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Research article/Araştırma makalesi

Two New *Inocybe* (Fr.) Fr. Records for Macrofungi of Turkey

Ahmet AFYON[1], Dursun YAĞIZ[1], Kutret GEZER [*1], Oğuzhan KAYGUSUZ [2]

[1] N.E. University, Ahmet Keleşoğlu Faculty of Education, Department of Science Education, Konya, Turkey
[2]Pamukkale University, Faculty of Sciences and Arts, Department of Biology, Denizli, Turkey

Abstract

In the result of macroscopic and microscopic studies on samples of mushroom collected in Afyonkarahisar, *Inocybe inconcinna* P. Karst. and *Inocybe quietiodor* Bon taxa were determined to be new records in Turkey. Each species was given with the colour photographs and short descriptions.

Key words: Macrofungi, new record, *Inocybe*, Afyonkarahisar, Turkey

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Türkiye Makrofungusları İçin İki Yeni *Inocybe* (Fr.) Fr. Kaydı

Özet

Afyonkarahisar'da toplanan mantar örnekleri üzerine yapılan makroskobik ve mikroskobik çalışmaların sonucunda *Inocybe inconcinna* P. Karst. ve *Inocybe quietiodor* Bon taksonlarının Türkiye'de yeni kayıtlar olduğu belirlendi. Türlerin renkli fotoğrafları ve kısa tanımlamaları verildi.

Anahtar kelimeler: Makrofungi, yeni kayıt, *Inocybe*, Afyonkarahisar, Türkiye

1. Introduction

The genus *Inocybe* is the larger of the two genera in the family and is one of the largest in *Agaricales* (Kirk et al., 2008). It is a highly diverse monophyletic group of ectomycorrhizal fungi that comprises between 500 and 700 species worldwide (Matheny et al., 2009; Alvarado et al., 2010). Between 70% and 80% of species in the family have been described in association primarily with ectomycorrhizal plant families *Pinaceae, Fagaceae,* and *Salicaceae* (Smith et al., 2011).

Turkey hosts many macrofungi species because of its ecological, topographical and geological biodiversity. Today, this biodiversity enriches much more with new species and records identified. So far about 2400 macrofungi taxa have been reported from Turkey (Allı, 2011). 94 of these macrofungi reported belong to *Inocybe* taxa.

This study was conducted in Afyonkarahisar between 2008 and 2009. Afyonkarahisar is located in western Turkey and is bordered to the east by Konya; to the west by Uşak and Denizli; to the south by Burdur and Isparta; and to the north by Kütahya and Eskişehir. The map of the research area is shown in Figure 1.

Some species of macrofungi were collected during field studies conducted especially in autumn and spring being appropriate for the development of ecological conditions. In the result of field and laboratory studies, 2 taxa with *Inocybe inconcinna* P. Karst. and *Inocybe quietiodor* Bon were identified among these species. In the light of the literature on Turkish macrofungi (Solak et al., 2007; Solak et al., 2009; Sesli and Denchev, 2008; Demirel et al., 2010; Kaya et al., 2010; Allı, 2011; Allı et al., 2011; Demirel and Kaşık, 2012; Sesli and Kobayashi, 2014), these 2 taxa are new records for the Turkish mycota. The study aims to contribute to macromycota of Turkey by adding new generic records.

