

RESEARCH ARTICLE

A CHECK LIST OF MACROFUNGAL DIVERSITY IN PILLUR VALLEY, COIMBATORE DISTRICT TAMIL NADU, INDIA

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ABSTRACT

The present study carried out in exploring the macrofungal diversity in Pillur Valley, Coimbatore district, Western Ghats of Tamilnadu, India. The study was assessed from lower to higher altitude ranges in the different vegetation during the June, 2016 to August, 2017. The results of the survey revealed that the totally 20 species belonging to 11 families, 17 genera and 3 different orders were identified and in addition with 65 % Edible, 35 % Non edible mushrooms were identified. The documented mushroom species are *Agaricus campestris*, *Ganoderma lucidum*, *Coprinus comatus*, *Marasimus sp*, *Hygrophorous sp* and *Termitomycets microcarpus*. In conclusion, these wild species of mushrooms had rich amount nutritional properties and dietary fibres which is used as supplement for malnutrition deficiency especially Vitamin D and it is suggested for cultivation practices for large scale production and commercialization.

Keywords: Wild mushrooms, *Hygrophorous sp*, *Termitomycets* and Western Ghats.

1. INTRODUCTION

Mushrooms can be found in forests worldwide and have long been exploited as resources in developed economies because of their important agro-industrial, medicinal and commercial uses. The Indian sub-continent is blessed with favorable agro climatic conditions that are suitable to a varied range of fungal species. Fungi are among the most important organisms in the world, to the extent that their vital roles in ecosystem functions together with their influence on humans and human-related activities. macrofungi are fleshy fruiting body, which naturally grows all types of soil, grassy ground, rotten wood, leaf litter and decaying organic matter, they ability to grow in different seasons, yet all exhibit enhanced growth during the rainy season (1). It has represented by 41,000 species across the globe; however, only 2% have been reported from India, despite the fact that one-third of the total global fungal diversity exists in the tropical Indian region (2).

Wild Edible and medicinal mushrooms, whose history can be traced back to 4000 years, are treasured as a health food because of their unique edible and medicinal values (3). In recent years, increasing attention has been given to wild edible as well as medicinal purposes, because of their special nutritional and therapeutic attributes. The United Nations Food and Agriculture Organization proposed that a rational diet should be "meat, vegetable, and mushroom every meal".

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from India, despite the fact that one-third of the total global fungal diversity exists in the tropical Indian region (2), Macrofungi are important economically due to their importance in food, medicine, bio-control, chemical, biological and other industries (4). Although the macrofungi are an integral part of a given ecosystem, their diversity and types are poorly studied, with a particular knowledge gap in the tropical regions including India (5).

2. MATERIALS AND METHODS

2.1. Study area



Fig. 1. Study area of Pillur valley.

The present study area, Pillur valley is confined to a major range in the Western Ghats of Nilgiri Biosphere Reserve, Coimbatore District, Tamil Nadu, India. The area of investigation approximately lies 110 - 18' latitude and 760 - 53" longitude. The altitude ranges from 1100 to 1428 m above mean sea level. The annual rain fall ranges from 1000 to 1400 mm. Pillur is continuous with Kerala forest in

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the west and coonor slops in the Nilgiri massif in the north. The forest area in the unique they exhibit a wide variety of floral diversity in different altitudinal and geographical zones. The major vegetation of Pillur valley is broadly classified in to scrub jungle, and deciduous forest (Fig.1).

2.2. Sample collection

During frequent field surveys from June, 2016 to August, 2017, mushroom species were collected. For collection of mushrooms various

equipment, such as hunting knife, scissor, digging tools and zipped polythene packets for preserving the collected mushrooms were used. During survey the morphological & ecological characters of observed specimens were properly noted. Photographs of specimen from different angles were also taken for future studies. Collected specimens were then preserved in a mixture of liquid preservatives using rectified alcohol, formalin, and distilled water at a ratio of 25:5:70.



a) *Agaricus silvicola* b) *A. xanthodermus* c) *Amanita fulva* d) *Ganoderma lucidum*
e) *Schizophyllum commune* f) *Termitomycetes microcarpus*

Fig. 2. Collection of mushroom species in Pillur valley Western Ghats, Coimbatore district.

