Ethnomedicinal Importance of Non-Timber Forest Products in Chhatarpur District, Madhya Pradesh

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***Abstract*—Non-Timber Forest Products (NTFPs) represent a vital component of rural livelihoods, providing food, medicine, fodder and income while sustaining the socio-economic fabric of tribal and folk communities. This study systematically documents the ethnomedicinal importance of NTFPs in Chhatarpur District, Madhya Pradesh, an under-explored region of Bundelkhand. Field surveys were conducted between 2023-2025 across four sites- Bijawar, Bajna, Badamalhera and Buxwaha using interview, group discussions, and participatory observations with traditional healers and local villagers. A total of 50 plant species belonging to diverse families were recorded, with leaves, roots, bark and fruits being the most frequently used parts.**

Medicinal uses were categorized into ten major disease groups, including arthritis, diabetes, asthma, cancer, dengue, malaria, skin diseases, liver disorders, and tuberculosis. Multipurpose plants such as Curcuma longa, Tinos Pora cordifolia, and Azadirachta indica were repeatedly cited, reflecting their pharmacological versatility and cultural significance. Unique species like Catharanthus roseus and Gymnema sylvestre highlighted localized knowledge and specialized appliccations. Modes of administration were dominated by simple preparations pastes, decoctions, and juices demonstrating the accessibility of remedies to rural populations.

Beyond healthcare, several NTFPs such as Madhuca longifolia (Mahua), Buchanania lanzan (Chironji), and Phyllanthus emblica (Amla) were found to hold strong economic value, contributing to household income and food security. The dominance of dicot families, with selective contributions from monocots, aligns with broader ethnobotanical patterns in India.

The findings emphasize the dual importance of NTFPs as both medicinal resources and livelihood assets. Conservation of ethnomedicinal plants, sustainable harvesting practices, and pharmacological validation are urgently needed to safeguard biodiversity and strengthen their role in healthcare. This study enriches the ethnobotanical knowledge base of Mahya Pradesh and underscores the potential of integrating traditional practices into modern conservation and healthcare strategies.

***Index Terms*—Ethnobotany, Ethnomedicine, Medicinal Diversity, Healing Practices, Sustainable Livelihoods**

I. INTRODUCTION

Non-Timber Forest Products (NTFPs) are biological resources obtained from forests other than timber, including fruits, seeds, bark, resins, and medicinal plants. They are central to rural livelihoods, providing food, medicine, fodder, and income, and thus play a vital role in sustaining the socio-economic fabric of tribal and folk communities (Sharma & Roy, 2016).

Ethnomedicine, the traditional knowledge of using plants for healing, is an integral part of biodiversity conservation. It not only preserves indigenous cultural heritage but also ensures sustainable use of forest resources. Documenting such practices is crucial for integrating traditional knowledge into modern healthcare systems and for promoting conservation strategies (Seal & Chatterjee, 2025; WHO, 2002).

At the national level, several studies have highlighted the ethnomedicinal importance of NTFPs among tribal groups across India, especially among Particularly Vulnerable Tribal Groups (PVTGs) in Odisha, Chhattisgarh, and the Andaman Islands (Seal &

Chatterjee, 2025). State-level surveys in Madhya Pradesh, such as those in Patalkot Valley, Mandla, and Chinaware, have documented medicinal plants used by Gond and Baiga tribes (Nagwanshi et al., 2023). These works emphasize the reliance of tribal communities on forest products for primary healthcare.

However, Chhatarpur District in Bundelkhand region remains under-studied. Despite its semi-arid climate, scattered forest patches, and dependence of local communities on NTFPs, systematic ethnomedicinal documentation is lacking. This research was therefore undertaken to fill this gap by recording and analysing the ethnomedicinal importance of NTFPs in Chhatarpur District. The study aims to provide insights into local healthcare practices, strengthen biodiversity conservation, and highlight the role of NTFPs in sustaining rural livelihoods.

II. OBJECTIVE

1. To document the ethnomedicinally important Non-Timber Forest Products (NTFPs) used in Chhatarpur District.
2. To identify the plant species, families, and parts employed in treating common diseases.
3. To examine the methods of preparation and administration of medicinal plants by local communities.
4. To highlight the role of NTFPs in rural healthcare and livelihoods, emphasizing their conservation value.

III. REVIEW OF LITERATURE:

Ethnomedicinal studies in India highlight the role of Non-Timber Forest Products (NTFPs) in tribal healthcare. Seal and Chatterjee (2025) noted that particularly Vulnerable Tribal Groups (PVTGs) across 18 states depend on indigenous medicine for common ailments such as malaria and diarrhoea. Similar surveys in Odisha and the Andaman Islands emphasized the cultural and ecological importance of ethnomedicine (Banerjee, 2019; Pasupuleti, 2023).

In Madhya Pradesh, studies in Patalkot Valley, Mandla, and Jabalpur documented over 60 medicinal species used by Gond and Baiga tribes for digestive, respiratory, and reproductive health (Nagwanshi et al., 2023; Dhanjal & Sharma, 2022). Western Madhya Pradesh surveys also recorded remedies from more than 100 traditional healers, showing the socio-economic value of NTFPs (Eswarappa, 2022). Despite this, Chhatarpur District remains unexplored, and no systematic ethnomedicinal survey has been conducted here. This gap justifies the present study.