* *Corresponding author* / Haberleşmeden sorumlu yazar: Tel.: +902582963521; Fax.: +90258296 3535; E-mail: kgezer@pau.edu.tr
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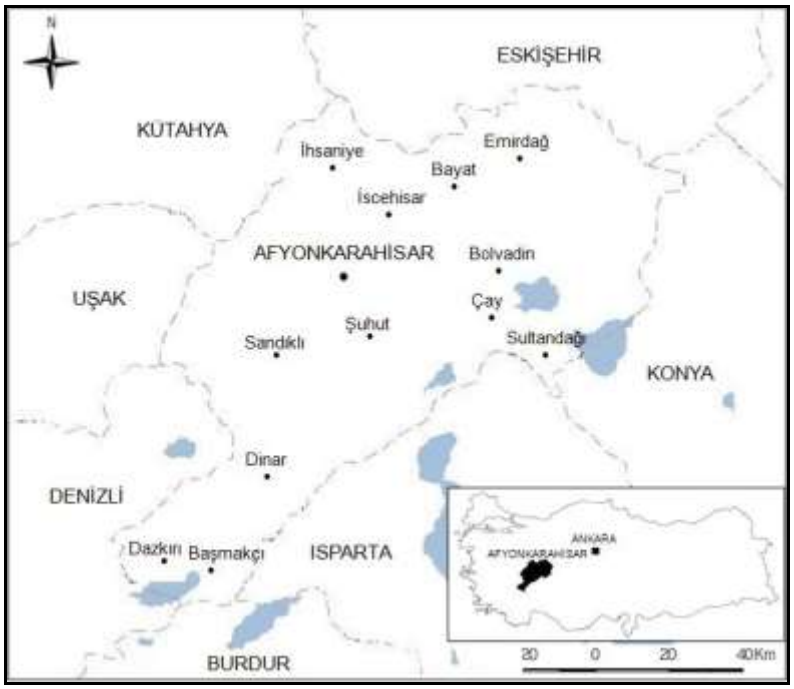

Figure 1. Map of the research area.

2. Materials and methods

During following field studies, morphological and ecological characteristics of fungi were recorded and photographed. Then sample measurements were made on macroscopic and microscopic structures in the laboratory. Taxa were identified and the data obtained had been compared with the literature belonging macrofungi (Breitenbach and Kränzlin, 2000). All identified specimens were deposited at the fungarium of Necmettin Erbakan University.

3. Results

The Descriptions of taxa
Agaricomycetes
Agaricales
Inocybaceae Jülich
Inocybe (Fr.) Fr.

Inocybe contains many species that have muscarine so their identification is difficult. Most of the species are medium sized, with a cap 10-120 mm broad and a stalk 20-80 mm long. While the cap in many species is some shade of brown, a few are white, lilac, or blackish. In the early stages, the cap is typically conic to bell-shaped, sometimes becoming convex at maturity. The gills are attached to the stalk and usually have grayish brown to dull brown. In the mature stage, gills are clay to dark brown color. Smell distinct in several species is described as spermatic. Taste indistinct or sometimes faintly bitter. Spore angular-nodulose or ovoid, smooth, brown or brownish, and the spore surface is covered with small warts or very small points or dots. Ectomycorrhizal, most frequent on rich soil. It may occur anytime from early summer to autumn (Breitenbach and Kränzlin, 2000; Knudsen and Vesterholt, 2008).

Inocybe inconcinna P. Karst.

Cap is 1.5-3 cm in diameter, conic, and then turns the bell shape to the planar shape with the slight umbo (Figure 2a). The surface is with fibril, light beige-brown and red or olive-brown in the center, bent to inward in the edges. Fleshy part is whitish and thin. Gills are gray-white when young, then turns to olive-brown. Its stalk is 2-3.5 x 0.3-5 cm in size, cylindrical, creamish. Spores are almond-shaped, flat, 5.39-5.51 x 8.82-9.86 µm in size (Figure 2b).

Afyonkarahisar, Bayat, Köroğlu beli, Maçaklı ways to 2nd km, it grows in the pine grove areas, 38º55.20N-30º53E, 1445 ± 10m, 05.06.2008, Afyon and Yağız 2603.

Figure 2. *Inocybe inconcinna*: a- basidiocarps, b- spores

Inocybe quietiodor Bon

Cap is 2-3 cm in diameter, conic to bell-shaped, broadly bell-shaped to the flat shape with obvious umbo (Figure 3a). Surface with fibril from the center towards the edges, light yellow to brownish soil, its edges are with the white fibril. Flash part is whitish pulp and thin. Gills are gray-beige, then gradually olive-brown. Stalk 3-5 x 0.5 cm in size, cylindrical, and with fibril, turns whitish to yellowish. Spores are elliptic, slight the almond-shaped, flat, 5.60-6.78 x 9.26-11.22 µm in size (Figure 3b).

