

A New Addition to Turkish Helotiaceae

Hakan IŞIK*¹, İbrahim TÜRKEKUL²

¹Tokat Science and Art Center, 60200, Tokat, Turkey

²Gaziosmanpaşa University, Faculty of Arts and Sciences, Department of Biology, 60200, Tokat, Turkey

(Alınış / Received: 02.05.2018, Kabul / Accepted: 11.06.2018, Online Yayınlanma / Published Online: 09.07.2018)

Keywords

Biodiversity,
Hymenoscyphus lepismoides,
Macrofungi
New record,
Tokat

Abstract: In this study, *Hymenoscyphus lepismoides* Baral & Bemann was recorded and photographed for the first time for Turkish mycota. The new record shows similarity with *Hymenoscyphus serotinus* (Pers.) W. Phillips and *Hymenoscyphus calyculus* (Fr.) W. Phillips. But it can be separated from the others with differences in the morphological and ecological features such as: spore and ascus size, host plant, attachment style of ascus base. The photographs showing the macro and micro properties of the new record and features related to habitat were provided. The differences of it from similar species were discussed.

Türkiye Helotiaceae'si İçin Yeni Bir İlave

Anahtar Kelimeler

Biyçeşitlilik,
Hymenoscyphus lepismoides,
Makromantarlar,
Yeni kayıt,
Tokat

Özet: Bu çalışmada, *Hymenoscyphus lepismoides* Türkiye mikotası için ilk kez kaydedildi ve fotoğraflandı. Yeni kayıt, *Hymenoscyphus serotinus* (Pers.) W. Phillips ve *Hymenoscyphus calyculus* (Fr.) W. Phillips ile benzerlik göstermektedir. Ancak yeni kayıt spor ve ascus büyüklüğü, üzerinde geliştiği bitki, ascus tabanının bağlanma şekli gibi morfolojik ve ekolojik özelliklerdeki farklılıklar ile diğerlerinden ayrılabilir. Yeni kaydın makro ve mikro özelliklerini gösteren fotoğrafları ve habitatı ile ilgili özellikleri verildi. Benzer türlerden farkları tartışıldı.

1. Introduction

The genus *Hymenoscyphus* is represented by 274 species worldwide [1]. The members of this genus are characterized by lignicolous, caulicolous and foliicolous ascomata, and ellipsoid-fusiform to obovoid-fusiform ascospores. The spores are bilaterally symmetrical and have abaxially angulate or hooked apex. The spore shape in this genus was named as "scutuloid" by Baral [2, 3].

The macrofungal diversity studies carried out until 2014, presents 215 Turkish ascomycetous macrofungi taxa [4]. This number has been increasing by the studies made in recent years such as: [5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20].

Study area in which fungi sample was collected is the northern slopes of Yaylacık mountain in the north of Tokat province. The distance to the center of the province is about 40 km and the broad-leaved forest vegetation is dominant. In this vegetation, *Carpinus betulus* L. populations and the members of *Fagus* genus are concentrated. The members of *Quercus* genus are also other broad-leaved trees in forest

vegetation. There are herbaceous plants and shrubs on the sides of the road. The aim of this study is to acquaint the new species (*Hymenoscyphus lepismoides* Baral & Bemann) detected for the first time in Turkey.

2. Material and Method

Fungal samples were collected during field trips in winter 2017. Color photographs showing their macroscopic properties were taken and important macroscopical features and ecological features were noted in their natural habitats. Then, the collection number were given to the samples brought to the laboratory and they were dried. The dried samples were placed into polyethylene bags for studies that will be carried out later. The microscopic properties of the samples were detected using a light microscope and stereo microscope. Some chemicals, such as lactofenol stain, distillate water, congo red, Melzer's reagent, KOH 5%, were used to determine the chemical properties of the samples. Fungal samples were identified with the help of the literature [3, 21].

Table 1. Host plant and distinguishing microscopic features of *Hymenoscyphus lepismoides*, *H. serotinus* and *H. calyculus*

Species	Ascospores size (µm)	Ascus size (µm)	Paraphyses type	Host plant	Attachment style of ascus base
<i>H. lepismoides</i>	25–41 × 4.5–8	115–200 × 9.5–15	cylindrical	<i>Carpinus betulus</i>	arising from simple septa
<i>H. serotinus</i>	18–31 × 3–4.3	110–145 × 6–10	cylindrical	<i>Fagus sylvatica</i>	arising from croziers
<i>H. calyculus</i>	16–24 × 3–4	100–115 × 8–10	filiform	on branches of broadleaved, mainly <i>Fagus</i> sp.	arising from croziers

The samples were deposited at Gaziosmanpaşa University, Faculty of Science, Department of Biology, Tokat, Turkey.

3. Results

The systematic of the new taxon is in accordance with [1, 22]. Related to the newly recorded taxon, short description, photographs of microscopic and macroscopic features, habitat, locality, collection date are provided below.

