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ANALYZE PHARMACOLOGICAL POTENTIAL OF MEDICINAL PLANTS USED BY TRIBAL COMMUNITIES IN KORBA DISTRICT, CHHATTISGARH

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ABSTRACT:
In the Korba District of Chhattisgarh, this study explores the pharmacological potential of medicinal plants traditionally used by local tribes and communities. Ethnobotanical surveys were conducted to document indigenous knowledge and practices associated with the medicinal plant usage among these communities. Information on plant species, traditional uses, preparation methods, and perceived therapeutic effects was gathered through various methods. Pharmacological investigations focused on antibacterial, anti-inflammatory, antioxidant, and cytotoxic properties aimed to evaluate their biological activities and potential therapeutic applications. These findings highlight the pharmacological diversity of medicinal plants in Korba District and underscore their potential for further exploration in drug discovery and development. The study provides a scientific basis for validating the therapeutic efficacy of traditional medicinal practices among tribal groups in Chhattisgarh, thereby contributing to the preservation of traditional knowledge and offering a framework for its continuation. Through this research, the rich pharmacological heritage of medicinal plants in Korba District emerges, emphasizing their relevance in contemporary healthcare and their potential role in future medicinal advancements.

KEYWORDS: *medicinal plant, tribal, medicine, forest*

1. INTRODUCTION

The pharmacological exploration of medicinal plants used by tribal communities holds profound significance in both scientific research and cultural preservation. Across the globe, indigenous peoples have developed intricate knowledge systems concerning the therapeutic properties of local flora, passed down through generations as part of their cultural heritage. These plants have been integral to traditional healthcare practices, addressing a wide array of ailments and contributing to community well-being in often resource-limited settings [1] [2] [3].

In recent decades, there has been growing interest in scientifically validating the pharmacological potential of these medicinal plants. Such validation not only substantiates traditional medicinal practices but also offers opportunities for discovering novel therapeutic agents. Tribal communities, especially in regions with rich biodiversity like Chhattisgarh, India, have traditionally utilized plants for their antimicrobial, anti-inflammatory, antioxidant, and other medicinal properties. However, many of these traditional uses have yet to be thoroughly investigated through rigorous pharmacological studies [1]. This study focuses on exploring and analyzing the pharmacological potential of medicinal plants used by tribal communities. By documenting traditional knowledge and employing modern scientific methodologies, such as pharmacological screening and bioassays, researchers can systematically evaluate the biological activities and therapeutic efficacy of these plants. This approach not only enhances our understanding of their medicinal properties but also identifies potential candidates for drug development [4] [5].

Moreover, studying medicinal plants within their cultural context promotes the conservation of traditional knowledge and biodiversity. As indigenous practices face challenges from globalization and environmental change, documenting and validating their pharmacological potential becomes crucial for preserving both medicinal traditions and ecological balance. By bridging traditional knowledge with contemporary scientific research, this study not only enriches our understanding of medicinal plants but also supports sustainable healthcare practices and cultural resilience among tribal communities. This introduction lays the groundwork for exploring the multifaceted significance of pharmacological studies on medicinal plants used by tribal communities, emphasizing their relevance in both scientific and socio-cultural domains [6] [7] [8] [9].

2. LITERATURE REVIEWS

Bajrang, O., & Premi, J. K. (2024) [10] studied among the indigenous peoples of North Chhattisgarh, India, there are several traditional medical techniques that could be used to treat persistent fever. The native people of North Chhattisgarh, India, have a traditional way of looking for health care that is being studied here. The goal was to look into the traditional ways of healing and the traditional knowledge system of the plant species that traditional doctors in

North Chhattisgarh use to treat fevers that won't go away. The goal of the study is to look into and analyze the traditional medicine used to treat chronic fever, as well as to find out what phytochemicals and medicinal properties are in the traditional medicine used to treat chronic fever by the native people of North Chhattisgarh, India.

