

SOME COMMON WILD EDIBLE MUSHROOMS GROWING IN JHARKHAND

Srivastava A.K. and Fr. Prabhat Kennedy Soreng S.J.

Dept of Botany, St. Xavier's College, Ranchi (Jharkhand), INDIA, 834001

E-mail: ajaysrivastava11@gmail.com

Abstract: Jharkhand is potentially a rich state but the average villagers continue to live a life of penury. With no money and no productive work just rain fed mono crop is all they have to cheer about. For half of the year they are thrown out of work, i.e. disguised unemployment. The children are sorely protein-malnourished. However the forest provides large and diverse options to the villagers in the form of varieties of wild edible mushrooms. *Macrolepiota procera* (Scop.) Singer, *Termitomyces clypeatus* R. Heim, *T. albuminosa* (Berk.) R., *T. heimii* K. Natarajan, *Lycoperdon*, *Calvatia*, *Geastrum*, *Boletus edulis* Bull, etc are commonly collected and consumed wild edible mushrooms. They are rich in protein and can easily fit into all's platter, being a vegetarian product. The villagers are acquainted with them, but they just collect them and consume. The idea to conserve and cultivate them is still eluding them. This paper is an effort to document these wild edible mushrooms so that in the further studies a protocol for their domestication could be developed so that villagers could find some avenues to generate income through cultivation and marketing.

Keywords: Disguised unemployment, diverse options, wild edible mushrooms, avenues to generate income

Introduction

Mushrooms are fruiting bodies of Fungi especially of Class Ascomycetes or Basidiomycetes. They are rich sources of protein. There are some mushrooms which are domesticated and grown for commercial purpose but many edible mushrooms are still wild in the forest. Jharkhand has deciduous forest; decaying leaves make rich humus for mushrooms' growth therefore Jharkhand has a rich diversity of wild edible mushrooms. The tribal people over here have a very good knowledge of wild edible mushrooms because they collect them from the forest during rainy season for their consumption or for sale. Documentation of indigenous knowledge of mushrooms of various local communities has been done by many researchers, like indigenous knowledge of mushrooms of Sherpa community of Sagarmatha National Park, Nepal has been done by A. Giri and P. Rana (2008), documentation of neglected mushrooms of Goa by Nandkumar M Kamat (2011). Traditional knowledge of wild edible fungi of Kohima district of Nagaland, India has been studied by Tanti et al., (2011) and they have identified 13 fleshy fungi species under 9 genera and 6 families.

Natarajan (1979) described a new species *T. heimii* Natarajan from India. Present paper is effort to document wild edible mushrooms of Jharkhand.