IV. STUDY AREA

Chhatarpur district in Bundelkhand, Madhya Pradesh, lies between 23°45′–25°20′ N and 78°10′–80°00′ E, with elevations of 300–450 m. The terrain is dominated by rocky plateaus, shallow valleys, and seasonal streams, while sandy loam soils support vegetation adapted to drought. The semi-arid monsoonal climate brings hot summers, mild winters, and 800-1000 mm of rainfall, though variability has led to prolonged dry spells and water scarcity.

The research was conducted in Chhatarpur District, Madhya Pradesh, focusing on four sites: Bijawar, Bajna, Badamalhera, and Buxwaha. The district lies in the Bundelkhand region, characterized by semi-arid climate, rocky terrain, and scattered forest patches that support diverse flora. Local tribal and folk communities depend n forest resources for healthcare and livelihood.

V. DATA COLLECTION

Field surveys were carried out between 2023-2025 using semi-structured interviews, group discussions, and participatory observations with traditional healers, elders, and local villagers. Plant specimens were collected, identified, and cross-checked with standard floras. Information recorded included botanical name, local name, family, plant part used, mode of preparation, and ethnomedicinal application.

VI. DOCUMENTATION AND ANALYSIS

Medicinal uses were categorized according to disease groups such as arthritis, diabetes, malaria, tuberculosis, and skin disorders. Data were tabulated to show common plants, unique plants, and frequency of use across sites. Families were classified into monocots and dicots, an preparation methods (paste, decoction, juice, powder) were noted.

VII. VALIDATION

The ethnomedicinal claims were compared with published literature from India and Madhya Pradesh to ensure reliability (seal & Chatterjee, 2025; Nagwanshi et al., 2023). References from pharmacological studies were also consulted to support traditional uses.