Ahirwar R. K. et al. (2024) [11] explained the different ethnobotanical plants and spices that the Indian people in Bilaspur, Chhattisgarh, use in their food. The goal was to find and record the herbs and spices that people from the tribal groups in the Bilaspur district of Chhattisgarh, India use in their food. From an ethnobotanical point of view, it is a report about this field that includes a analysis of plants that were recorded. The tribal groups in the study area were asked to fill out a questionnaire to get information. The accuracy level and use value were used to look at the data that was gathered. As is usual in ethnobotany, the plant samples were gathered, identified, and then treated as voucher specimens. There are 24 types of plants, which are divided into 15 families and 22 orders. The area has a lot of grass and a lot of plants that are useful for medicine or business. The tribal people still regularly use these plants to make herbs and spices that are used in cooking and medicine. However, younger people are losing the traditional information that older people had about these plants. Because of this, it will be useful as a reference and as a way to record and pass on what people in the Bilaspur, Chhattisgarh area know about these herbs and spices.

Hait M. & Kashyap N. K. (2024) [12] described the nutritional value, bioactive ingredients, and healing power of flowers from Chhattisgarh, India that can be eaten. Flowers have been eaten as food in many countries as part of traditional dishes and alternative therapies. Many types of edible flowers are more than just a treat, though, because they contain healthy things like protein, vitamins, carbs, fats, and the potential to be used as medicine. Flowers are an important part of growing the food business because they have good nutritional and sensory properties and bioactive parts that are good for people's health. To keep up with traditional ways of doing things, it's important to support the local use of flowers. Many studies have been done to find out more about the places and times where people eat flowers. As the demand for natural and healthy foods grows around the world, scientists have looked into the health benefits, active chemicals, and cooking methods of many species that can be eaten. New ways of getting natural bioactive chemical from flowers are helping scientists figure out what they are made of and make additives that are good for the food business. To encourage people to use flowers as food, we still need correct taxonomy, toxicology, and a complete practice guide for widely grown flowers, processing, and preserving.

Tiwari A. K., et al. (2022) [13] looked into the traditional ways of taking care of health in the tribal belt of Chhattisgarh, India: A Native American Knowledge from Native Folk medicines have been used for a long time and are linked to Ayurveda. For native people, it is still the best and cheapest way to get better. The traditional medicine system gives us a new idea for study because it looks at the whole person. In this study, we use scientific methods to find out how local traditional medicine practitioners use information about traditional medicines. The

ethnomedicinal study was done in three tribal districts of Chhattisgarh, India: Kanker, Bilaspur, and Jashpur. A total of 125 people were chosen to be interviewed as part of the survey. It showed the sources' ages, levels of literacy, and years of experience. The main science tools used to look at secondary data were the Informant consensus factor, the use value, and the fidelity level. There are 25 groups of medical plants based on the medicines they can be used for. Traditional healers have named 41 different plant families and 80 different plant types. 31 types of plants were used to treat health problems with the skin and stomach. An UV score of 0.99 means that Terminalia bellirica Roxb. is very useful. The most consensus among informants (1.0) was found in the areas of calculus, hematology, and urology in our study.

Rana, D., et al. (2021) [14] researched on the people who live in the Churah region of district Chamba, Himachal Pradesh, India, use medicinal plants to treat a variety of illnesses. People who live in remote parts of the Himalayas rely on plants for medicine and health care. This is because they believe herbal remedies work better and there aren't any modern medical facilities nearby. The point of this study was to find out what indigenous people in the Churah subdivision of district Chamba, Himachal Pradesh, know about using plants as medicine. The people who took part were traditional doctors, tribal people, and non-tribal people. Even though their society and culture are slowly changing, these locals still know a lot about plants and how to use them. Field surveys were done in many towns that were far away, and interviews, well-structured questionnaires, and group meetings were used to talk to people. A lot of literature was read to learn about the pharmacological activity and chemical makeup of the selected plant species, and the data that was collected was looked at using different quantitative tools. It was said that a total of 78 plants could fix 13 illnesses. It was revealed that 21 plant species have new or less well-known medical uses, which highlights the need for more pharmacological testing.