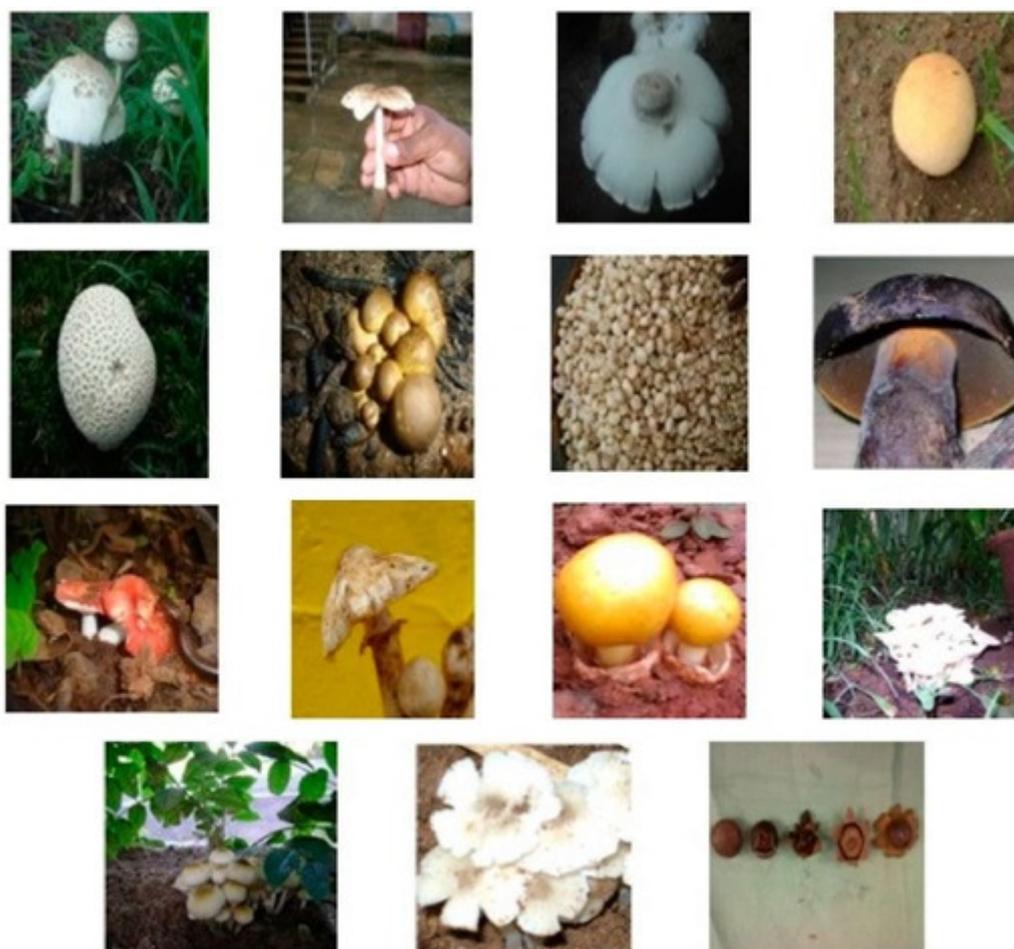
Materials and Method

With the help of villagers who were familiar with the wild edible mushrooms and their places of occurrences, many field trips were made to Khunti forest during the rainy season and wild edible mushrooms were collected. The morphological characteristics, habitats, weeks and months of their occurrence, temperature, local names etc of these mushrooms were studied. Their digital photographs were also taken. These mushrooms were brought to lab for further studies. The inquiries were also made with the villagers who were selling wild edible mushrooms in Khunti market and near the Kachhari in the Ranchi city. With the help of taxonomic keys and mushroom guides their scientific name and taxonomic position were studied using the data collected.

Scientific name/ common name	Classification		
		Introductory Mycology by C.J. Alexopoulos, C. W.Mims, M. Blackwell	A Guide to the Mushrooms by Louis C. C. Krieger
<i>Macrolepiota procera</i> (Scop.) Singer	<i>Phylum: Basidiomycota</i> <i>Class: Hymenomyces</i> <i>Order: Agaricales</i> <i>Family: Agaricaceae</i> <i>Genus: Macrolepiota procera</i>	<i>Class: Basidiomycetes</i> <i>Order: Agaricales</i> (<i>Hymenomyces</i>) <i>Family: Agaricaceae</i> <i>Genus: Macrolepiota procera syn.</i>	<i>Kingdom : Fungi</i> <i>Division: Basidiomycota</i> <i>Subclass:</i> <i>Homobasidiomycetidae</i> <i>Order: Agaricales</i> <i>Family: Lepiotaceae</i> <i>Genus: Macrolepiota</i>
<i>Termitomyces clypeatus</i> R. Heim <i>T. albuminosa</i> (Berk.) R. <i>T. heimii</i> K. Natarajan (Chirko, Bada khukhri, Patiyari)	<i>Phylum: Basidiomycota</i> <i>Class: Hymenomyces</i> <i>Order: Agaricales</i> <i>Family: Tricholomataceae</i> <i>Genus: Termitomyces</i>		<i>Division: asidiomycota</i> <i>Class: Basidiomyces</i> <i>Sub class:</i> <i>Agaricomycetidae</i> <i>Order: Agaricales</i> <i>Family: Lyophylaceae</i> <i>Genus: Termitomyces</i>
<i>Lycoperdon</i> (<i>Tumba Putu</i>) <i>Calvatia</i>	<i>Phylum: Basidiomycota</i> <i>Class: Gasteromyces</i> <i>Order: Lycoperdales</i> <i>Family: Lycoperdaceae</i>	<i>Class: asidiomycetes</i> <i>Order: Lycoperdales</i> (<i>Gasteromyces</i>) <i>Family: Lycoperdaceae</i> <i>Sub-</i> <i>Family: Lycoperdae</i> <i>Genus: Lycoperdon,</i> <i>Calvatia</i>	<i>Kingdom: Fungi</i> <i>Division: Basidiomycota</i> <i>Order: Agaricales</i> <i>Family: Lycoperdaceae</i> <i>Genus: Lycoperdon</i> <i>Genus: Lycoperdon,</i> <i>Calvatia</i>
<i>Geastrum</i> (<i>Rugra, Putu</i>)	<i>Phylum: Basidiomycota</i> <i>Class: Gasteromyces</i>	<i>Class: Basidiomycetes</i>	<i>Kingdom: Fungi</i> <i>Phylum: Basidiomycota</i> <i>Class: Agaricomycetes</i>

