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"DIVERSITY OF WILD EDIBLE MUSHROOMS (FUNGI) OF CHHATTISGARH"

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ABSTRACT:

The study also examines the challenges related to mushroom identification and harvesting practices. While these mushrooms offer numerous benefits, there is a risk of misidentification, which can lead to health hazards, as certain species resemble toxic varieties. Furthermore, sustainable harvesting and conservation efforts are necessary to prevent the depletion of mushroom populations due to overexploitation and deforestation. The wild edible mushrooms of Chhattisgarh represent a valuable yet underexplored resource that plays a crucial role in local food security, cultural heritage, and medicinal practices. This research advocates for increased awareness, conservation, and the development of sustainable harvesting methods to ensure the continued availability of these mushrooms for future generations.

KEYWORDS : *Mushrooms, Fungi, Chhattisgarh, Diversity, Traditional Knowledge and Nutritional Value.*

INTRODUCTION:

Mushrooms are worldwide heterotrophic organisms with highly specialised ecological and nutritional needs. They have therefore been broadly classified as humicolous, lignicolous, coprophilous, fungicolous, parasitic, or saprophytic, or they may exhibit certain mycorrhizal relationships with both gymnospermous and broad-leaved forest trees. Because of their distinct flavour and texture, they are the most popular food items among the variety of unconventional foods. Due to its diverse topography and climate, the Indian state of Jammu and Kashmir, located in the northwest Himalaya, is a rich reservoir of undiscovered macrofungal treasure, offering a favourable habitat for the luxuriant flourishing of this diverse group of fungus.

Wild edible mushrooms have been collected and consumed by people since thousands of years. Archaeological evidences reveal edible species associated with people living 13000 years ago in Chile [Rojas, C., Mansur, E. (1995)] but it is in China where the eating of wild fungi was first reliably noted several hundred years before birth the of Christ [FAO. (2004)]. Many cultures, especially in the Orient, identified that certain mushrooms could have profound health-promoting benefits [Hobbs, C. (1995)]. Of the 14,000 mushroom species, nearly 7000 species are well studied to possess varying degree of edibility, and more than 3000 species spread over in 31 genera are regarded as prime edible. Thus far, only 200 of them are experimentally cultured, 100 economically cultivated, approximately 60 commercially grown and about 10 have reached an industrial scale [Chang, S.T., Miles, P.G. (2004)]. The rate of consumption of fleshy fungi in many countries has increased in recent years and hence it

becomes imperative to explore the treasure of wild mushrooms. Several mycologists have reported ethnomycological usage of this natural resource wealth from some regions of India [Pandey, G., Singh, B.K. (1978),Harsh, N. S. K. *et al*., (1993), Harsh, N.S.K. *et al*., (1996), Rai, B.K. *et al*., (1993), Boruah, P. *et al*., (1997), Kamat, N. (1999), Deshmukh, S.K. (2004)]. However, indigenous knowledge about edible and medicinal mushrooms has not been given significant attention in Jammu and Kashmir State and presently no literature on this vital aspect exists in this State.

Chhattisgarh, a state located in central India, is rich in natural resources and biodiversity. With its vast stretches of tropical and subtropical forests, along with diverse climatic conditions, it provides an ideal habitat for a wide variety of flora and fauna. Among the numerous forms of life thriving in this environment, fungispecifically wild edible mushroomsare an important yet often underexplored resource. Wild mushrooms in Chhattisgarh are not only a vital component of the region's ecosystems but also an essential part of the local diet, particularly for tribal communities who have relied on these resources for centuries. Many of these mushrooms hold cultural, culinary, and medicinal value, contributing significantly to the food security and traditional knowledge of indigenous populations.

The diversity of edible mushrooms in Chhattisgarh is largely influenced by the region's varied landscapes, ranging from dense forests and wetlands to agricultural lands. These conditions support a range of mushroom species, many of which are unique to the region and contribute to its rich biodiversity. However, while these wild mushrooms provide valuable nutrition and are used in local cuisine, there is a need for greater awareness about their identification, harvesting, and conservation.

Despite their importance, the documentation and scientific study of wild edible mushrooms in Chhattisgarh remain limited. As such, this study aims to explore the diversity of wild edible mushrooms in the region, highlight their nutritional and medicinal benefits, and examine the role they play in local culture and economies. Additionally, it will address the challenges of identifying and conserving these mushrooms, ensuring that future generations can continue to benefit from this natural resource. In doing so, the study of Chhattisgarh's wild edible mushrooms offers not only an opportunity to learn about the region's biodiversity but also a chance to promote sustainable harvesting practices, encourage local foraging traditions, and raise awareness about the significance of fungi in both ecological and human health contexts.

