Additions to the Turkish Discomycetes

YUSUF UZUN
İSMAİL ACAR
MUSTAFA EMRE AKÇAY
ILGAZ AKATA

Follow this and additional works at: https://journals.tubitak.gov.tr/botany

Part of the Botany Commons

Recommended Citation
Available at: https://journals.tubitak.gov.tr/botany/vol38/iss3/17

This Article is brought to you for free and open access by TÜBİTAK Academic Journals. It has been accepted for inclusion in Turkish Journal of Botany by an authorized editor of TÜBİTAK Academic Journals. For more information, please contact academic.publications@tubitak.gov.tr.
Additions to the Turkish Discomycetes

Yusuf UZUN1,*, İsmail ACAR2, Mustafa Emre AKÇAY2, Ilgaz AKATA3

1Department of Pharmaceutical Sciences, Faculty of Pharmacy, Yüzüncü Yıl University, Van, TURKEY
2Department of Biology, Faculty of Science, Yüzüncü Yıl University, Van, Turkey
3Department of Biology, Faculty of Science, Ankara University, Ankara, Turkey

* Correspondence: yusufuzun2004@yahoo.com

Abstract: In this study, Mollisia ventosa P.Karst., Hymenoscyphus herbarum (Pers.) Dennis, H. immutabilis (Fuckel) Dennis, H. robustior (P.Karst.) Dennis, Ciboria amentacea (Balb.) Fuckel, and Peziza fimeti (Fuckel) E.C.Hansen have been recorded in Turkey for the first time. Comments on their morphological and anatomical features, geographical position, locality, collection date, and distribution and short descriptions and photographs related to macro- and micromorphologies of the taxa are provided.

Key words: Biodiversity, Discomycetes, new records, Turkey

1. Introduction
The apothecial ascomycetes that produce cup-shaped ascomata with various colors are commonly known as discomycetes. They represent approximately 9000 taxa, which are saprobic, parasitic, mycorrhizal, or lichenized. Some discomycetes are used in drugs or as biological control agents. Therefore, the fungal resources of the group are significant for biodiversity conservation (Gargas and Taylor, 1995; Wu, 2005).

According to checklists on Turkish macromycetes (Solak et al., 2007; Sesli and Denchev, 2008) and recently contributed data (Akata et al., 2012; Akata and Kaya, 2012a, 2012b, 2013; Kaya et al., 2012; Akata and Yaprak, 2013; Güngör et al., 2013; Sesli and Helfer, 2013), Mollisia ventosa P.Karst., Hymenoscyphus herbarum (Pers.) Dennis, H. immutabilis (Fuckel) Dennis, H. robustior (P.Karst.) Dennis, Ciboria amentacea (Balb.) Fuckel, and Peziza fimeti (Fuckel) E.C.Hansen have not been previously reported from Turkey.

The purpose of this study is to make contributions to the Turkish discomycetes by adding new taxa.

2. Materials and methods
Apothecia were collected from Bingöl, Hani (Diyarbakir), Çatak (Van), Beşikdüzü (Trabzon), and Zigana (Gümüşhane) in eastern Turkey between 2006 and 2012. Relevant ecological and morphological properties of the specimens were noted and they were photographed in their natural habitats. Samples were taken to the fungarium for detailed studies. Distilled water, Melzer’s reagent, and 5% KOH were used for microscopic investigation.

Microphotographs of apothecia were taken under a light microscope (Leica DM 1000). The specimens were identified with the help of Breitenbach and Kränzlin (1984), Hansen and Knudsen (2000), Spooner (2001), Moravec (2005), and Medardi (2006). The identified samples were deposited at the fungarium of Yüzüncü Yıl University in Van (VANF) and the ANK herbarium.

3. Results
Short descriptions, photographs of apothecia, and microphotographs of asci and spores are provided. The taxonomy of the taxa follow that of Kirk et al. (2008).

HELOTIALES
3.1. Dermateaceae Fr.
3.1.1. Mollisia ventosa P.Karst. (1871) (Figure 1)

Macroscopic and microscopic features: Apothecia sessile, 0.5–15 mm broad, disk-shaped with a rounded or slightly in-rolled margin. Hymenium grayish to yellowish gray, outer surface glabrous, brownish to ochre-brown. Asci 110–150 × 5–6 µm, cylindrical to clavate, 8-spored, uniseriate, amyloid at apex. Paraphyses 2.5–3 µm broad, filiform and septate. Spores 11–14 × 2.5–3 µm, ellipsoid,
sometimes rather curved, unicellular or with 1–2 septa, hyaline and smooth (Figure 1).