	<i>Order: Lycoperdales</i> <i>Family: Geastraceae</i> <i>Genus: Geastrum</i>	<i>Order: Lycoperdales</i> <i>(Gasteromycetes)</i> <i>(Stomach fungi)</i> <i>Family: Lycoperdaceae</i> <i>Sub-family: Geastrae</i> <i>Genus: Geaster</i>	<i>Subclass: Phalloctidae</i> <i>Order: Geastrales</i> <i>Family: Geastraceae</i> <i>Genus: Geastrum</i>
<i>Boletus edulis</i> <i>(Jamun khukri)</i>	<i>Phylum: Basidiomycota</i> <i>Class: Hymenomyces</i> <i>Order: Agaricales</i> <i>Family: Boletaceae</i> <i>Genus: Boletus edulis</i>	<i>Kingdom: Fungi</i> <i>Division: Basidiomycota</i> <i>Class: Agaricomycetes</i> <i>Order: Boletales</i> <i>Family: Boletaceae</i> <i>Genus: Boletus</i> <i>Species: B. edulis Bull.</i>	<i>Class: Basidiomycetes</i> <i>Order: Agaricales</i> <i>Family: Polyporaceae</i> <i>Genus: Boletus</i>

Photographs



a. *Macrolepiota procera* (Scop.) Singer b. *Termitomyces clypeatus* R. Heim c. *T. albuminosa* (Berk.) R. d. *Lycoperdon* e. *Calvatia* f. *Geastrum* g. *Geastrum* h. *Boletus edulis* Bull i. *Russula sanguinea* (Bull.) Fr. j. *T. heimii* K. Natarajan k. *Amanita* l. *Clitocybe* m. *Armillaria mellea* (Vahl) P. Kumm n. *T. microcarpus* (Var) o. Stages in the breaking of outer peridium of *Geastrum*.

***Mycolepiota procera* (Scop.)**

It has a tall stipe (up to 25 cm) and a large cap with rusty brown coloured umbo. It is coated with pink granules, spore print is white. June is the best month for this mushroom. Rain always precedes the emergence of this mushroom. It tastes good. Its protein content is 32% on dry weight basis (Gogoi, Robin and Rathaiah, Yella and Rahman Borah, Tasvina 2006). Nutritional value of *Macrolepiota* is moisture 91.0%, ash 1.09%, protein 3.30%, fat 0.18%, carbohydrate 0.86% (Dutta, Ram 2007). Pulses have 16-24% proteins and they are not as digestible.

***Termitomyces clypeatus* R. Heim**

The distinguishing character of this mushroom is the prominent, cone-like pointed, dark colour projection at the centre of the cap. It is found between June and August. It grows from termite mounds. This is one of the most delicious mushrooms found in nature (Gogoi, Robin and Rathaiah, Yella and Rahman Borah, Tasvina 2006). Its nutritional value is, 'moisture is 91.3%, ash 0.81%, protein 4.1%, fat 0.22% and carbohydrate 1.13% (Dutta, Ram 2007).' The other mushroom which is poisonous looks similar to it but its colour is dark.

***T. albuminosa* (Berk.) R**

In Jharkhand this mushroom is known as *badakhukri* (big mushroom) and most abundantly found. It comes up exclusively from termite's nests (Gogoi, Robin and Rathaiah, Yella and Rahman Borah, Tasvina 2006). A patch of veil is present at top of the pileus. The skin of the cap peels off. The stalk is about 25 cm long and swollen near the attachment with the cap. The spore print is deep pink. It is mainly found in the month of September. According to the Agro-forestry Research Programme, Plandu's booklet it is also known as *Mycolpiota*. It is a very delicious mushroom. There is another species of *Termitomyces* (photo no.k) which looks similar to *Termitomyces albuminosa* but little smaller in size, appears at least one month before *Termitomyces albuminosa* appears which has annulus and is most abundantly found mushroom. The Scientific name of this mushroom is *Termitomyces heimii*, it is locally known as *patiyari*.