2.3. Identification

The identification of edible mushrooms were based on the morphological characters of the fruiting bodies following the guidelines mentioned in the websites, viz., www.mushromexpert.com, www.rogersmushrooms.com, <http://lifehacker.com>, <http://www.wisegeek.com>, <http://www.soppognyttevekster.no>, <http://www.mnn.com>, Manual of Common Edible Mushrooms and scholarly article The collections of wild edible mushrooms have been identified by integrating their macroscopic and microscopic characterization by following method. Specimens were identified to their respective families, genera and species by consulting the available help of expert Valuable literature. Some of the mushroom samples were sent to Agharkar Research Institute Pune for the identification.

2.4. Preservation/drying of material

The specimens were preserved dry. The collections were dried in folding portable wooden driers, specifically designed for the purpose. The dried collections were wrapped in polythene bags and properly sealed. These bags were kept systematically in card board boxes which were

stored in damp proof conditions. 1:4 P-Dichlorobenzene and Naphthalene balls were used as insect repellants. Specimens to be used for raising culture and systematic studies were usually sun dried or dried gradually at 25-30°C in the drier.

3. RESULTS AND DISCUSSION

Wild edible mushrooms are one of the higher valued non-timber forest products (6,7) China and most Asian countries. In the present result revealed that totally 20 wild mushroom species, belonging to 11 families, 17 genera were collected at Pillur valley, Western Ghats of Coimbatore district, Tamilnadu, India. The total mycotain this area are dominated by the family Agaricaceae (6 species), Polyporaceae (3 species), Lyophyllaceae (2 species) and other species belonged to the families Bolbitaceae, Ganodermataceae, Hygrophoraceae, Marasmiaceae, Mycenaceae, Plurotaceae, Russulaceae, Schizophyllaceae and Tricholomataceae each single species (Fig. 2 and Fig. 3). Similarly, Andrew *et al.* (1) reported that diversity and distribution of macrofungi in the Mount Cameroon totally 177 macrofungal species belonging to 83 genera and 38 families were recorded.

Table 1. Collection and identification of macrofungal species in Pillur valley Western Ghats of Coimbatore District.

S.No.	Name of the species	Order	Family	Habit	Edibility
1	<i>A. campestris</i>	Agaricales	Agaricaceae	Soil	Edible
2	<i>Agaricus silvicola</i>	Agaricales	Agaricaceae	Soil	Edible
3	<i>Agaricus xanthodermus</i>	Agaricales	Agaricaceae	Soil	Non-edible
4	<i>Coprinus sp</i>	Agaricales	Agaricaceae	Soil	Edible
5	<i>Collybia sp</i>	Agaricales	Tricholomataceae	Soil	Non-edible
6	<i>Ganoderma lucidum</i>	Polyporales	Ganodermataceae	Decaying wood	Edible
7	<i>Hygrophorous sp</i>	Agaricales	Hygrophoraceae	Soil	Edible
8	<i>Lentinus sp</i>	Polyporales	Polyporaceae	Decaying wood	Edible
9	<i>Lycoperdon perlatum</i>	Agaricales	Agaricaceae	Soil	Non-edible
10	<i>Macrolepiota procera</i>	Agaricales	Agaricaceae	Soil	Edible
11	<i>Mycena sp</i>	Agaricales	Mycenaceae	Soil	Non-edible
12	<i>Marasmeus sp</i>	Agaricales	Marasmiaceae	Soil	Edible
13	<i>Paneolus accuminatus</i>	Agaricales	Bolbitaceae	Soil	Non-edible
14	<i>Polyporus sp</i>	Polyporales	Polyporaceae	Decaying wood	Edible
15	<i>Pleurotus platypus</i>	Polyporales	Plurotaceae	Decaying wood	Edible
16	<i>Russula sp</i>	Russulales	Russulaceae	Symbiotic	Edible
17	<i>Schizophyllum commune</i>	Agaricales	Schizophyllaceae	Decaying wood	Edible
18	<i>Termitomyces microcarpus</i>	Agaricales	Lyophyllaceae	Soil	Edible
19	<i>Termitomyces sp</i>	Agaricales	Lyophyllaceae	Soil	Edible
20	<i>Trametes vesicolor</i>	Polyporales	Polyporaceae	Decaying wood	Edible

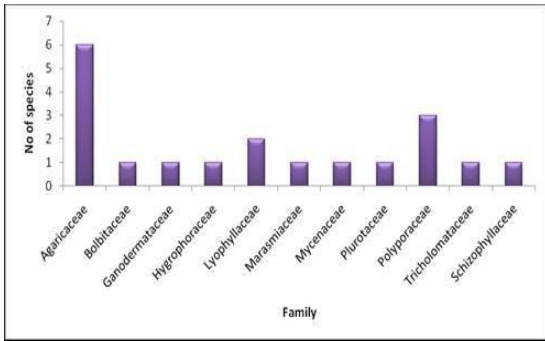


Fig. 3. Dominant families of mushroom species in pillur valley.