Study Area

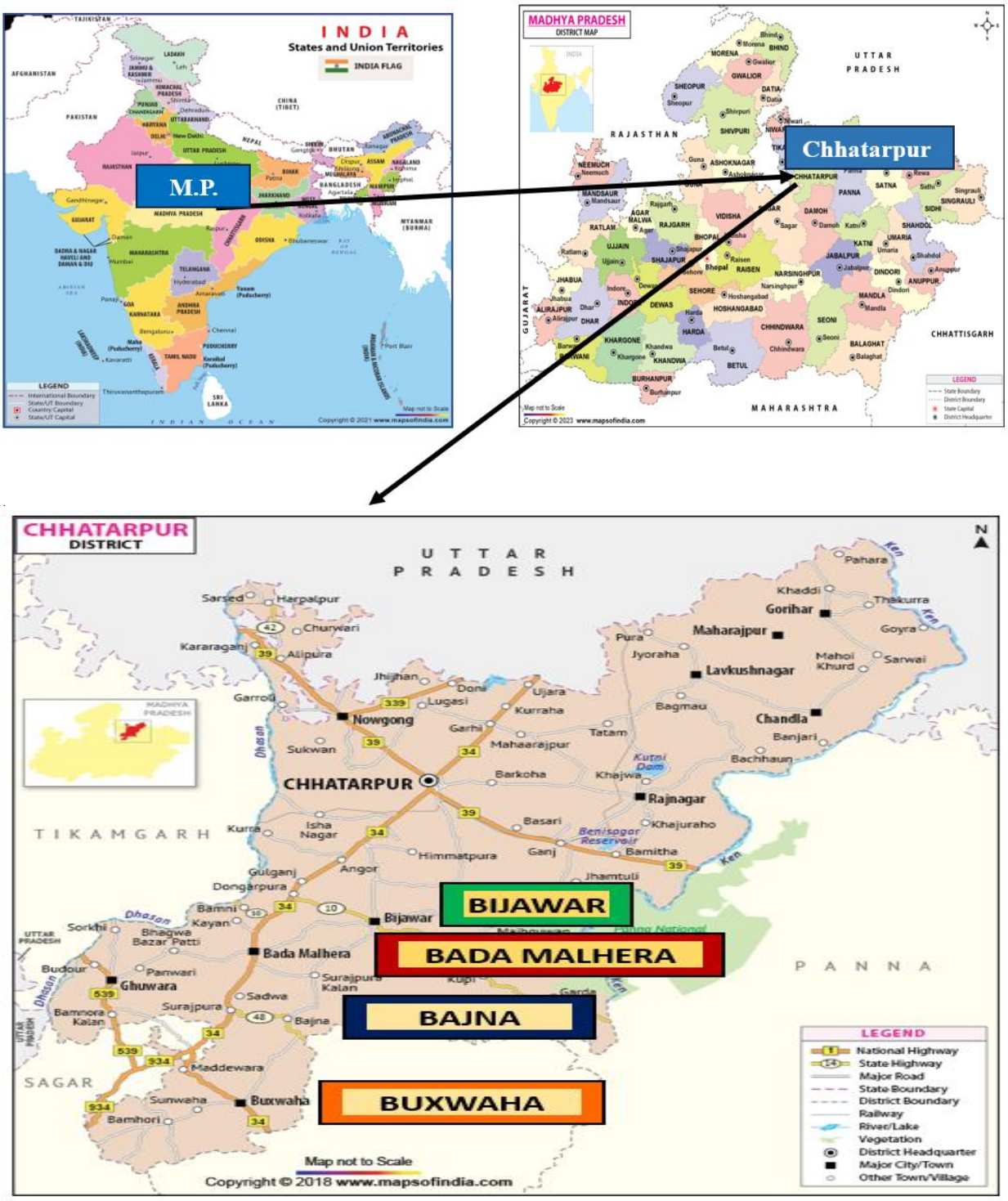

Fig: Map showing the location of the study area

III. RESULTS

Table1: Ethnomedicinal survey of plant at different four regions Bijawar, Bajna, Buxwaha and Badamalhera

S. No.	Botanical Name	Common Name	Family	Plant part used	Medicinal use
1.	Acacia catechu (L. f.) Willd.	Khair	Fabeceae	Heartwood	Used for treating diarrhea, sore throat, and wounds
2.	Acorus calamus L.	Sweet Flag	Acoraceae	Rhizome	Treats digestive disorders, cough, and neurological issues
3.	Aegle marmelos (L.) Corrêa	Bael	Rutaceae	Fruit, leaves	Used for diarrhea dysentery, and diabetes
4.	Alangium salvifolium (L. f.) Wangerin	Sage-Leaved alangium	Alangiacea e	Rhizome	Treats digestive disorders, cough, and neurological issues
5.	Ananas comosus (L.) Merr.	Pineapple	Bromeliace ae	Fruit	Digestive aid, anti-inflammatory, and diuretic
6.	Artocarpus lakoocha Roxb.	Monkey jack	Moraceae	Bark, fruit	Used for skin diseases and digestive issues
7.	Asparagus racemosus Willd.	Shatavari	Asparagace ae	Root	Promotes reproductive health, immunity, and lactation
8.	Azadirachta indica A. Juss.	Neem	Meliaceae	Leaves, bark, seed	Antibacterial, antifungal, and blood purifier
9.	Bauhinia vahlii Wight & Arn.	Malu	Fabaceae	Bark, leaves	Used for ulcers, wounds and diarrhea
10.	Bixa orellana L.	Annatto	Bixaceae	Seeds	Used as a natural dye and for skin allments
11.	Bombax ceiba L.	Silk cotton	Malvaceae	Bark, root	Treats diarrhea, dysentery, and inflammation
12.	Buchanania lanzan Spreng.	Chironji	Anacardiac eae	Seed, bark	Used for skin diseases and as a tonic
13.	Butea monosperma (Lam.) Taub.	Flame of the forest	Fabaceae	Flowers, bark	Treasts diarrhea, skin diseases, and diabetes
14.	Cassia fistula L.	Golden shower	Fabaceae	Fruit pulp	Laxative, treats constipation and skin diseases
15.	Cassia tora L.	Sickle senna	Fabaceae	Leaves, seeds	Used for skin diseases and liver disorders
16.	Chlorophytum tuberosum Baker				
17.	Clitoria ternatea L.	Butterfly pea	Fabaceae	Root, Flower	Memory enhancer,antistress
18.	Curcuma longa L.	Turmeric	Zingiberace ae	Rhizome	Anti-inflammatory antiseptic, and antioxidant
19.	Dioscorea spp. L.	Yam	Dioscoreac eae	Tuber	Used for hormonal balance and digestive health
20.	Diospyros melanoxylon Roxb.	Tendu	Ebenaceae	Leaves, bark	Used in bidi, Wound healing
21.	Embelia ribes Burm. f.	False Black Pepper	Myrsinacea e	Fruit	Anthelmintic, treats intestinal worms
22.	Glycyrrhiza glabra L.	Licorice	Fabaceae	Root	Treats cough, ulcers, and inflammation
23.	Grewia optiva J.R.Drumm. ex Burret	Bhimal	Malvaceae	Bark, leaves	Used for fodder, fiber, and skin ailments
24.	Helicteres isora L.	East Indian Screw	Malvaceae	Fruit	Treat diarrhea, dysentery