Afyonkarahisar, Sandıklı, Örencik village, Çivril ways to 1st km, Bölükçam location, it grows in the pine areas, 38˚26.70N-29˚53.52E, 1190 ± 10m, 30.11.2008, Afyon and Yağız 2597.

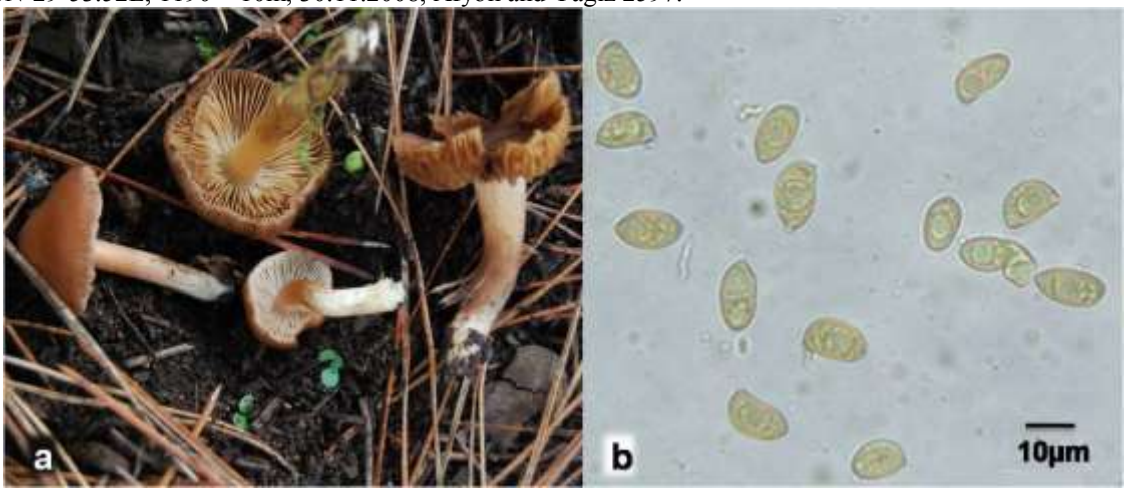

Figure 3. *Inocybe quietiodor*: a- basidiocarps, b- spores.

4. Conclusions

It is reported that most of agarics belonging to the genera: *Inocybe*, *Agaricus*, *Agrocybe*, *Bolbitius*, *Coprinus*, *Cortinarius*, *Galerina*, *Melanotus*, *Phaeomarasmius*, *Pholiota*, *Psathyrella* and *Simocybe* have dark-spores (Halling, 1986). *Inocybe* has great variability in form and even color, depending on the environment, allows for misidentification. It may closely resemble to edible mushroom such as *Laccaria laccata* and to poisonous *Galerina* species. Species of *Inocybe* are little brown mushrooms as the genera *Clitocybe*, *Conocybe*, *Galerina*, and *Psilocybe*, which occur in similar habitats (Hall et al., 2003).

Many species of *Inocybe* have a small brown cap with a raised center and a variety of strange smells, including that of semen. The gills are grayish beige when young, turning darker brown with age. Although most are associated with hardwoods and conifers, some can be found in the grassy margins of paths and trails (Hall et al., 2003). Furthermore, *Inocybe* have ochre to brown spores, and mostly have no ring on the stalk. Mushrooms belonging to the genera *Hebeloma* have also some of the abovementioned features; therefore, these mushrooms can be misidentified. However, *Inocybe* is recognized by its fibrillose to rimose cap texture. Most *Inocybe* species are poisonous, and even if they are small and brown and not particularly culinary appealing.

With this study two new *Inocybe* records were reported and a contribution was made to Turkish mycobiota..

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