Lycoperdon and Calvatia

The order Lycoperdales has been divided into four or five families, like, Lycoperdaceae, Geastraceae (Dring, 1973; Miller and Miller, 1988) etc. *Lycoperdon* is a genus of puffball mushrooms. Fruit body spherical or pear shaped with round top and tapering stem, 1-6 cm wide, 3-7 cm high. Most of the time they grow from dead wood and if they grow through the ground they usually indicate that wood is buried. It grows in the beginning of the rainy

season. In ancient times, the spore mass of ripe puffballs were used to stop bleeding which was probably due to the good virtue of its powdery nature (Tripathi, D.P. 2005). *Lycoperdon pyriforme*, *L. gemmatum* and *L. umbrinum* are common species. Lycoperdons grow fast and decay very soon. There seems to be no pore at the centre of the fruiting body for spore dispersal, fruiting body decays and the spores are released.

Geastrum

It is commonly known as earthstars. The name comes from, 'geo' meaning earth and 'aster' meaning star. The name refers to the behaviour of the outer peridium. At maturity, the outer layer of the fruiting body splits into segments which turn outward creating a star-like pattern on the ground. The inner peridium is a spore sack. In some species, the outer peridium splits from a middle layer, causing the spore sack to arch off the ground. If the outer peridium opens when wet and closes when dry, it is described as hygroscopic. It is found June to July. It is found abundantly in the *Sal* forest (*Shorea robusta*). In Jharkhand local people call it *rugra* or *putu*. Two varieties of *Geastrum* are mainly found in Jharkhand.

***Boletus edulis* Bull**

The name is derived from the Latin term *Boletus* 'mushroom' from the Ancient Greek ultimately from *bolos* 'lump' or 'clod'. The genus *Boletus* contains many members which are edible and tasty. This is a symbiotic Fungus. The edible *Boletus* of Jharkhand is always found in association with *Syzygium cuminii*, therefore it is called *Jamun Khukhri*. In size this is the biggest mushroom of Jharkhand.

Beside above described mushrooms *Amanita*, *Clitocybe*, *Russula sanguinea* (Bull.) Fr., (it is found in red, white and yellow colour, Millipede is found most often times with this mushroom as shown in the photo no. i. It is called *patra* in local language because it is found abundantly with decaying leaves) and *Armillaria mellea* (Vahl) P. Kumm also are found in Jharkhand.

Discussion and Conclusion

Though mushrooms are rich protein food, people are hesitant to consume them especially when it is collected from the field. Local people have made known the edibility of these wild mushrooms to the public. Thus these wild mushrooms need to be tapped as food source by domesticating them; otherwise they will remain hidden in the forest and will become extinct.

References

- [1] Alexopoulos, C.J., C.W Mims, M. Blackwell. *Introductory Mycology*. New York: John Wiley & Sons, Inc, 1996.
- [2] Dutta, Ram. *Advances in Mushroom Science*. Delhi: Satish Serial Publishing House, 2007.
- [3] Giri and P. Rana (2008). ETHNOMYCOLOGICAL KNOWLEDGE AND NUTRITIONAL ANALYSIS OF SOME WILD EDIBLE MUSHROOMS OF SAGARMATHA NATIONAL PARK (SNP), NEPAL, *J. Nat. Hist. Mus.* Vol. 23, 2008, 65-67.
- [4] Gogoi, Robin et al. *Mushroom Cultivation Technology*. Jodhpur: Scientific Publishers, 2006.
- [5] Krieger, Louis C. C. *A guide to the Mushrooms: Their Botanical Position, Mode of Growth, Physiology, Habitat, Ecology and Economic importance*. Delhi: Asiatic Publishing House, 2007.
- [6] Nandkumar M Kamat (2011). *The Neglected Mushrooms of Goa*, Published on: Panorama July 16, 2011 - 23:22
- [7] Natarajan NK. (1979). South Indian Agaricales v: *Termitomyces heimii*. *Mycologia*, 71, 853-855. <http://dx.doi.org/10.2307/3759201>.
- [8] Singh, Reeti & Singh, UC. *Modern Mushroom Cultivation*. Jodhpur: Updesh Purohit for Agrobios, 2005.
- [9] Tanti Bhaben, Gurung Lisha & Sarma Gajen Chandra, (2011). Wild edible fungal resources used by ethnic tribes of Nagaland, India, *Indian Journal of Traditional Knowledge*, Vol. 10 (3), July 2011, pp. 512-515.