25.	Holarrhena antidysenterica (Roth) A.DC.	Kurchi	Apocynaceae	Bark	Treats amoebic dysentery
26.	Indigofera tinctoria L.	True indigo	Fabaceae	Leaves	Natural dye, treats skin diseases
27.	Ipomoea carnea Jacq.	Bush Morning glory	Convolvulaceae	Leaves	Used in traditional medicine for swelling
28.	Ipomoea nil (L.) Roth	Japanese Morning glory	Convolvulaceae	Seeds	Laxative, purgative
29.	Lawsonia inermis L.	Henna/Mehdi	Lythraceae	Leaves	Hair dye, cooling agent
30.	Madhuca longifolia (J.Koenig) J.F.Macbr.	Mahua	Sapotaceae	Flowers, seeds	Used in alcohol production, skin diseases
31.	Mangifera indica L.	Mango	Anacardiaceae	Leaves, bark	Treats diarrhea, diabetes & hair dye
32.	Morus alba L.	White Mulberry	Moraceae	Leaves, fruit	Treats diabetes, cough
33.	Mucuna pruriens (L.) DC.	Velvet Bean	Fabaceae	Seed	Treats Parkinson's, aphrodisiac
34.	Ocimum americanum L.	American Basil	Lamiaceae	Leaves	Antibacterial, aromatic
35.	Phyllanthus emblica L.	Indian Gooseberry	Phyllanthaceae	Fruit	Rich in Vitamin C, antioxidant
36.	Plumbago zeylanica L.	Ceylon Leadwort	Plumbaginaceae	Root	Digestive stimulant, treats skin diseases
37.	Pongamia pinnata (L.) Pierre	Karanja	Fabaceae	Seed oil	Treats skin diseases, biofuel source
38.	Psoralea corylifolia L.	Bakuchi	Fabaceae	Seeds	Treats vitiligo, skin disorders
39.	Rauvolfia serpentina (L.)	Indian snakeroot	Apocynaceae	Root	Treats hypertension, insomnia
40.	Schleichera oleosa (Lour.) Oken	Kusum	Sapindaceae	Seeds, bark	Oil source, treats skin diseases
41.	Swertia chirayita Roxb.	Chirata	Gentianaceae	Whole plant	Bitter tonic, treats fever, malaria
42.	Syzygium cumini (L.) Skeels	Jamun	Myrtaceae	Fruit, seed	Treats diabetes, digestive issues
43.	Tamarindus indica L.	Tamarind	Fabaceae	Fruit pulp	Laxative, digestive aid
44.	Terminalia bellirica (Gaertn.) Roxb.	Baheda	Combretaceae	Fruit	Part of triphala; treats cough, digestive issues
45.	Terminalia chebula Retz.	Haritaki	Combretaceae	Fruit	Part of triphala; rejuvenative, laxative
46.	Tinospora cordifolia (Willd.) Miers	Giloy	Menispermaceae	Stem	Immunity booster, antipyretic
47.	Tribulus terrestris L.	Gokhru	Zygophyllaceae	Fruit	Aphrodisiac, treats urinary disorders
48.	Typha elephantina Roxb.	Elephant Grass	Typhaceae	Whole plant	Used for mats, thatching, and traditional remedies
49.	Withania somnifera (L.) Dunal	Aswangandha	Solanaceae	Root	Adaptogen, stress relief boosts immunity
50.	Woodfordia fruticosa (L.)	Dhawai	Lythraceae	Flowers	Used in fermentation, treats diarrhea

Table2: Name of the 10 diseases which are common in four sites at Chhatarpur district

S. No.	Name of diseases	Botanical Name	Uses	References
1.	Arthritis	Curcuma longa, Boswellia serrata, Zingiber officinale, Withania somnifera, Salix alba, Berberis vulgaris, Citrus spp., Ricinus communis, Nyctanthes	Anti-inflammatory, analgesic, joint mobility	Durgeshwari Misar et al. (2022); Dirkjan van Schaardenburg et al. (2021)

2.	Blood Pressure	Ocimum sanctum, Nyctanthes arbor-tristis, Terminalia arjuna, Allium sativum, Aloe barbadensis, Ziziphus mauritiana, Hibiscus sabdariffa	Cardioprotective, vasodilatory, diuretic	Majedul Hoque et al. (2023); Muhammad Riaz et al. (2020)
3.	Diabetes	Gymnema sylvestre, Momordica charantia, Syzygium cumini, Trigonella foenum-graecum, Tinospora cordifolia, Azadirachta indica, Aloe barbadensis, Aegle marmelos, Terminalia chebula, Terminalia bellirica	Hypoglycemic, insulin sensitizer, antioxidant	Sayed Mohammad Firdous et al. (2021); MDPI Review (2023)
4.	Asthma	Adhatoda vasica, Ocimum sanctum, Solanum xanthocarpum, Curcuma longa, Zingiber officinale, Nigella sativa, Terminalia chebula, Glycyrrhiza glabra, Piper longum	Bronchodilator, mucolytic, anti-inflammatory	K. Praveena et al. (2020); Bel Houari Meriem et al. (2022)
5.	Cancer	Catharanthus roseus, Curcuma longa, Tinospora cordifolia, Withania somnifera, Azadirachta indica, Terminalia chebula, Aloe barbadensis, Terminalia bellirica, Phyllanthus emblica, Vitex negundo	Antiproliferative, pro-apoptotic, antioxidant	Patricia Quintero-Rincón et al. (2025); AICR Science Report (2022)
6.	Dengue	Carica papaya, Ocimum sanctum, Azadirachta indica, Tinospora cordifolia, Andrographis paniculata, Curcuma longa, Aloe barbadensis, Phyllanthus emblica, Withania somnifera	Antiviral, platelet support, immunomodulatory	Bisma Rehman et al. (2024); Dilipkumar Pal & Padum Lal (2020)
7.	Malaria	Azadirachta indica, Andrographis paniculata, Tinospora cordifolia, Swertia chirata, Ocimum sanctum, Carica papaya, Curcuma longa, Terminalia chebula, Phyllanthus emblica	Antiplasmodial, fever-reducing, immune support	Qura Tul Ain et al. (2025); Nyambura Achieng M. (2023)
8.	Skin Diseases	Azadirachta indica, Aloe barbadensis, Curcuma longa, Ocimum sanctum, Cassia fistula, Calotropis procera, Ficus benghalensis, Terminalia chebula, Terminalia bellirica, Phyllanthus emblica	Antimicrobial, wound-healing, anti-inflammatory	Nazerke Bolatkyzy et al. (2025); Dipali Patil et al. (2018)
9.	Liver Diseases	Andrographis paniculata, Phyllanthus niruri, Tinospora cordifolia, Curcuma longa, Azadirachta indica, Aloe barbadensis, Boerhavia diffusa, Phyllanthus emblica, Picrorhiza kurroa, Swertia chirata	Hepatoprotective, antioxidant, cholagogue	Rongrui Wei et al. (2020); Methiye Mancak et al. (2025)
10.	Tuberculosis	Adhatoda vasica, Solanum xanthocarpum, Ocimum sanctum, Curcuma longa, Azadirachta indica, Tinospora cordifolia	Antimycobacterial, expectorant, bronchodilator	Manish Parmar et al. (2025); Antibiotics (MDPI) Review (2023)

