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# Cultural characteristics of *Phaeomarasmius erinaceus* (Fr.) Scherff. ex Romagn.

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**Abstract**
In this study, the cultural features that morphological and anatomical characteristics of *Phaeomarasmius erinaceus* (Fr.) Scherff. ex Romagn. which in the family Basidiomycota divisio, Inocybaceae family were examined. The mushrooms are collected at Kırıkkale-Sulakyurt and Balışeyh district in 2011 and brought to laboratory. The samples were then dried under aseptic conditions. Tissue pieces were taken from the dry mushrooms and were inoculated into the Potato Dextrose Agar (PDA) center and incubated in the dark at 25°C. Mycelium completed colonization in 12 d. In the study, *Phaeomarasmius erinaceus* spores and mycelia were examined by Zeiss light microscope and Scanning electron microscope (SEM) at Kırıkkale University Electron Microscope Laboratory. At the beginning of inoculation, mycelium was mixed and air hyphae observed. Very light yellow pigmentation was determined.

**Key words:** *Phaeomarasmius erinaceus*, Morphological features, Anatomical features, Mycelium development.

## 1. Introduction

Agaricales, *Phaeomarasmius erinaceus*, which is in the family of Inocybaceae, is not a very common species. It is common in Europe (Buczacki, 1992) and especially in British (Watling, 1992). For the first time in our country, it was collected from Bitlis, Tatvan, Yelkenli Village by Kaya on May 31, 1998 (Kaya, 2000) and given as the first record for Turkey. In addition, in our country, Adıyaman Gerger-Sutepe (Kaya, 2009); Şanlıurfa-Siverek (Kaya, 2015) has also been identified.

In this study, the cultural characteristics, morphological and anatomical characteristics of *Phaeomarasmius erinaceus* (Fr.) Scherff. ex Romagn., which are found in Inocybaceae family (Anonymus, 2017), have been examined.

## 2. Material and Methods

### *2.1. Organism*

In this study, *Phaeomarasmius erinaceus* fructifications were used in the Inocybaceae family, which is naturally distributed in our country.

### *2.2. Study area*

*Phaeomarasmius erinaceus* was collected at 2011 at Kırıkkale-Sulakyurt and Balişeyh district (Figure 1) and were preserved in Molecular Systematic, Mycology and Conservation Biology Laboratory of Kırıkkale University Science and Literature Faculty as PG-147 and PG-150.

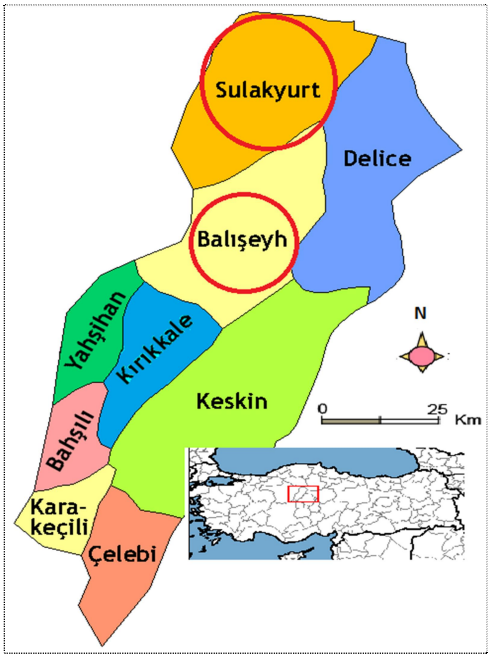


**Figure 1.** Study area.

### *2.3. Morphological studies*

Mushrooms collected in the field were brought to the laboratory and dried under aseptic conditions. Tissue fragments taken from dry mushrooms was inoculated in to the Potato Dextrose Agar (PDA) medium center and incubated for 12 d in the dark at 25 °C.

### *2.4. Anatomical studies*

#### *2.4.1. Light microscope studies*

In our study, Light Microscopy studies were carried out with the Zeiss Imager A101 microscope, which is located in the Department of Biology of Science and Literature Faculty of Kırıkkale University.