Fungi R.T. Moore

Ascomycota Whittaker

Helotiales Nannf. ex Korf & Lizoň

Helotiaceae Rehm

Hymenoscyphus lepismoides Baral & Bemann, Ascomycete.org 5(4): 120 (2013)

Macroscopic and microscopic features:

Apothecia 0.5–5 mm diam., light to bright yellow to yellow-ochre when fresh, turning red-brown with age, slightly concave to flat, eventually also strongly convex, margin smooth to finely crenulate or fimbriate, exterior whitish to pale yellow or greyish-brownish, distinctly pubescent. Stipe 0.3–4 × 0.3–0.7 mm, pale cream-ochraceous or pale yellow, at base or sometimes completely red-brown. Asci 115–200 × 9.5–15 µm clavate, apex strongly conical, spores obliquely biseriata, 8-spored, hymenoscyphus type, base narrowed in a long stalk arising from simple septa. Ascospores 25–43 × 4.5–8 µm, strongly heteropolar, clavate-scutuloid, apex obtuse, with (1–)2–3 usually more or less curved setulae 1–2 µm long, setulae also lacking in some spores, filled with medium and small guttules. Paraphyses cylindrical, with apically rounded terminal cell, more or less hyaline, small to large, multiguttulate (Figure 1).

Hymenoscyphus lepismoides grows on fallen twigs and branches of *Carpinus betulus*, in late autumn [3, 21].

Specimen examined: Tokat province, Canpolat village, fallen and rotten branche of *Carpinus betulus*, 40° 31' 289" N, 36° 39' 464" E, 1131 m, 03.12.2017, ISIK 754.

4. Discussion and Conclusion

Hymenoscyphus genus is represented by 274 species worldwide and with eight species in Turkey [1, 4, 23]. *Hymenoscyphus lepismoides* is found in section Scutulioideae of the genus *Hymenoscyphus*. The most important feature of this section is that its members have predominantly scutuloid ascospores [21]. The members of the genus *Hymenoscyphus* detected in our country are *H. calyculus* (Fr.) W. Phillips, *H. fructigenus* (Bull.) Gray, *H. herbarum* (Pers.) Dennis, *H. immutabilis* (Fuckel) Dennis, *H. lutescens* (Hedw.) W. Phillips, *H. robustior* (P. Karst.) Dennis, *H. scutula* (Pers.) W. Phillips and *H. serotinus* (Pers.) W. Phillips. Of these, *H. serotinus* and *H. calyculus* show similarity with *H. lepismoides*.

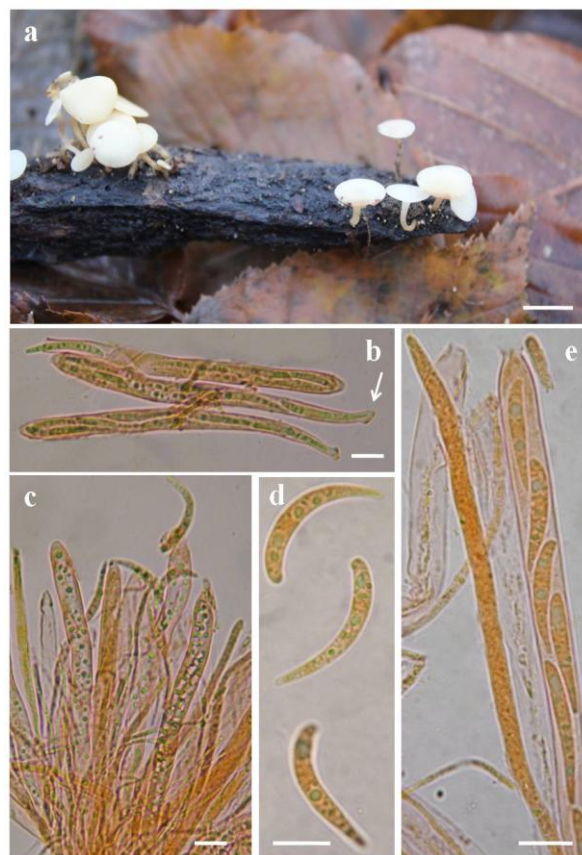


Figure 1. *Hymenoscyphus lepismoides*: a- ascocarps, b- asci base arising from simple septa (in congo red), d- ascospores (in congo red), c and e- asci with spores and paraphyses (in congo red) (scale bars: a= 5 mm; b,c,d,e = 20 µm)

Paucity of dependable morphological characteristics makes difficult to distinguish the members of this genus. Nevertheless, *Hymenoscyphus lepismoides* can be distinguish from other similar ones in terms of being different in host plant, spore and ascus size, attachment style of ascus base. The differences among *Hymenoscyphus lepismoides* and other similar species were shown in Table 1 according to [3, 21, 24]. With the present study, *Hymenoscyphus lepismoides* Baral & Bemann was reported for the first time from Turkey and the number of current members of the genus *Hymenoscyphus* increased from eight to nine.