Table3: Unique Plants Name at four sites (appear only once)

S. No.	Name of Plant	Common Name/Family	Diseases
1.	Aegle marmelos	Bael/Rutaceae	Diabetes
2.	Allium sativum	Garlic/Liliaceae	Blood Pressure
3.	Boswellia serrata	Indian frankincense/Burseraceae	Arthritis
4.	Calotropis procera	Aak/Ascleapeadeaceae	Skin
5.	Carica papaya	Papaya/Caricaceae	Dengue, Malaria (but not elsewhere)
6.	Cassia fistula	Amaltas/Cesalpinoideae	Skin
7.	Catharanthus roseus	Periwinkle/Apacynaceae	Cancer
8.	Citrus spp.	Citrus fruits/Rutaceae	Arthritis
9.	Ficus benghalensis	Banyan/Moraceae	Skin
10.	Gymnema sylvestre	Gurmar/Apocynaceae	Diabetes
11.	Hibiscus sabdariffa	Roselle/Malbeceae	Blood Pressure

12.	Momordica charantia	Bitter melon/Cucurbetaceae	Diabetes
13.	Nigella sativa	Black seed/Rannuculaceae	Asthma
14.	Phyllanthus niruri	Bhumi amla/Rutaceae	Liver
15.	Picrorhiza kurroa	Kutki/Poaceae	Liver
16.	Ricinus communis	Castor/Euphorbiaceae	Arthritis
17.	Salix alba	White willow/Salicaceae	Arthritis
18.	Syzygium cumini	Jamun/Miritaceae	Diabetes
19.	Terminalia arjuna	Arjuna/Combretaceae	Blood Pressure
20.	Trigonella foenum-graecum	Fenugreek/Fabaceae	Diabetes
21.	Vitex negundo	Nirgundi/Verbenaceae	Cancer
22.	Zingiber officinale	Ginger/zingiberaceae	Arthritis, Asthma (but not elsewhere)
23.	Ziziphus mauritiana	Ber/Ramneaceae	Blood Pressure

Table4: Mode of administration for ethnomedicinal studies of plants at Bijawar, Bajna, Badamalhera and Buxwaha district at Chhatarpur during (2023-2025)

S. no.	Name of Plant	Family	Parts used	Flowering season	Ethnobotanical uses	Growth form
1.	Achyranthes aspera L.	Amaranthaceae	Root	Oct-Dec	Root paste with cold water is administered twice a day for 3 days against burning sensation of urination.	H
2.	Aegle marmelos (L.) Correa	Rutaceae	Fruit, leaves, bark	Mar-Jun	Digestive tonic, sacred plant, antidiarrheal fresh leaf paste have been given to cure appendix, fruit pulp with sugar and water given to digestive problem it also protects in summer seasons to maintain body temp.	T
3.	Allium sativum L.	Amaryllidaceae	Bulb	Jun-Aug	Antimicrobial, cardiovascular health spice	H
4.	Andrographis paniculata (Burm. f.)	Acantathaceae	Leaf and Root	Sept-Mar	10 ml leaf juice is prescribed twice a day for 5 days against colic pain.	H
5.	Bombax ceiba L.	Bombacaceae	Seed s & root	Jan.-Mar	A glass full of water (150 ml) in which the root (2// long) is soaked overnight is taken on empty stomach for 5 days against amoebic dysentery.	T
6.	Boswellia serrata Roxb.	Burseraceae	Gum resin	Apr-Jun	Anti-inflammatory, incense, arthritis treatment. The gum of this plant use at antimicrobial protectant. Fumigation of the gum applied for microbial protection.	T
7.	Calotropis procera (Aiton) Dryand.	Apocynaceae	Latex leaves, flowers	Feb-Apr.	Traditional medicine, fiber, insecticide The leaf paste applied on foot to cure dibitease problem. Leaf are also used arthiritis with castor oil.	S
8.	Carica papaya L.	Caricaceae	Fruit, leaves, latex	Feb-Jun	Digestive and (papain), food, skin care. The leaf extract of carica papaya used in dengue fever and improves blood platelets count.	H