Kaushik, J., et al. (2021) [15] proposed the role of traditional healers in community medicine among the tribal people of North forest range of Bastar plateau, Chhattisgarh, India. The standard medical system is an important part of health care around the world. Traditional medicine has gotten the attention of ethnobotanical and pharmaceutical experts around the world because it is affordable, acceptable, has health benefits, and is easy to get. This study took place in 10 towns in the forests of the North Forest Zone of the Bastar plateau in the Kondagaon district of Chhattisgarh, India. We used use categories, use value (UV), informant consensus factor (Fic), and fidelity level (Fl) to count and examine the ethnobotanical data that we gathered. In the study area, 46 groups, 50 species, and 32 families of medicinal plants were found. Traditional doctors often used plant parts in the form of a decoction (25% powder), paste (19%), or juice (17%). They also used small amounts of oil, lepa, kwath, and raw forms, such as fresh material. Based on how different plant types are used to treat different illnesses, they were roughly put into 16 groups. The most common use for Ocimum sanctum was given the highest score (0.94), which showed how often it was used. The best Fic value (1.00) and amount of accuracy were found for Eclipta prostrate (hair care) and Bryophyllumpinnatum (kidney

problems). Within the 16 illness groups, different health problems were found, and people in this area still chose traditional treatments as the first choice for all kinds of illnesses.

JU, S. K., et al. (2019) [16] stated that South Indian ethnic groups have their own information about the medicinal plants they use. There isn't a lot of knowledge available about the healing plants that ethnic and native communities in the south of India use. These traditional Indian medicines are an important part of local healthcare and could lead to more study on plant-based medicines in India. The purpose of this study is to record and evaluate the traditional knowledge of medicinal plants. It also wants to compare how this knowledge is spread and look at where research is focused to get a sense of what research is needed now and what research might be possible in the future in this area. This study looked at a lot of different ethnic and indigenous groups' ethnobotany, medicinal plants, ethnic studies, and studies on traditional knowledge. It used scientific reports and peer-reviewed journal articles from 1980 to 2016 to do its research. A total of 2000 plant species from 1033 genera and 215 families were used in our work to make herbal medicines. It's interesting that only seven families are responsible for the largest number of medical species and herbs that are widely used to make herbal preparations like teas, juices, decoctions, and infusions.

Shrivastava, S., & Jagtap, S. S. D. P. (2019) [17] investigated the new directions in chemistry and problems with the environment in Chhattisgarh. Khadi has changed over the years from a fabric that freedom fighters used to identify themselves to a fashion item. There is such a high demand for khadi today that the thousands of people who work to spin and make khadi cloth can't keep up with it. Khadi, also written as Khaddar, is a traditional Indian fabric that became popular after India got its freedom thanks to Mahatma Gandhi. Gandhi supported khadi as an option to wearing British clothes and as a way to make a statement against them. Khadi is also used to make the Indian flag, which makes it even more important as a national symbol. People want more khadi than manufacturers can make because it's becoming more and more famous as a good piece to have in your closet. It used to be that khadi had a rough feel, but now it is made with cotton, silk, and wool, which makes it more comfy and also more popular. Khadi cloth is one of the most surprising things because it can keep you cool in the summer and warm in the winter. Also, washing this cloth makes it better, not worse. But, starch needs to be added so it doesn't wrinkle easily. It can last for four or five years. Khadi is also often decorated with patterns and handiwork. Men and women both work together to weave this fabric in a way that lets air flow through it. Before, Khadi was colored in earth tones.

Table 1: Comparative table summarizing the findings of the mentioned studies.