#### *2.4.2. Electron microscopy (SEM) studies*

The samples were passed through 50%, 60%, 70%, 80%, 90%, 95%, 99% absolute ethyl alcohol series for 10 minutes, after dehydration, the samples were placed in petri dishes at 66 ºC, the material was left to dry for 10 nights. Then the piece from the dry samples was then covered with carbon and covered with gold for 10 minutes with a Polaron Sc 500 device (Kaaric et al., 1983). It has been identified with Scanning Electron Microscope (JEOL) in Kırıkkale University Electron Microscope Laboratory.

## 3. Results and Discussion

### *3.1. Morphological studies*

Morphological studies include examining the mycelium developed in petri dishes. In our work, studies carried out in Petri dishes; the structure of the developed mycelium was identified as mixed. Very light yellow pigmentation was seen. Mycelium in 90 mm diameter Petri dishes; 2 d after inoculation began to develop. The mycelia developed fast but weak. Then air hyphae were observed. The mycelium colonization was completed at 12 d (Figure 2).

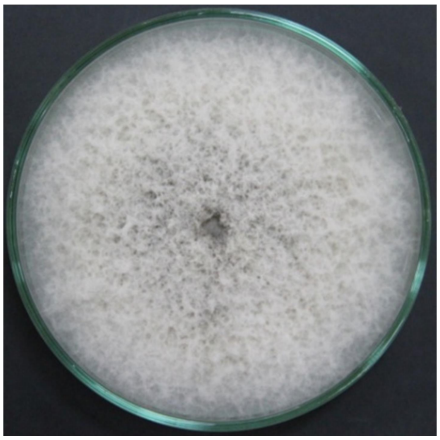

**Figure 2.** *Phaeomarasmius erinaceus* mycelium colonization on agar medium.

The development of the mycelium incubated in Potato Dextrose Agar medium, was measured daily during the 12 d incubation period. In the first two days, the development were not observed and the third day began to develop. Mycelium development has grown mixed. On the third day of development, mycelium developed air hyphae from the center. The mycelium development graphic for the measurements is given in Figure 3.

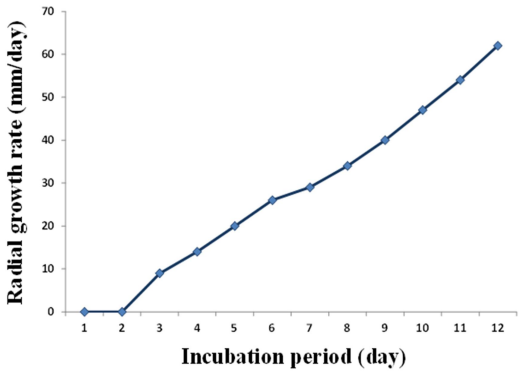


**Figure 3.** The curve of mycelium development.

### *3.2. Anatomical studies*

#### *3.2.1. Light microscope studies*

In our study, the dimensions of the spores were measured as 7-10x5-7 µm. Spores shape is oval and flat. Spores are given in Figure 4.

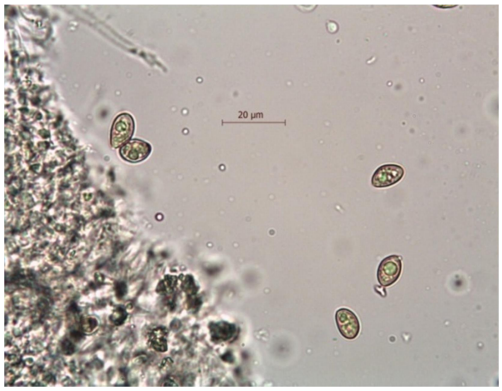


**Figure 4.** *Phaeomarasmius erinaceus* spores (X100).

Kaya (2000), was determined as spores 8.5-11x6-8.5 µm, ellipsoid to lemon-shaped, smooth, germ pore absent, thin-walled. Gibson (2011) in his study, was determined spores as 7.2-10.8x5.0-6.4 µm, oval to almost rhomboid in face view, oval to obscurely almond-shaped in side view, smooth, no germ pore. Mycelium structures were examined by light microscopy (Figure 5) and growth points were determined.