9.	Casearia Graveolens Dalz.	Flacourtiaceae	Fruit	Feb-May	The crushed fruit paste is mixed in ponds, lakes	T
10.	Cassia fistula L.	Fabaceae (caesalpiniaceae)	Pods bark, leaves	Apr-Jun	Laxative, ornamental, timber. The pods of these plants used in digestive problem	T
11.	Catharanthus roseus George Don	Apocynaceae	Leaves whole plant	Mar-Jun	Source of vincristine/vinblastine (anticancer, ornamental) leaf and flower paste of this plant given in cancerous patients.	S
12.	Citrus spp. (pomelo)	Rutaceae	Fruit, peel, leaves	Mar-May	Food, vitamin C, perfumes, traditional medicine	S
13.	Cocculus hirsutus (L.) Diels	Menispermaceae	Root & whole plant	Mar. May	Plant decoction (2 tea spoonful, 2 times daily) is drunk as a cooling tonic to treat abdominal disorders. Root paste is taken thrice a day for liver disfunction	H
14.	Diospyros melanoxylon Roxb.	Ebenaceae	Flower	Apr.-May	Flower powder (10 gm) mixed with black pepper (Piper nigrum L.) 3:2 is taken twice a day for 15 days against leucorrhoea.	T
15.	Ficus benghalens L.	Moraceae	Bark, aerial roots, latex	Mar-Jun	Sacred tree, digestive aid, wound healing	T
16.	Gloriosa superba L.	Liliaceae	Root	Aug. Sept.	The root juice (5 ml) is taken after meal twice a	H
17.	Gymnema sylvestre R. Br.	Apocynaceae	Leaves	Jul–Sep	“Sugar destroyer,” antidiabetic, weight management	WC
18.	Hibiscus sabdariffa L.	Malvaceae	Calyx, leaves	Jun-Oct	Herbal tea, antihypertensive food coloring	S
19.	Momordica charantia L.	Cucurbitaceae	Fruit, leaves	May–Sep	Antidiabetic, digestive stimulant	C
20.	Nigella sativa L.	Ranunculaceae	Seeds	Nov-Apr	Spice, carminative, antimicrobial, traditional medicine	H
21.	Nyctanthes arbortristis L.	Oleaceae	Stem, bark & seed	Sept. Feb.	Dried seed powder with Brassica oil is locally	T
22.	Ocimum canum Sims	Lamiaceae	Leaf	Jul.-Mar.	Leaf decoction with common salt (2:1) is administered twice a day for 7 days against viral fever	H
23.	Phyllanthus niruri L.	Phyllanthaceae	Whole plant	Jul-Sep	Liver tonic, anti jaundice, diuretic	H
24.	Picrorhiza kurroa Royle ex Benth.	Plantaginaceae	Rhizome	Jun-Aug	Hepatoprotective, digestive, antipyretic	H
25.	Rauvolfia tetraphylla L.	Apocynaceae	Root	Most part of the year	Decoction of stembark with black pepper (Piper nigrum L.) is given twice a day for 7 days against pneumonia	S
26.	Ricinus communis L.	Euphorbiacea	Seed	Jan-May	Ricinus communis L. Euphorbiaceae Seed Jan-May Jan-May The seed oil is massaged on the swellings of rheumatic joints	S
27.	Salix alba L.	Salicaceae	Bark, leaves	Apr-May	Source of salicin (aspirin precursor), pain relief	T
28.	Swertia angustifolia	Gentianaceae	Root	Oct-Dec	5 ml root juice is given once a day for 3 days	H

	Buch. Ham. ex D.Don					
29.	Syzygium cumini L.	Myrtaceae	Fruit, seeds, bark	Mar–Jun	Antidiabetic, digestive, timber	T
30.	Terminalia arjuna (Roxb.ex DC.) Wight. & Arn	Fabaceae	Bark & stem	May-Aug.	Stem decoction with goat milk is giv	T
31.	Terminalia bellirica (Gaertn.) Roxb.	Fabaceae	Fruit, bark & stem	Feb.-Mar	The fruit juice mixed with Rasi (Sesamam orientale) is applied regularly for 1-2 months to check graying of hair	T
32.	Trigonella foenum L.	Fabaceae	Seeds, leaves	Nov-Mar	Culinary spice lactation aid, antidiabetic	H
33.	Vitex negundo L.	Lamiaceae	Leaves, roots, seeds	May-Sep	Anti-inflammatory insect repellent, respiratory ailments	S
34.	Wrightia tinctoria (Roxb.)	Apocynaceae	Latex&Root	Jun.-oct.	Latex with mustard oil (2:1) is locally applied for	T
35.	Zingiber officinale Roscoe	Zingiberaceae	Rhizome	Jun-Aug	Spice, digestive aid, anti-nausea, anti-inflammatory	H
36.	Ziziphus mauritiana Lam	Rhamnaceae	Fruit, leaves, bark	Nov-Mar	Food, fodder, medicine for digestive issues	T