Author(s) & Year	**Title of Study**	**Results and Findings**
Bajrang, O., & Premi, J. K. (2024)	Traditional medicines used by the people of North Chhattisgarh, India, to treat	Explored traditional health practices among tribal people in North Chhattisgarh for

	long-term fever	chronic fever treatment. Identified and analyzed medicinal plant species and their phytochemical properties. Traditional knowledge of these medicinal plants is crucial for chronic fever treatment in the region.
Ahirwar R. K., et al. (2024)	The study of the different ethnobotanical plants and spices that the Indian people in Bilaspur, Chhattisgarh, use in their food. Today in Plant Science	Documented herbs and spices used by tribal communities in Bilaspur for culinary purposes. Identified 24 plant species from 15 families. Plants were used as fruits (34%), leaves (23%), seeds (17%), etc. Highlighted the importance of these plants for both culinary and medicinal uses. Noted the decline of traditional knowledge among younger populations and emphasized the need to preserve this knowledge.
Hait, M., & Kashyap, N. K. (2024)	The nutritional value, bioactive ingredients, and healing power of flowers from Chhattisgarh, India that can be eaten.	Discussed the nutritional and therapeutic potential of edible flowers. Highlighted their bioactive components beneficial to human health. Emphasized the need for proper taxonomy, toxicology studies, and comprehensive guides for commercial use. Addressed the global interest in natural and healthy diets and the potential of edible flowers in the food industry.
Tiwari A. K., et al. (2022)	People from the tribal belt of	Surveyed traditional

	Chhattisgarh, India, have knowledge about traditional health practices that comes from their own people.	medicinal practices in Kanker, Bilaspur, and Jashpur. Identified 80 medicinal plant species used by traditional healers. Found high use values for Terminalia bellirica Roxb. (0.99) and 100% fidelity for several key species. Highlighted the importance of vertical transmission of indigenous knowledge among informants.
Rana, D., et al. (2021)	Use of therapeutic plants to treat different illnesses by the people who live in the Churah subdivision of Chamba district in Himachal Pradesh, India	Reported indigenous medicinal knowledge of 78 plants used to treat 13 ailments. Found maximum species used for dermatological (42), respiratory (20), and digestive problems (19). Highlighted new or lesser-known therapeutic uses of 21 plant species, suggesting further pharmacological validation is needed.
Kaushik, J., et al. (2021)	Role of traditional healers in the community medicine among the tribal people of North forest of Chhattisgarh, India.	Documented 50 plant species used by traditional healers in North Bastar. Quantitatively analyzed use categories, use value (UV), informant consensus factor (Fic), and fidelity level (Fl). Found Ocimum sanctum with the highest use value (0.94) and Eclipta prostrata and Bryophyllum pinnatum with the highest Fic and fidelity

		levels. Highlighted the preference for traditional treatments among local people.
JU, S. K., et al. (2019)	South Indian ethnic groups have their own information about the medicinal plants they use.	Documented 2000 plant species used by ethnic communities in South India. Identified 1033 genera and 215 families. Found that only seven families contributed most medicinal species. Highlighted the potential for expanding research on phytomedicines and the importance of preserving traditional knowledge.
Shrivastava, S., & Jagtap, S. S. D. P. (2019)	New directions in chemistry and problems with the environment in Chhattisgarh.	Explored the market trend and popularity of khadi fabric in Chhattisgarh. Found increasing demand for khadi, making it difficult to meet market needs. Noted its unique properties and cultural significance. Also discussed environmental pollution in Chhattisgarh's surface water due to urbanization and industrial activities.

3. RESEARCH METHODOLOGY:

3.1. Site Description

Korba, located in the central part of Chhattisgarh, is known for its rich natural resources, diverse tribal communities, and significant industrial presence. Here’s a brief overview of the district:

Geographic and Demographic Profile:

- **Location:** Situated in the central region of Chhattisgarh, Korba covers an area of approximately 7,145.44 square kilometers.
- **Population:** The district has a population of around 1.2 million people, comprising various ethnic groups, including a significant tribal population such as the Gonds, Baigas, and Korwas.
- **Climate:** Korba experiences a tropical climate with hot summers, a monsoon season, and mild winters. The average annual temperature ranges from 10°C to 40°C, with an average annual rainfall of around 1,400 mm.