Ecology: On dead branch of alder (Alnus spp.); other records on barkless decaying wood and decorticated shed twig (Breitenbach and Kränzlin, 1984; Dimitrova, 1997).

Specimen examined: Turkey. Trabzon: Beşikdüzü, Aksaklı village, 41°03′N, 39°11′E, 80 m, 06.09.2011, Akata 4147 (ANK).

3.2. Helotiaceae Rehm

3.2.1. Hymenoscyphus herbarum (Pers.) Dennis (Figure 2)


Macroscopic and microscopic features: Apothecia short stipitate, 2–3 mm broad, cup to disk-shaped. Hymenium smooth, whitish to cream, outer surface the same color, sometimes paler. Stipe up to 1 mm long and 0.2–0.3 mm broad. Asci 70–90 × 6–7 µm, 8-spored, clavate, amyloid at the tips. Paraphyses 1.5–2.5 µm broad, cylindrical. Spores 13–16 × 2–3 µm, hyaline, cylindrical to fusoid, biseriate in the ascus (Figure 2).


Specimen examined: Turkey. Gümüşhane: Zigana mountain, Hamsiköy, 40°42′N, 39°27′E, 1420 m, 02.09.2011, Akata 4081 (ANK).
3.2.2. *Hymenoscyphus immutabilis* (Fuckel) Dennis (Figure 3)

**Syn:** *Helotium immutabile* Fuckel (1871), *Pachydisca immutabilis* (Fuckel) Boud. (1907).

**Macroscopic and microscopic features:** Apothecia shortly stipitate, 1–2 mm broad, cup to funnel shaped. **Hymenium** yellowish to orange yellow outer surface concolorous. **Stipe** 1 mm long and 0.1–0.3 mm broad. Asci 80–100 × 9–10 µm, clavate, 8-spored, uniseriate, amyloid at apex. **Paraphyses** septate, filiform, slightly swollen at the tips. **Spores** 10–13 × 4–5 µm, fusoid to turbinate, hyaline and smooth (Figure 3).

**Ecology:** On remnants of oak branch (*Quercus* sp.); other records on decaying wood, leaves, and petioles of various broadleaved trees (Hansen and Knudsen, 2000).

**Specimen examined:** Turkey. Bingöl, Genç, Tarlabası village, 38°41′906″N, 40°29′180″E, 1253 m, 05.05.2009, Uzun-Bingöl 1230 (VANF).

3.2.3. *Hymenoscyphus robustior* (P.Karst.) Dennis (Figure 4)

**Syn:** *Peziza rhodoleuca* subsp. *robustior* P.Karst. (1869), *Helotium robustius* (P.Karst.) P.Karst. (1871), *Calycina robustior* (P.Karst.) Kuntze (1898).

**Macroscopic and microscopic features:** Apothecia stipitate, 1–2 mm broad, funnel to disk-shaped. **Hymenium** brownish to pallid brown, outer surface concolorous. **Stipe** 1–2 mm long. Asci 100–110 × 7–9 µm, clavate to cylindrical, 8-spored, uniseriate, amyloid at apex. **Paraphyses** septate, filiform, slightly swollen at the tips.

**Specimen examined:** Turkey. Bingöl, Genç, Tarlabası village, 38°41′906″N, 40°29′180″E, 1253 m, 05.05.2009, Uzun-Bingöl 1230 (VANF).

![Figure 3. *Hymenoscyphus immutabilis*: a) apothecia, b) asci and paraphyses, c) amyloid apex of ascus, d) spores.](image3)

![Figure 4. *Hymenoscyphus robustior*: a) apothecia, b) asci and paraphyses, c) amyloid apex of ascus, d) spores.](image4)
tips. Spores 10–12 × 3–4 µm, hyaline, smooth, ellipsoid to cylindrical (Figure 4).

Ecology: On remnants of Quercus sp. branch; also on various herbs in damp habitats (Hansen and Knudsen, 2000).