Table5: List of non-timber forest product at four sites Bijawar, Bajna, Badamalhera and Buxwaha

S. No.	Name of Plant	Common Name	Family	Part Used for economic importance
1.	Acacia catechu (L.f.) Willd.	Catechu / Khair	Leguminaceae	Chal/bark
2.	Aegle marmelos (L.) Correa	Bael/stone apple	Rutaceae	Chal/bark
3.	Albizia lebbeck (L.) Benth.	Siris/ Woman's tongue tree	Fabaceae (Mimosoideae)	Chal/bark
5.	Aloe barbadensis mill.	Aloe vera	Asphodelaceae (formaerly Liliaceae)	whole
6.	Azadiracta indica A. Juss.	Neem	Meliaceae	Chal/bark
7.	Buchanania lanzan Spreng.	Chironji	Anacardiaceae	Seed
8.	Butea monosperma (Lam.)	Flame of the forest/ Palas	Fabaceae (Papilionnoideae)	Chal/bark
9.	Calotropis procera (Aiton) W.T. Aiton	Giant milkweed/ Apple of Sodom	Apocynaceae	Jad/root
10.	Cassia fistula L.	Golden shower/ Amaltas	Fabaceae (Caesalpinoideae)	Pod, seed
11.	Cholophytum borivilianum R.R.Fern.	Safed musli	Asparagaceae (formerly Liliaceae)	Under
12.	Crataeva nurvula Buch- Ham.	Varuna	Capparaceae	Chal/bark
13.	Cyperus rotundus L.	Nut grass/ Purple nutsedge	Cyperaceae	Underground part
14.	Eclipta alba (L.)	Bhringraj/False daisy	Asteraceae	Whole plant
15.	Emblica officinalis Gaertn.	Amla/Indian gooseberry	Phyllanthaceae (formerly Euphorbiaceae)	Leaf, fruit and seed
16.	Feronia limonia (L.)	Wood apple	Rutaceae	Fruits, leaves
17.	Ficus benghalensis L.	Banyan tree	Moraceae	Chal/bark
18.	Ficus racemosa L.	Cluster fig/Gular	Moraceae	Chal/bark

19.	Ficus religiosa L.	Peepal/Sacred fig	Moraceae	Chal/bark
22.	Ficus virens Aiton	White fig/ Pikhan	Moraceae	Fruit
23.	Gmelina arborea Roxb.	Gamhar/ White teak	Lamiaceae (formerly Verbenaceae)	Chal/bark
24.	Holarrhena antidysenterica (Roth)	Indrayava	Apocynaceae	Chal/bark
25.	Holarrhena pubescens Wall.	Kurchi	Apocynaceae	Whole plant
26.	Jasminum officinale L.	Jasmine	Oleaceae	Patti/Leaf
27.	Justicia adhatoda L.	Malabar nut/ Vasaka	Acanthaceae	Panchang
28.	Laccifer lacca Kerr	Lac insect	Insect (not a plant, produces lac resin)	Lakh dana
29.	Litsea glutinosa (Lour.) C.B.Rob.	Indian bollygum	Lauraceae	Chal/bark
30.	Madhuca longifolia (J. Konig)	Mahua	Sapotaceae	Seeds, fruit, leaf
31.	Mangifera indica L.	Mango	Anacardiaceae	Guthli/seed
32.	Moringa olifera Lam.	Drumstick tree/Miracle tree	Moringaceae	Beej/seed, chal/bark, leaf/patti
33.	Nardostachys jatamansi (D. Don) DC.	Spikenard/ Jatamansi	Caprifoliaceae (valerinaceae)	Root
34.	Pongamia pinnata (L.) Pierre	Indian beech/ Pongam	Fabaceae	Beej/seed, patra/leaf
35.	Ricinus cummunis L.	Castor oil Plant	Euphorbiaceae	
36.	Saraca asoca L. (syn. Roxb.)	Ashoka tree	Fabaceae (Casealpiniodae)	Chal/bark
37.	Senegalia catechu (L. F.)	Khair	Fabaceae	Chal/bark
38.	Syzgium cummini (L.) Skeels	Jamun/java plum	Myrtaceae	Chal/bark
39.	Terminalia arjuna (Roxb.) Wight & Arn.	Arjun tree	Combretaceae	Chal/bark, Guthli
40.	Terminalia bellirica (Gaertn.) Roxb.	Bahera/Beleric myrobalan	Combretaceae	Chilka
41.	Terminalia chebula Retz.	Haritaki/Black myrobalan	Combretaceae	Fruit
42.	Thespesia populnea (L.) sol. Ex Correa	Portia tree	Malvaceae	Paras pipal
43.	Tinospora cordifolia (Willd.) Miers	Giloy	Menispermaceae	Whole plant
44.	Vachellia nilotica (L.)	Gum Arabic tree	Fabaceae	Gond
45.	Vigna trilobata (L.) verdc.	Mraduparni	Fabaceae	Fruit
46.	Vitex negundo L.	Nirgundi	Lamiaceae	Beej/Seed,patti/leaf
47.	Woodfordia fruticose (L.) kurz.	Dhataki/Dhwai phool	Lythraceae	Chal/Bark