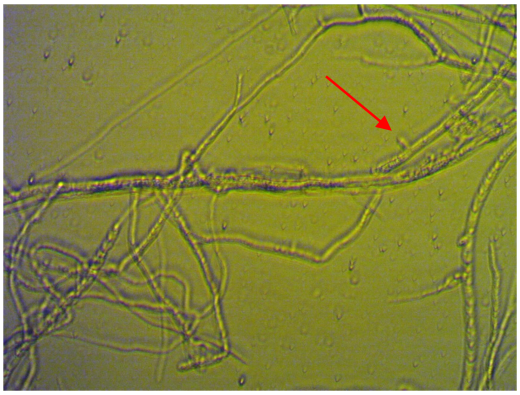

**Figure 5.** *Phaeomarasmius erinaceus* mycelium structure (red arrow= growth point).

### *3.2.2. Electron microscopy (SEM) studies*

*Phaeomarasmius erinaceus* of spore was measured 4.5-5.5 x 7.5-8 µm as round and smooth (Figure 6).

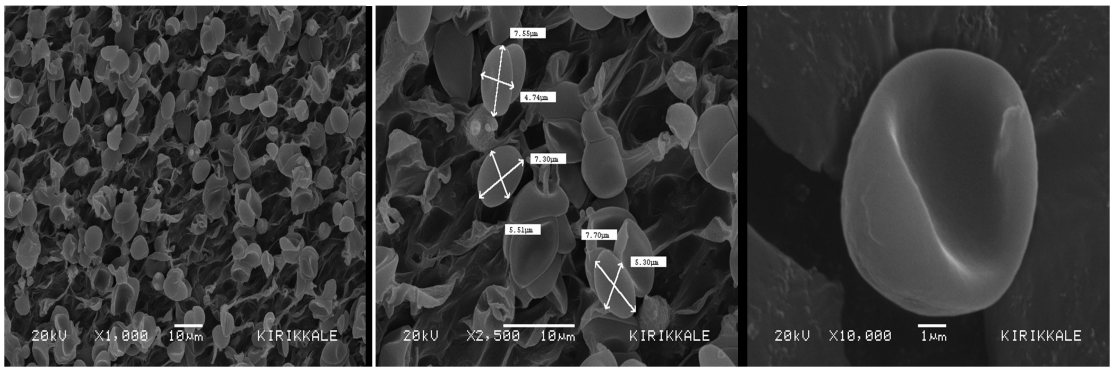


**Figure 6.** *Phaeomarasmius erinaceus* spores (SEM).

Mycelium structures were examined by electron microscopy (Figure 7). Mycelium widths (10000x) were measured as 556 nm and 1.01 µm. Growth points were identified in mycelium.

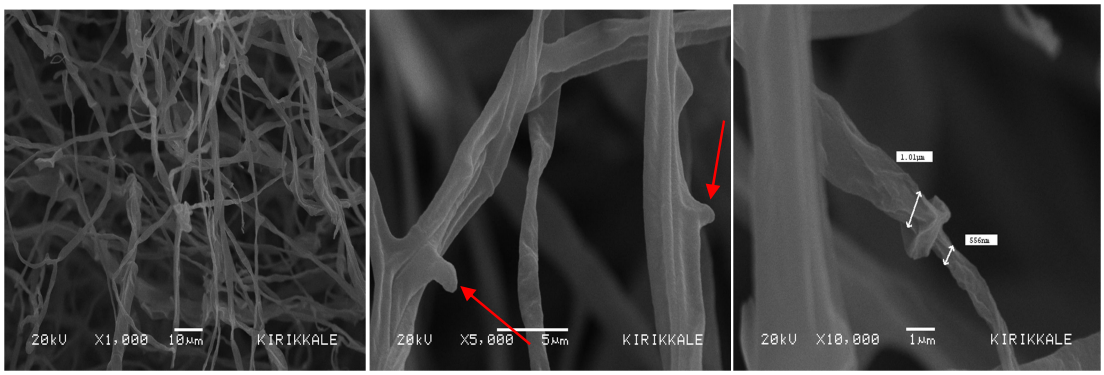


**Figure 7.** *Phaeomarasmius erinaceus* mycelium (SEM) (red arrow= growth point).

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