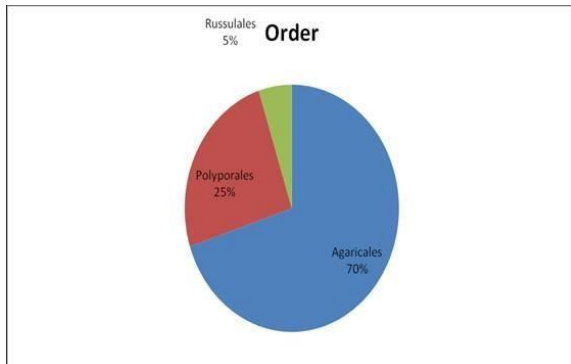


Fig. 4. Distribution of mushrooms in different order.

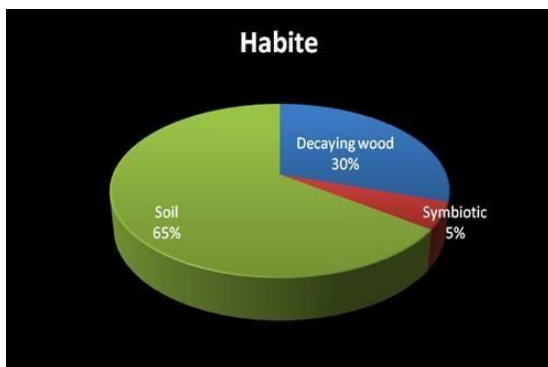


Fig. 5. Different habits of mushroom species in Pillur valley of western Ghats.

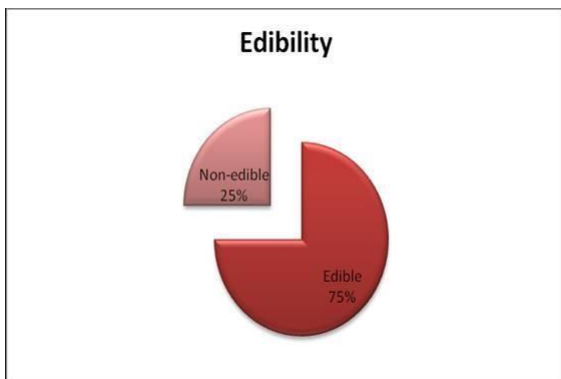


Fig. 6. Mushroom species and their edibility status.

Angelini *et al.* (8) also reported the diversity and ecological distribution of Macrofungi totally 305 species belonging to 61 families and 121 genera were identified and documented in Italy. The macrofungi diversity in Patharia Forest of Sagar at Madhya Pradesh was reported by Vyas *et al.* (9). Earlier, Manjula (10) has been reported that the 300 agarics species belonging to 59 genera and 15 families of Agaricales were observed in the North West Himalayas. The diversity of agarics (Gilled mushrooms) was identified and documented in different region of Maharashtra, India (11). Singer (12) has been reported 1320 species belonging to 129 genera under Agaricales were documented. The order Agaricales (70%) was most dominant followed by Polyporales (25%) and Russulales (5%) in addition with soil was found as major habitat for 65 % of the macrofungi while 30% species Decaying wood and 5 % symbiotic associated in tree species are represented in (Fig. 4 and Fig. 5). Further the collected wild mushrooms 75 % are edible along with 25 % non-edible (Fig.6). The detailed information about the mushroom species different order, family habit and edibility status are presented in Table-1. The collected wild edible mushroom species were utilized as supplementary food by local tribal's especially in rainy seasons Greeshma *et al.* (13) observed that the seven species and ten genera of macrofungi in lateritic scrub jungles of Southern Western Ghats. In India, different kinds of tribes are lived in different region. They were utilized not only medicinal plants and also traditionally utilized in wild mushroom. More ethnomycological studies were conducted in different regions of India (14,15). In recently, Santhoshkumar *et al.* (16) has been studied sirumalai hills totally 38 macrofungi species, belonging to 20 families and 29 genera were recorded. The present finding clearly shows that the Pillur valley is rich store house of macrofungi.

4. CONCLUSION

From this result, it concluded that the wild habitat mushrooms are rich source of vitamins, minerals and amino acids for fulfill the nutrition deficiency in human food dietary. The development of the cultivation method and practices to improve the livelihood status of the rural peoples and also conservation of wild resources.

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