IX. DISCUSSION

The ethnomedicinal survey conducted across four sites in Chhatarpur District revealed a rich diversity of non-timber forest products (NTFPs) with significant healthcare and livelihood value. A total 50 species belonging to multiple families were documented, with leaves, roots, bark and fruits being the most frequently used plant parts. This pattern reflects the accessibility of these plant parts and their established role in traditional medicine. Consistent with earlier ethnobotanical surveys in Bundelkhand (Arjariya & Chauraisa, 2009).

The analysis of disease categories showed that ten major ailments arthritis, diabetes, asthma, cancer, dengue, malaria, skin diseases, liver disorders, and tuberculosis were commonly treated using NTFPs. Among these, diabetes and skin diseases were associated with the highest diversity of plant remedies, indicating their prevalence in community health

concerns multipurpose plant remedies, indicating their prevalence in community health concerns. Multipurpose plants such as Curcuma longa, Tinospora cordifolia, and Azadirachta indica were repeatedly cited across several disease categories, underscoring their pharmacological versatility and cultural importance. Similar reliance on multipurpose plants has also been reported in Badamalhera and Bijawar blocks of Chhatarpur (Prajapati & Khare, 2023).

The distinction between common and unique plants highlights the dual nature of ethnomedicinal knowledge. While common plants like Syzygium cumini and Terminalia chebula form the backbone of traditional healthcare practices, unique species such as Catharanthus roseus (anticancer) and Gymnema sylvestre (antidiabetic) reflect site-specific knowledge and specialized uses. This suggests that local communities not only rely on widely recognized species but also preserve niche knowledge adapted to their ecological settings Weeds and lesser-known species also contribute to ethnomedicinal diversity in Chhatarpur, as highlighted by Hanfi (2020).

Modes of administration were dominated by simple preparations such as pastes, decoctions, and juices. These methods require minimal processing and rely on fresh plant material, making them accessible to rural populations with limited resources. The reliance on traditional preparation techniques also reflects the continuity of indigenous practices across generations.

Beyond healthcare, the survey of NTFPs emphasized their economic importance. Species such as Buchanania lanzan (Chironji seeds), Madhuca longifolia (Mahua flowers), and Emblica officinalis (Amla fruits) provide both medicinal and commercial benefits. These products contribute to household income, food security, and culture practices, reinforcing the socio-economic fabric of rural communities.

The family distribution analysis showed dominance of dicot families, with monocots contributing selectively through species like zingiberaceae. This aligns with broader ethnobotanical surveys in India, where dicots are often more diverse and widely used in traditional medicine.

Overall, the findings demonstrate that NTFPs in Chhatarpur District are central to both healthcare and livelihoods. The overlap of medicinal and economic roles highlights the need for conservation strategies that safeguard biodiversity while supporting sustainable use.

X. CONCLUSION

This study provides the first systematic documentation of ethnomedicinally important non-timber forest products in Chhatarpur District, Madhya Pradesh. The results highlight the diversity of 50 plant species used by local communities to treat ten major diseases, with multipurpose plants such as Curcuma longa and Tinospora cordifolia playing a dominant role. Unique species reflect localized knowledge, while simple preparation methods ensure accessibility of remedies.

The dual importance of NTFPs serving as both medicinal resources and sources of livelihood underscores their value in sustaining rural communities. By integrating traditional knowledge with modern conservation strategies, these plants can contribute to biodiversity preservation, healthcare improvement, and socio-economic resilience.

The study emphasizes the urgent need for conservation of ethnomedicinal plants, sustainable harvesting practices, and further pharmacological validation to strengthen their role in healthcare systems. Documenting and preserving this knowledge not only supports local communities but also enriches the broader scientific understanding of biodiversity and its applications.

XI. FUTURE SCOPE

Future research on ethnomedicinally important NTFPs in Chhatarpur should focus on pharmacological validation of dominant species like Curcuma longa and Tinospora cordifolia to integrate traditional remedies into modern healthcare. Conservation programs are essential to protect rare plants such as Gymnema sylvestre and Catharanthus roseus from overharvesting. Value-addition and sustainable commercialization of products like Mahua, Chironji, and Amla can enhance rural livelihoods. Digital documentation and community tratining will preserve indigenous knowledge, while comparative studies across regions can enrich national ethnobotanical databases. Together, these steps ensure biodiversity conservation, healthcare improvement, and socio-economic resilience.

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