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A CASE STUDY

A wild edible mushroom *Termitomyces albuminosus* Berk and its importance among tribal people of Sivasagar district of Assam

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SUMMARY

Sivasagar district is a historically important place of Assam and a transitional area between Assam-Nagaland and Assam-Arunachal Pradesh. Tea and rice are the major cultivated crop of the district. More than 26 different tribal groups such as Missings and others like Tai Ahoms, Tai khamyang, Tai phake, Sonowal, Kacharis, Moran, Motak, Tea tribes of different communities of the study site live in different areas and depend upon the wild sources. The district is rich in biodervisity including the fungal diversity. This paper deals with the study of a specific mushroom '*Termitomyces albuminosus'* belonging to the class Basidiomycetes of fungi, which is edible and is taken as food by different tribal people of Sivasagar district traditionally. It is a long stemmed mushroom having basidiocarp or fruiting body of somewhat white to pale brown in colour and grows generally on bamboo litters where termite nests are there and also on soil. The traditional uses of this mushroom still serve the need of more than 60 per cent of the different tribes of Assam. The present paper deals with the result of intensive field surveys conducted between 2013-2014. It was observed that it gives economic support to the rural people but different anthropogenic factors greatly influence on the natural growth of this mushroom.

Key Words : Ethnobotany, Mushroom, Tribal people, *Termitomyces albuminosus*

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The North East India is endowed with rich biodiversity including fungi. The historically famous Sivasagar district of Assam being a transitional zone of Arunachal Pradesh and Nagaland has great variety of flora with number of fungal diversity. The district comprises of three sub divisions *viz.*, Sivasagar, Nazira and Charaideo and seven reserve forests: Abhoypur, Diroi, Sapekhati, Dilli, Sola, Panidihing and Galekey.

Basidiomycetes is regarded as the most advanced group of fungi and it includes both harmful as well as useful fungi. Most of them attack food and ornamental plants as well as forest trees. Although the mushrooms are used as delicious food throughout the world but some

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of them are very much poisonous and so one should be very careful while collecting the mushroom.

Several workers have studied the fungi in greater detail contributing their findings in various aspects eg. (Berkeley, 1844-56; Bilgrami and Rizwi, 1979; Puri, 1956; Roy and De, 1996; Sankaran, 1994; Singh, 1987; Sharma, 2000). From the north eastern region, different workers including Bisht and Harsh (2001) and Hazarika and Thakuria (2004) studied the fungi particularly from the north east region.

In the present study, an attempt has been made to study the wild edible mushroom *Termitomyces albuminosus* used by different tribes of Sivasagar district and the future prospects of this mushroom scientifically and commercially.

Objectives of the study:

–Survey, collection and identification of this wild edible mushroom.

–Preparation of inventory of wild edible mushrooms present in the study area and their host.

–Ethno- botanical knowledge on mushroom, *Termitomyces albuminosus* among ethnic people of the study area.

Survey and collection of fruiting bodies of this basidiomycetous fungus were carried out in the different parts of Sivasagar district of Assam. Collection of fruiting bodies was made during June-September of 2013-2014. The collected specimens were preserved as dry for detailed microscopic studies and for long term storage they were kept in 4 per cent formaldehyde solution. Identification of species was done on the basis of morphological and anatomical features using various monographs (Roy and De, 1996; Sharma, 2000). During the study several mushrooms were collected which belonged to both poisonous and edible groups among which *Termitomyces albuminosus* was found to be the most commonly consumed species by most of the tribal people of the study site.

Termitomyces albuminosus Berk. is an attractive wild edible mushroom which grows on generally in bamboo litters and in the soil. This well known symbiotic wild mushroom occurred on the surface of termite nests which is also called as chicken mushroom or termite mushroom having long stipe. The termites cultivate this fungus in nests as their food. During the study it was observed in bamboo litters where termite nests were present in the study area and also in the soil inside the kitchen. The cap of the mushroom is 5-11 cm, flat, acutely umbonate, pale brown to brown, glabrous, cracked, striate. At maturity the cap become enlarged, opened and appear as cracked on upper part of the cap.