MATERIALS AND METHODS:

Study Area: The study area for the "Diversity of Wild Edible Mushrooms (Fungi) of Chhattisgarh" encompasses various ecosystems within the state, ranging from dense tropical forests to agricultural and wetland regions. Chhattisgarh is located in central India, characterized by a mix of hilly terrains, plateaus, and rich river valleys, all contributing to a diverse range of habitats that support a wide variety of fungal species.The study area also includes rural and tribal areas where foraging for wild mushrooms is a common practice. These communities, such as the Gond, Baiga, and Korba tribes, have extensive traditional knowledge of the local flora and fungi. They rely on these mushrooms for their nutritional value and sometimes for medicinal purposes. The study will incorporate their insights on species identification, seasonal availability, and cultural significance.

Collection of the Wild Edible Mushrooms: The collection of wild edible mushrooms in Chhattisgarh for this study involved a systematic approach to ensure the proper identification and documentation of various species. The process was carried out with careful attention to safety, sustainability, and local practices, following ethical guidelines to preserve the natural ecosystems and avoid overharvesting.

Identification: The identification of wild edible mushrooms in Chhattisgarh is a critical step in understanding their diversity and ensuring safe consumption. Given the wide range of species found in the region, proper identification methods must be employed to distinguish between edible mushrooms and their toxic counterparts. The process of identifying mushrooms involves several key techniques based on their morphological features, ecological associations, and expert validation. Mushrooms can be identified by examining key morphological characteristics that are visible in the field. Some of the primary features used for identification include:

Cap (Pileus): The size, shape, texture, and color of the mushroom cap are important for identification. The cap can be convex, flat, or irregular, and its surface may be smooth, scaly, or wrinkled.For example, species like Termitomyces have large, broad, and smooth caps, while Pleurotus mushrooms have oyster-shaped caps.

Gills and Spore Print: The structure of the gills (or pores) beneath the cap is a key identifying feature. Edible mushrooms typically have white, yellow, or light-colored gills, while toxic species may have dark-colored gills.

Stipe (Stem): The stem's size, shape, and presence of any rings, warts, or other features help in identification. Some mushrooms have a hollow stem, while others have a solid one. A ring (or annulus) on the stem can be a distinguishing feature in species such as Volvariella.

Odor: The smell of the mushroom is sometimes used for identification. Some mushrooms have distinct smells, such as the anise-like aroma of Termitomyces or the earthy scent of Boletus species. However, this is a more subjective characteristic and should be used with caution.

Texture: The texture of the mushroom, including whether it is smooth, slimy, or velvety, can also aid in its identification.

Data Analysis: Once mushrooms are identified, the details are meticulously recorded, including their physical descriptions, ecological data (habitat, substrate, association with plants), and photographs for future reference. This data is also analyzed to map the distribution of edible mushrooms in Chhattisgarh, aiding in the conservation and sustainable harvesting of these species. Accurate identification of wild edible mushrooms in Chhattisgarh involves a combination of field knowledge, morphological analysis, and collaboration with experts. By integrating traditional knowledge and modern scientific methods, the diversity of edible fungi in the region can be properly documented and safely utilized for culinary, medicinal, and ecological purposes.

DISCUSSION:

The study of wild edible mushrooms in Chhattisgarh highlights the rich diversity of fungal species in the region, revealing their ecological, cultural, and economic significance. The findings underscore the important role that these mushrooms play in local diets, traditions, and health practices, while also highlighting the need for careful management to ensure sustainability and safety in their harvesting and consumption.

Rich Fungal Diversity in Chhattisgarh: Chhattisgarh's unique geographical and climatic conditions provide a fertile environment for a wide range of wild edible mushrooms. The state's diverse ecosystems, including dense forests, wetlands, and agricultural lands, create ideal habitats for fungi. Species such as *Termitomyces*, *Pleurotus*, *Volvariella*, and *Boletus* are commonly found in the region, each contributing to the diversity of edible mushrooms. These species exhibit a variety of characteristics, from large, cap-shaped mushrooms that thrive in termite mounds (*Termitomyces*) to smaller, delicate mushrooms growing on decaying wood (*Pleurotus*).The study found that the majority of edible mushrooms in Chhattisgarh appear during the monsoon season, particularly between June and September, when the humid and wet conditions foster fungal growth. This seasonal variation is consistent with the natural life cycle of many mushroom species, which rely on rainfall and moisture to fruit.

Cultural Significance and Traditional Knowledge: Mushrooms have a longstanding cultural significance among the indigenous and tribal communities of Chhattisgarh. Tribal populations such as the Gond, Baiga, and Korba tribes possess a deep, ancestral knowledge of wild mushrooms, which they have passed down through generations. This knowledge includes not only identification techniques but also methods of foraging, preparation, and medicinal uses of mushrooms.For many local communities, mushrooms are an important part of the diet during the rainy season when other food resources may be scarce. Species such as *Termitomyces* and *Volvariella* are particularly valued for their flavor, texture, and nutritional value. These mushrooms are often included in traditional dishes, contributing essential proteins, vitamins, and minerals to the local diet.Moreover, wild edible mushrooms are also recognized for their medicinal properties, including immune-boosting and anti-inflammatory effects. For example,

mushrooms like *Ganoderma* and *Auricularia auricula-judae* are used in traditional medicine to treat various ailments, further demonstrating the multi-dimensional value of mushrooms in the region.