Figure 1: Korba District, Chhattisgarh

3.2. Data Collection

The Korba District was the location of both intensive and extended field visits that were carried out on a periodic basis. The information that was collected from the respondents included their names, ages, genders, addresses, levels of education, the location where the plant was collected, and the date of the encounter. This information was recorded using a structured questionnaire. In addition, information regarding the plant species, the part(s) that were utilized, and the

formulations of remedies were gathered for the treatment of various health issues. In the current study, a survey was conducted in 14 villages of 32 traditional healers in the Korba region of Chhattisgarh State. The purpose of the survey was to collect information about the plans and plant items that are utilized by various tribes.

3.3. Data analysis

Most of the information that was gathered during the course of the study was descriptive in nature and was conveyed in a straightforward manner. Plants that were reported to have medicinal formulations and other ethnobotanical uses, the method of preparation of herbal formulations, their mode of administration, and the types of ailments that were cured by herbal remedies are listed. The data that was collected was recorded in a spreadsheet and treated in the form of percentages and proportions concerning the number of plants that were found in each family within the study area.

4. RESULT

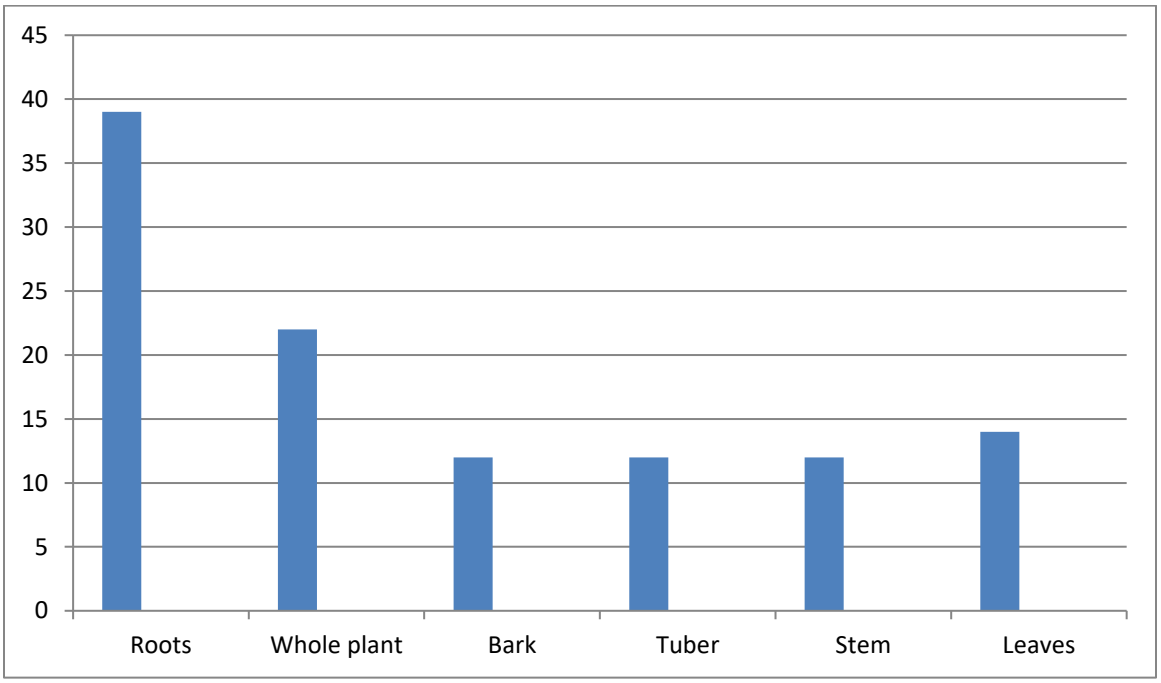
Forests are one of the most remarkable gifts that nature has bestowed upon humanity, and since the beginning of time, people have relied on plants for sustenance. Forest produce encompasses a wide range of products that are culinary, industrial, and commercial in nature. The amount and quantity of the contribution that these goods make to our day-to-day lives is enormous. These products have a wide range of applications and are essential to the survival of the people that now lives in and around forests. The life of tribes is inextricably linked to forest products; the fulfillment of their fundamental requirements and fulfillment of their livelihoods are derived from the processing and collecting of these goods. There is a harmonious relationship between the tribal people and the plants, and the primary interest of man in plants is to find solutions for their sufferings and maladies of a sub systemic nature.