Termitomyces albuminosus **in bamboo litter**

Different stages of *Termitomyces albuminosus*

Termitomyces albuminosus **in kitchen floor**

Gills structure

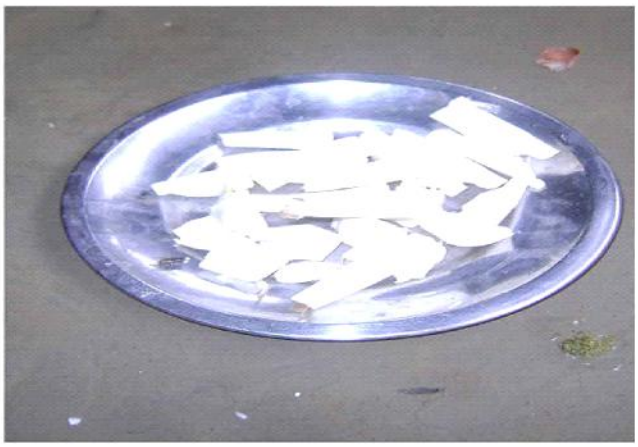
The gills are free, crowded of several lengths, white to pale brown. The stem is central, 7-16 × 1.2-1.5 cm long, solid, white, glabrous, base enlarged with black brown rhizomorphs. The stem is soft and cracky and skin layer of the stem can be removed easily. The underground part of the fungus is long. The spores measure 6-10 × 4-µm, elliptical, hyaline, smooth, cystidia broadly clavate, hyphae with clamps. This edible mushroom is taken as delicious food by most of the ethnic people of the area.

Collection method of the fungus :

Generally people collect wild edible mushroom that are available in an around their locality. According to them, the fungi that they take as food should be collected at that period of the year when lightning and thunder frequently occur *i.e.* at the onset of the monsoons. The mushrooms, those germinate just after thundering were only collected for vegetables. Normally grown mushrooms are never collected because those are considered as poisonous. This belief is accepted by the tribal people generation after generation.

Preparation of mushroom as food :

The collected mushrooms are at first washed with clean water and the skins were removed by hand and some tribes do not, then the mushrooms were cut in to small pieces. The mushrooms are cooked with pieces of brinjal, if the colour of the prepared vegetable does not turn black it is considered to be safe for consumption. On the contrary if the cut pieces of brinjal change the colour the mushroom is discarded. During the study it was observed that mushroom prepared as vegetable with brinjal was yellowish in colour and very nice flavour and taste. Generally the people of the area take this mushroom during the morning time and not with alcohol.



Preparation of the food from the fungus

Conclusion :

The mushrooms are a valuable source of nourichment being rich in high quality protein and amino acids. Besides, they contain folic acid, vitamin B complex, vitamin-C and several minerals like calcium, phosphorus, potassium, iron and copper. Because of high protein and mineral content they are highly priced source of nutrition in the human diet. Due to meat like texture and delicious taste they are favourite delicacy among the people.

Termitomyces albuminosus contains calcium, phosphorus, iron, protein and other nutrients. It has high phosphorus contents which can be used as a source of phosphorus supplement in human food. Often eat chiken FIR can improve immunity against cancerous cell, lower blood sugar etc., it functions of nourishing, moisturizing, dryness and also suitable for women. Enzymes as peroxidisase and laccase have been isolated from *Termitomyces albuminosus.*

In the rural area of North East India where cultivated mushroom are generally not available, people go into the deep forest in search of these edible fungi. While searching for edible mushrooms these ethnic people consider some common factors which are non scientific and based only on their traditional belief and knowledge. But consumption of these mushrooms without any scientific knowledge regarding their edibility would be deadly which happens every year among the people of north east India and numbers of people die by consuming poisonous mushrooms.

It will be both commercially and economically become beneficial if measures are taken to isolate this mushroom scientifically and cultivate artificially and hope 50 per cent of rural people can meet their needs and grow small scale market with this mushroom cultivation.

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