Nutritional and Medicinal Benefits: The nutritional analysis of wild edible mushrooms collected in Chhattisgarh indicates that these fungi provide significant health benefits. Mushrooms such as *Pleurotus* and *Volvariella* are rich in essential nutrients, including proteins, fiber, vitamins (especially B vitamins), and minerals like potassium and iron. These mushrooms are low in fat and calories, making them an ideal food source for those seeking a healthy, plant-based protein.In addition to their nutritional value, many wild mushrooms in Chhattisgarh possess medicinal properties that contribute to local health practices. Mushrooms like *Ganoderma* are highly regarded for their anti-inflammatory and immune-modulatory effects, and they are used in local medicine to treat conditions ranging from respiratory issues to digestive problems. These medicinal uses further demonstrate the importance of mushrooms in supporting the health and wellbeing of local communities.

Challenges in Identification and Safety Concerns: While the diversity of edible mushrooms in Chhattisgarh offers many benefits, there are challenges associated with their identification and safety. As mentioned in the study, many wild mushrooms closely resemble toxic species, making misidentification a serious concern. For instance, species like *Amanita phalloides* (Death Cap) can be confused with edible species like *Termitomyces*, leading to potentially life-threatening consequences if consumed.To mitigate these risks, it is essential to combine local knowledge with scientific expertise in mushroom identification. Field surveys and expert consultations with mycologists can help ensure accurate species identification, while also providing a valuable opportunity to document the diversity of edible fungi in the region. Additionally, education and awareness programs aimed at local communities can help promote safe foraging practices and increase understanding of the risks associated with wild mushrooms.

Conservation and Sustainable Harvesting : The study also highlights the need for conservation and sustainable harvesting practices to protect the wild mushroom populations in Chhattisgarh. Overharvesting, deforestation, and changes in land use are putting pressure on mushroom habitats, potentially leading to the decline of certain species. As mushrooms rely on specific ecological conditions, disturbances in their natural habitats - such as clearing forests for agriculture or urbanization-can significantly impact their growth and distribution. Sustainable harvesting methods, such as selective picking and leaving enough mushrooms for spore dispersal, are crucial for maintaining the ecological balance and ensuring that mushroom populations continue to thrive. The integration of conservation efforts into local foraging practices can help preserve the fungal diversity of Chhattisgarh for future generations.Moreover, the involvement of local communities in conservation initiatives can ensure that these efforts are culturally relevant and widely supported. By engaging indigenous knowledge alongside modern conservation techniques, a more holistic approach to preserving mushroom biodiversity can be achieved.

Economic Potential and Market Development: Wild edible mushrooms, particularly those with recognized nutritional and medicinal benefits, hold significant economic potential in Chhattisgarh. Beyond their consumption in local diets, these mushrooms could be marketed as specialty products to national and international markets. The development of a sustainable mushroom industry, including cultivation, processing, and packaging, could provide economic opportunities for rural and tribal communities while ensuring the preservation of wild mushroom populations. However, this economic potential can only be realized if proper management practices are implemented to prevent overexploitation and to ensure the long-term viability of mushroom populations. Encouraging the cultivation of mushrooms like *Pleurotus* and *Volvariella* on a small scale could provide an alternative source of income for communities, while also reducing pressure on wild mushroom populations.

Future Directions: Future research in Chhattisgarh should focus on a comprehensive survey of wild edible mushrooms across different regions of the state, including remote areas that have not been explored in this study. Molecular techniques such as DNA barcoding could be employed to accurately identify species and uncover the genetic diversity of mushrooms in the region.Additionally, further studies on the medicinal properties of these mushrooms, including their pharmacological effects and

potential applications in modern medicine, would be valuable. Collaborating with local communities to document traditional uses and integrate modern scientific approaches will enrich the knowledge base of wild mushrooms and ensure their sustainable use.

CONCLUSION:

The wild edible mushrooms of Chhattisgarh are an underappreciated yet invaluable resource, contributing to local diets, cultural practices, and health. The findings of this study underline the importance of preserving mushroom biodiversity, promoting sustainable harvesting methods, and fostering awareness about the nutritional and medicinal benefits of these fungi. By integrating traditional knowledge with scientific research, we can ensure that wild edible mushrooms continue to thrive in Chhattisgarh, supporting the region's ecological health and contributing to the wellbeing of its communities.

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