundelkhand region, Madhya Pradesh, India. A total of 64 plant species were identified as being used in the

treatment of different diseases. Trees constituted the highest proportion, and the most preferred method of preparation of traditional medicines from plant material was in crushed powdered form. The survey was able to identify and record the broad range of medicinal plants and practices used by Bundelkhand region people in their treatment of diseases. The data collected is very much valuable, not only as part of the process of documenting and preserving a traditional knowledge and culture in danger of being lost, but also in its provision of a broad selection of medicinal plants that could be subjected to further pharmacological and clinical investigation for their potential role in the treatment of diseases. In this context, If the government creates awareness in the villages of Bundelkhand region, promotes medicinal farming and its production with proper marketing strategies, it will not only benefit the farmers but will also increase the revenue of the government and people will get traditional medicines of India. Attention should be paid by the pharmaceutical companies so that the region can produce quality herbs. It would also help increase their revenues.

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DECLARATION OF COMPETING INTEREST:-

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

DATA AVAILABILITY:-

The authors do not have permission to share more detail data.

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