Table 2: Age and Gender Characteristics of Traditional Healers Interviewed in Korba District

Age (Year)							
Gender	21-30	31-40	41-50	51-60	61-70	70 -75	Total
Male	6	10	12	15	18	9	70
Female	8	12	13	12	15	5	65

Plant Parts Used: The forests of the Korba region contained the greatest number of trees, climbers, and herbs, followed by shrubs, epiphytes, and others that were parasitic to other plants. These growth forms are highly drought resistant and are not impacted by seasonal fluctuations, which may be the reason why they are available in virtually all seasons. This could be the reason why they are available. Either the entire plant or various parts of the plant, such as the bark, stem, leaves, flowers, fruits, seeds, roots/rhizomes/tubers, and latex, are utilized in the process of

formulation of recipes. When it came to the preparation of herbal treatments, the most common components utilized by the various cultures in the region were the roots (39%) and the whole plants (22%), followed by the bark (12%), the tuber, stem (12%), and the leaves (14%).



Graph 1: Plant Parts Used in Herbal Remedies by Tribal Communities in Korba District, Chhattisgarh

The tribe is still reliant on plant resources for the treatment of a variety of maladies; however, this dependence is lessening, and the understanding of herbal medicine and the application of plant-based therapies is also declining. During the course of our research, we have documented and identified 28 plants, each of which has a therapeutic significance, and we have made an effort to preserve the traditional knowledge.

Table 2: Medicinal plants of Korba district with information collected on the basis of interview with Korwa tribe and local people.

Species	**Family**	**Vernacular name**	**Parts used**	**Medicinal uses**
Abrus precatorius L	FABACEAE	Gunj, Ratti	White seeds, Leaf	Preventing conception, swelling in body parts, headache
Acacia catechu	MIMOSACEA	Khair, Kattha	Stem bark	Night blindness

L.				(Rat-kana)
Amaranthus viridis L.	AMARANTHACEAE	Kanta bhaji	Root, leaf	Root paste on boils for suppuration, leaves as poultice for sores
Argemone mexicana L.	PAPAVERACEAE	Pili kateri	Seed, Root	Eczema, toothache
Azadirachta indica A. Juss.	MELIACEAE	Neem	Leaves	Diabetes, chicken pox
Andrographis paniculata Burm.	ACANTHACEAE	Chiraita	Stem bark, Leaf	Loss of appetite, malaria
Adhatoda vasica Nees.	ACANTHACEAE	Adusa	Leaf	Asthma, malaria, diarrhea
Abutilon indicum L.	MALVACEAE	Kanghi	Leaf, Bark	Leaf paste for boils, bark decoction for fever
Achyranthus aspera L.	AMARANTHACEAE	Chirchita	Seed, Entire plant, Fruits, Leaf	Cough, scorpion bite
Bambusa arundinacea Retz.	POACEAE	Bans	Leaf	Boil, irregular menstruation
Buchanania lanzan Spreng.	ANACARDIACEAE	Char, Achar, Chironji	Leaves, Bark, Seed	Expectorant
Butea	FABACEAE	Palash, Parsa	Flower, Bark,	Contraceptive,

monosperma Lamk.			Seed	scabies
Boerhavia diffusa L.	NYCTAGINACEAE	Punarnava	Whole plant	Jaundice, asthma
Chlorophytum tuberosum Roxb.	LILIACEAE	Koijhari bhaji, safed musli	Tuber	Tuber powder for stamina, urinary problems
Costus speciosus J. Koenig	COSTACEAE	Keokand	Rhizome	Rhizome powder is purgative
Gloriosa superba L.	LILIACEAE	Kalihari	Tuber, seed	Tuber paste for labor pain, seed powder is wormicidal, tuber powder for stomachache
Gymnema sylvestris Retz.	ASCLEPIADACEAE	Gurmar	Leaf	Leaf powder for diabetes
Hemidesmus indicus R. Br.	ASCLEPIADACEAE	Anantmul	Root, Latex	Root powder for urinary problems and joint pain, latex for skin diseases and as a lactic agent
Pueraria tuberosa Roxb.	FABACEAE	Patal kumhada	Tuber	Tuber powder for stamina, diuretic
Saccharum munja Roxb.	POACEAE	Kans	Root	Root powder as diuretic, for

