

Screening of Morphological and Anatomical Features of *Mitrophora semilibera* (DC.) Lev. from Turkey

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Abstract

In this study, the morphological and anatomical features of *Mitrophora semilibera* (DC.) Lev. spores and mycelium were examined. In our country; they show a wide distribution in temperate periods. Cap is reach diameters up to 2-5 cm, brownish, conical and irregular brownish ribs. Stalk is whitish, about 9-10 cm long and hollow. The mushroom samples were collected from Kırıkkale region at Turkey and were brought to the laboratory. Tissue fragments were taken and they were cultured on the potato dextrose agar (PDA). They were incubated in the dark for 10 days, in 24°C. In the during incubation period, the development of mycelium were measured on a daily and the radial growth rates were taken as criteria. During the development, the mycelium has cottony to the agar medium surface and they were so quickly developed. There were air hyphae. No pigmentation was observed at the mycelium. The spores and mycelium of *M. semilibera* were investigated with help of both light microscopy and scanning electron microscopy (SEM). The spores of *M. semilibera* are smooth, with dimensions of 22-28 x 11-16 µm. Generally, they shaped like elliptical.

Key Words: *Mitrophora semilibera*, Turkey mycobiota, Kırıkkale macrofungus, Mycelium development

INTRODUCTION

Mitrophora semilibera is a common species of fungus in the family Morchellaceae [1] with a cosmopolitan distribution. *Morchella semilibera* and *Morchella hybrida* are synonym [2]. Various soybean whey media were tested as substrate for seven species of fungi in submerged culture. Very little mycelial growth was obtained with *Morchella hybrida* [3]. The fruit bodies of this species of the genus are edible and are mainly used as a flavouring in soups and gravies [4]. *Morchella semilibera*, commonly called the half-free morel, is a species of fungi in the Morchellaceae family [5].

In this study, cultural properties those morphological and anatomical features of *Mitrophora semilibera* (DC.) Lev. spores and mycelium from Turkey were examined.

MATERIAL AND METHODS

Organism

In this study, *Mitrophora semilibera*-Morchellaceae familia- was used. *Mitrophora semilibera* was collected Kırıkkale region at Turkey in 2012 and 2013. Mushroom samples were stored at Kırıkkale University Mushroom Application and Research Laboratory

Morphological studies

Piece of tissue taken from the help of a scalpel *Mitrophora semilibera* fructifications were inoculated center of potato dextrose agar (PDA) plates and the primary mycelium was developed. Mycelial agar discs (8mm diameter) that taken from the primary mycelium were inoculated in the center of MEA and incubated in the dark for a period of 26°C for 10 d. The morphological structure of the development of secondary mycelium was examined. During the incubation period; mycelium development was measured on a daily basis. In the development; radial growth rates of mycelium were taken as criteria.

Anatomical studies

Light Microscopy studies

Light microscopy studies were maintained with Zeiss (40x) that was present Kırıkkale University Faculty of Arts and Science.

Electron Microscopy studies

Scanning electron microscope (SEM) examinations were performed with Electron Microscopy with the JEOL 5600 microscope presenting Kırıkkale University Electron Microscopy Laboratory. *Mitrophora semilibera* samples were washed in the 0.2 M sodium phosphate buffer, and divided into small pieces. Examples were fixed that left at 4 °C and 3% glutaraldehyde for 1 hour. After fixation, samples were washed at the sodium phosphate buffer pH = 7.2, 3 times in a 10-minute intervals, then samples were fixed at 4 °C for 1.5 hours, in 1% osmium tetroxide and during dehydration, examples were kept 10-min intervals at 50%, 60%, 70%, 80%, 90%, 95% absolute ethyl alcohol and 99%. After dehydration, samples placed in Petri Dishes and dried, leaving the incubator at 60°C for 6 nights. Dried specimens were mounted onto aluminum stubs, coated with gold for 2 min. at 20 mA [6].

RESULTS

Spore Structures

The spores of *M.semilibera* are colorless, hyaline. generally, they shaped like elliptical, smooth. (Figure 1 and Figure 2).

Mycelium Structure

The mushroom samples were brought to the laboratory, tissue fragments were taken and they were cultured on the potato dextrose agar (PDA) and were incubated in the dark for 10 days, in 24°C. Mycelium in 90mm diameter Petri dishes; began to developed after 12 hours from inoculation. Mycelium showed a very rapid development. During the development, the mycelium has cottony to the agar medium surface. There were air hyphae.

No pigmentation was observed at mycelium. Mycelial colonization completed Inoculation of day 3 (Figure 3).

According to Light and Scanning Electron microscopy investigations; *Mitrophora semilibera* mycelium has septa (Figure 4). Mycelium widths were measured as 2.38µm -2.53 µm with SEM (Figure 5).

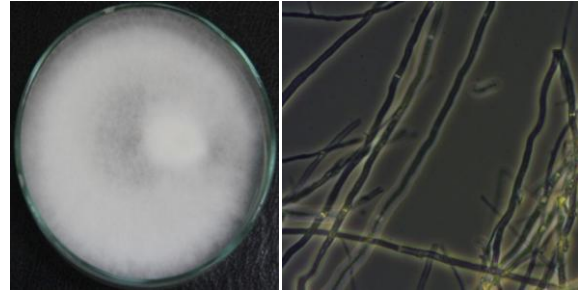


Figure 3. Morphological structure of mycelium

Figure 4. Mycelium structure with light microscope

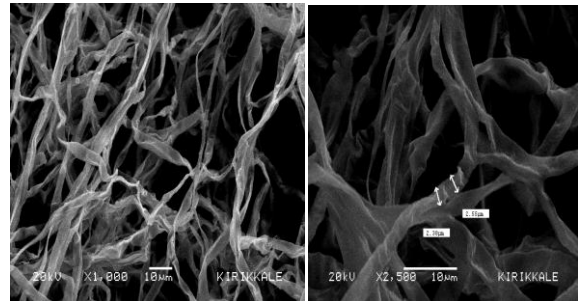


Figure 5. Mycelium structure with SEM microscope

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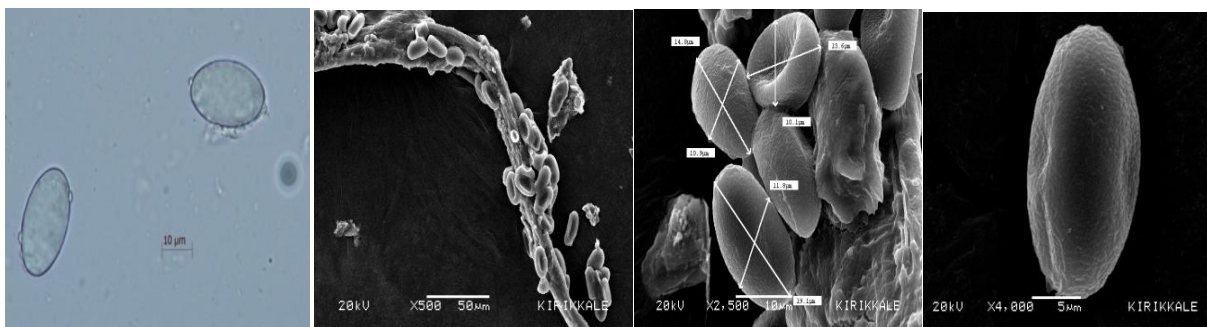


Figure 1. Spore structure with light microscope (100 X)

Figure 2. Spore structure with SEM microscope

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