

Research

# Knowledge and Documentation of Wild Edible and Non-Edible Mushrooms Used by the Local Communities of Jharkhand

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**Abstract**

The wonderful world of fungi has always fascinated the human race, by their appearances and characteristic nature. The word **mushroom** is used for fungi and moulds in French. Since ancient times, mushrooms have been regarded as a special kind of nutritious food. They are diverse in both their growing habitats as well as their medicinal and physiological benefits. Mushroom foraging has been practiced by humans for the same reason. The forest provides large and diverse options to the villagers in the form of varieties of wild edible and non-edible mushrooms. Wild edible mushrooms are very important in the food security of tribal groups throughout Jharkhand. The aim of this study is to produce a prior mushroom checklist based on the collection and document the edible and non-edible mushrooms from Jharkhand state which are collected during the rainy season by tribals for their livelihood.

**Keywords:** Mushroom, Nutritious, Health advantages, Anti-cancer Properties, Tribal people, Basidiomycetes, Hypogeous, Low-fat content

**Introduction**

Humans are innately and emotionally attracted to other living organisms. The biophilia concept states that we are inherently drawn to environments that have supported human life in the past, so attraction toward nature is part of our genetic makeup. Mushrooms are one of such organism which has incurred the interest of human beings in the past and in the present for their health advantages in addition to standard nutrients. In recent years, the presence of bioactive compounds has fuelled the interest towards mushrooms. These compounds have been found to have hypocholesterolemic, anti-cancer, and hepatoprotective properties and are appropriately referred to as functional food.

The word **mushroom** is used for fungi and moulds in French. Since ancient times, mushrooms have been regarded as a special kind of nutritious food. Greeks preferred mushrooms as a commodity providing strength for warriors in battle and the Romans regarded mushrooms as the "Food of God". From ancient times wild mushrooms were collected from their natural growing habitats (Cooke, 1977). Thousands of years ago, the fruiting body of higher fungi (Basidiomycetes or Ascomycetes) has been used as a source of food (Mattila et al., 2001) due to their chemical composition, association with termites, trees of forest which is attractive from the nutrition and economical point of view. In most countries including India, mushrooms are an important delicacy because of their unique flavor and texture though they do not contribute a significant portion of the human diet (Valentao et al., 2005). The high-energy values with low-fat content are their natural endowment. The tribal people over here have a very good knowledge of

wild edible and non-edible mushrooms because they collect them from the forest during the rainy season for their consumption or for sale.

Jharkhand state is located in the eastern region of India; it lies between 23°15'N to 24°45'N longitudes and 83°17' E to 87°45'E latitude. Jharkhand has a deciduous forest; decaying leaves make rich humus for mushrooms' growth therefore Jharkhand has a rich diversity of wild edible and non-edible mushrooms. The tropical climate of Jharkhand, especially Khunti, is suitable for the growth of mushrooms. The Munda tribes of Jharkhand mostly found in the Khunti district are involved in mushroom cultivation. These mushrooms are consumed frequently by various tribes inhabiting nearby the forest. These tribal groups are engaged in the collection and consumption of wild edible mushrooms based on their traditional knowledge. Mushrooms are macrofungi with outstanding fruiting bodies that can be hypogeous or epigeous, large enough to be seen with the naked eye, and can be picked by hand (Chang ST & Miles, 1992). The consumption of edible mushrooms in Jharkhand represents a cuisine tradition. Some species of mushrooms are traditionally eaten and received several popular local names such as Bala khukhri, Patiyari khukhri, Jamun khukhri, Chirkho khukhri, Bans khukhri, Patra Khukhri, Machu Khukri, Leche etc. In the Khunti district, a large diversity of wild edible and non-edible mushrooms are found growing on the forest floor, twigs, branches, rotting plants, and cattle dung. Although, it is difficult to estimate the number of extent of mushrooms present in the wild habitat. The objective of the present work is to compile and document the diversity of wild edible and non-edible mushrooms from the biodiversity-rich Khunti District.

### Material and methods

The local market and forest area of the Khunti district was surveyed and wild edible and non-edible mushrooms were collected during the rainy season and a list of these was prepared based on the local knowledge. Samples were collected using sturdy knives to dig down to bases. Each collected mushroom was carefully rolled in wax paper and then kept in zippered plastic bags with lots of air trapped in them to act as cushions. After collection specimens were kept in sterile containers, each container was labeled with their date & place of collection and brought to the laboratory for identification and preservation. Identification of the specimen was done by morphological characteristics of the fruiting body, traditional knowledge provided by ethnic tribal communities, and guidelines mentioned in the manual of Purkayastha and Aindrila (1985). Specimens were preserved in a 6:3:1 ratio of distilled water, ethanol, and formalin for further analysis.

#### Documentation of the collected mushrooms

To 1ml of leaf extract added in 1ml of Meyers' reagent and a few drops of iodine solution. The formation of yellow colour precipitate indicates the presence of alkaloids.

1. Local or vernacular Name
2. Habitat
3. Growth habit
4. Width of Pileus
5. Shape
6. Colour and colour change
7. Length of Stipe
8. Annulus: Present or Absent
9. Pseudorhiza: Present or Absent

### Result and discussion

The specimens were collected from the Khunti district. The forest of Khunti District possesses abundant Sal crop species; in the rainy season, this forest receives heavy rainfall that is favorable for the growth of mushrooms. A total of 27 mushroom species

were collected and identified, out of the 27 species 15 species were wild edible mushrooms. Among them, 14 species were identified and 1 species was unidentified. 12 species were non-edible.

### Conclusion

Total of ten species were studied, these mushrooms are wild edible and distributed in the forest and other areas of the Khunti district. The tribal people of Ranchi have extensive knowledge of wild mushrooms. There is a need to cultivate these varieties for the economical benefit and as an alternative to plant and animal-derived food. It has been seen that there is a huge market of these species in the rural as well as urban mass.

It is also found that the tribal communities have the most knowledge about the nutritional and medicinal value of wild mushrooms. Wild edible mushrooms are widely distributed in the Khunti district and it is an important source of nutrient, health, and income generation. There is an urgent need to increase the use and consumption of wild edible mushrooms for the welfare of the state and to combat malnutrition among tribal people. The use of wild edible mushrooms can also help in the improvement of the livelihood of the local people.



- a) *Boletus edulis*
- b) *Termitomyces clypealus*
- c) *Termitomyces microcarpus*
- d) *Astraceus hygrometricus*
- e) *Termitomyces hiimii*
- f) *Amanita exitialis*
- g) *Russula foetens*
- h) Unidentified
- i) *Amanita caesarea*
- j) *Termitomyces alchetron*
- k) *Termitomyces alburnainosa*
- l) *Russula cyanoxanth*
- m) Unidentified
- n) *Termitomyces clypeatus*
- o) *Termitomyces spp.*

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