				stomachache
Smilax macrophylla Roux.	LILIACEAE	Sher	Root, Stem	Root powder as tonic and for joint pain, stem for toothache
Tephrosia purpurea L.	FABACEAE	Sarphonk	Flower, Root	Root powder as blood purifier, flower juice to increase blood
Terminalia arjuna Roxb.	COMBRETACEAE	Kahua	Stem bark	Bark powder for heart diseases, skin, diarrhea, and with honey for cough
Terminalia bellerica Roxb.	COMBRETACEAE	Baheda	Fruit	Fruit powder for acidity and asthma
Terminalia chebula Retz.	COMBRETACEAE	Harra	Fruit, Bark	Fruit powder for constipation, roasted fruit for cough, fruit powder for acidity
Urginea indica Roux.	LILIACEAE	Jangli pyaj	Bulb	Bulb as cardiotonic, for joint pain, seed powder for asthma
Woodfordia fruticosa L.	LYTHRACEAE	Dhawai	Flower, Bark	Entire flower for dysentery, bark paste for

				fresh wounds
Phyllanthus niruri L.	EUPHORBIACEAE	Bhui amla	Entire plant	Juice for jaundice and liver problems

5. DISCUSSION

The results of the study highlight the profound relationship between tribal communities in Korba District, Chhattisgarh, and the forest resources they depend on for their livelihoods and healthcare needs. Forests serve as a vital source of diverse resources, including medicinal plants that play a crucial role in traditional healing practices. Findings reveal that the Korba region's forests boast a rich diversity of plant species, encompassing trees, climbers, herbs, shrubs, epiphytes, and parasitic plants. This diversity likely contributes to their resilience across seasons, making them accessible throughout the year despite varying environmental conditions. The study identifies roots as the most commonly utilized plant part in preparing herbal remedies, followed by whole plants, bark, tubers, stems, and leaves, reflecting the holistic approach of the local communities towards plant-based medicine.

Despite this rich tradition, there are concerns about the declining reliance on traditional herbal knowledge among the tribes, possibly due to modernization and changing lifestyles. This trend underscores the urgent need for initiatives aimed at preserving and revitalizing indigenous knowledge of medicinal plants. Documentation of important medicinal plants used by the Korwa tribe not only contributes to the scientific understanding of their pharmacological potential but also seeks to safeguard this invaluable traditional knowledge for future generations. Moving forward, efforts should focus on enhancing awareness among local communities about the sustainable use and conservation of medicinal plants, promoting their cultivation, and integrating traditional practices with modern healthcare systems. By doing so, we can ensure the continued availability of these resources while supporting the economic development and cultural integrity of the region.

CONCLUSION

In summary, the findings of the study highlight the crucial necessity of recognizing and protecting the enormous knowledge of medicinal plants that is possessed by the Korwa tribe in the Korba District of Chhattisgarh. Despite the fact that the region's vast forest cover and biodiversity provide a rich reservoir of medicinal plants, the potential of these plants is still poorly untapped due to numerous problems associated with identification and inadequate exploitation of information. In order to effectively address these difficulties, it is necessary to make coordinated efforts to raise awareness, encourage the production of medicinal plants in the

local area, and create complete documentation of indigenous knowledge. Through the concentration of research and conservation efforts on these resources, we are able to harness their potential to not only enhance the production of medicinal plants but also make a substantial contribution to the region's economic development and the preservation of its cultural heritage. Taking this integrated approach holds the potential to ensure the preservation of traditional knowledge for future generations while also ensuring the sustainable exploitation of natural resources.

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