Specimen examined: Turkey. Bingöl, Genç forest, 38°44′730″ N, 40°34′247″ E, 1123 m, 08.11.2008, Uzun-Bingöl 1012 (V ANF).

3.3. Sclerotiniaceae Whetzel

3.3.1. Ciboria amentacea (Balb.) Fuckel (Figure 5)
Syn.: Peziza amentacea Balb. (1804), Rutstroemia amentacea (Balb.) P.Karst. (1871), Hymenoscyphus amentaceus (Balb.) W.Phillips (1887).

Macroscopic and microscopic features: Apothecia stipitate, 5–10 mm broad, cup to saucer-shaped, becoming flattened with margin turned downward in older specimens. Hymenium smooth, outer surface concolorous, pale to ochre brown. Stipe 1.5–2.5 mm long, 0.1–0.3 mm broad. Asci 120–130 × 8–10 µm, cylindrical, 8-spored, uniseriate, amyloid at apex. Paraphyses nonseptate, filiform, slightly swollen at the tips. Spores 7.5–10 × 4.5–5.5 µm, ellipsoid, smooth and hyaline (Figure 5).

Ecology: On remnants of willow, in the literature usually solitary to gregarious, also on dung of other herbivores, summer to autumn (Hansen and Knudsen, 2000).

Specimen examined: Turkey. Van, Çatak, Kanispi region, 38°03′075″ N, 43°02′533″ E, 1685 m, 16.05.2012 Uzun 6175 (V ANF).

4. Discussion
Mollisia ventosa is macroscopically close to several Mollisia members, but it is easily distinguished from the others by its septate spores (Breitenbach and Kränzlin, 1984).

Hymenoscyphus herbarum differs from most of the other herb-dwelling members of the genus by its mostly sessile manner of growth and by its excipulum of prismatic or angular-celled textura. Moreover, the original color of the H. herbarum sample is whitish to cream. However, it is yellow to ochre in the literature. The reason for the difference could be variation that originated from ecological conditions (Breitenbach and Kränzlin, 1984).

H. immutabilis could be confused with H. phyllophilus (Desm.) Kuntze but the latter species has septate and more slender spores (Breitenbach and Kränzlin, 1984).

H. robustior resembles H. repandus (W. Phillips) Dennis due to its ecology and micro- and macromorphology. Both species grow on various herbaceous stems and their

Figure 5. Ciboria amentacea: a) apothecia, b) asci and paraphyses, c) amyloid apex of asci, d) spores.
apothecia and spore shapes are similar, but H. robustior has larger asci, longer stem, and brown to orange brown apothecia, while the latter is yellow to ochraceous (Hansen and Knudsen, 2000).

Ciboria amentacea produces apothecia that grow on the male catkins of alder poplar and willow. It resembles C. coryli (Schellenb.) N.F. Buchw. in many ways, but the latter species occurs on male catkins of common hazel (Corylus avelana L.) and has larger spores (Akata and Kaya, 2012a).

Peziza is a complicated genus and it is not easy to find certain diagnostic characteristics to identify the species. Micromorphology such as ascospore features, biochemical reactions of the asci, and pigmentation of the paraphyses are very useful to separate Peziza species (Barseghyan and Wasser, 2011; Akata and Kaya, 2012a). P. fimeti is macroscopically very similar to P. moravecii (Srvec) Srvec, but, P. moravecii has sessile apothecia and narrower spores (Spooner and Butterfill, 1999).

In the literature (Uzun et al., 2010; Akata et al., 2012; Akata and Kaya, 2012a, 2012b, 2013; Kaya et al., 2012; Akata and Yaprac, 2013; Güngör et al., 2013), 171 discomycetes taxa have so far been reported from Turkey. With this study, Mollisia ventosa P.Karst., Hymenoscyphus herbarum (Pers.) Dennis, H. immutabilis (Fuckel) Dennis, H. robustior (P.Karst.) Dennis, Ciboria amentacea (Balb.) Fuckel, and Peziza fimeti (Fuckel) E.C. Hansen are recorded for the first time from Turkey and the number of Turkish Discomycetes species is increased to 177.

Acknowledgments
The authors would like to thank Yüzüncü Yıl University (Project No.: 2006-FED-B09) for its financial support.

References