References

- [1] Kirk, P. M. 2011. Index Fungorum. URL: <http://www.indexfungorum.org> (accessed 10 February 2018).
- [2] Baral, H. O., Krieglsteiner, G. J. 1985. Bausteine zu einer Askomyzeten-Flora der Bundesrepublik Deutschland: In Süddeutschland gefundene inoperkulate Diskomyzeten - mit taxonomischen, ökologischen, chorologischen Hinweisen und einer Farbtafel. Beihefte zur Zeitschrift für Mykologie, 6, 1-160.
- [3] Baral, H. O., Bemann, M. 2013. *Hymenoscyphus serotinus* and *H. lepismoides* sp. nov., two lignicolous species with a high host specificity. *Ascomycete.org*, 5(3), 109-128.
- [4] Sesli, E., Denchev, C. M. 2014. Checklists of the myxomycetes, larger ascomycetes, and larger basidiomycetes in Turkey. 6 th. Mycotaxon Checklists Online: 1-136.
- [5] Kaya, A., Uzun, Y., Karacan, İ. H., Kaya, Ö. F., Yakar, S. 2015. Macromycetes determined in Islahiye (Gaziantep/Turkey) district. *Biological Diversity and Conservation*, 8(3), 209-217.
- [6] Uzun, Y., Kaya, A., Akata, I., Keleş, A., Yakar, S. 2015. Notes on Turkish *Hypocrea*. *Biological Diversity and Conservation*, 8(2), 117-121.
- [7] Demirel, K., Uzun, Y., Akçay, M. E., Keleş, A., Acar, İ., Efe, V. 2015. Van yöresi makromantarlarına katkılar. *The Journal of Fungus*, 6(2), 13-23.
- [8] Taşkın, H., Doğan, H. H., Büyükalaca, S. 2015. *Morchella galilaea*, an autumn species from Turkey. *Mycotaxon*, 130, 215-221.
- [9] Akata, I., Doğan, H. H. 2015. Orbiliaceae for Turkish Ascomycota: Three new records. *Bangladesh Journal of Botany*, 44(1), 91-95.
- [10] Taşkın, H., Doğan, H. H., Büyükalaca, S., Clowez, P., Moreau, P. A., O'Donnell, K. 2016. Four new morel (*Morchella*) species in the elata subclade (M. sect. Distantes) from Turkey. *Mycotaxon*, 131, 462-482.
- [11] Akata, I., Uzun, Y., Kaya, A. 2016. Macrofungual diversity of Zigana Mountain (Gümüşhane/Turkey). *Biological Diversity and Conservation*, 9(2), 57-69.
- [12] Doğan, H. H., Kurt, F. 2016. New macrofungi records from Turkey and macrofungual diversity of Pozantı-Adana. *Turkish Journal of Botany*, 40, 209-217.
- [13] Uzun, Y., Kaya, A., Yakar, S., Karacan, H. İ. 2016. *Hyaloriaceae* Lindau, a new family record for Turkish mycobiota. *The Journal of Fungus*, 7(1), 24-28.
- [14] Uzun, Y., Karacan, H. İ., Yakar, S., Kaya, A. 2017. *Octospora* Hedw., A new genus record for Turkish Pyronemataceae. *Anatolian Journal of Botany*, 1(1), 18-20.
- [15] Acar, İ., Uzun, Y. 2017. An interesting half-free morel record for Turkish mycobiota (*Morchella populiphila* M. Kuo, M.C. Carter & J.D. Moore). *The Journal of Fungus*, 8(2), 125-128.
- [16] Türkekul, İ. 2017. New *Calbovista*, *Mycena*, *Rhizopogon*, *Stictis* and *Symphyosirinia* records from Turkey. *Mycotaxon*, 132(3), 503-512.
- [17] Işık, H., Türkekul, İ. 2018. A new record for Turkish mycota from Tokat province: *Arachnopeziza aurelia* (Pers.) Fuckel. *Journal of Fungus*, 9(1): 54-57.
- [18] Uzun, Y., Karacan, İ. H., Yakar, S., Kaya, A. 2018. New bryophilic *Pyronemataceae* records for Turkish Pezizales from Gaziantep province. *Anatolian Journal of Botany*, 2(1), 28-38.
- [19] Uzun, Y., Yakar, S., Karacan, İ. H., Kaya, A. 2018. New additions to the Turkish *Pezizales*. *Turkish Journal of Botany*, 42, 335-345.
- [20] Kaya, A., Uzun, Y., Karacan, İ. H., Yakar, S. 2018. New additions to Turkish *Helotiales* and *Orbiliiales*. *Kastamonu Univ., Journal of Forestry Faculty*, 18 (1), 46-52.
- [21] Declercq, B. 2004. The genus *Hymenoscyphus* S.F.Gray sensu lato in Belgium. Key to the species and varieties [Manuscript].
- [22] Kirk, P. M., Cannon, P. F., Minter, D. W., Stalpers, J. A. 2008. *Dictionary of the fungi*, 10th edn. CAB International. Wallingford, UK. 784 p.
- [23] Öztürk, Ö., Doğan, H. H., Şanda, M. A. 2016. Some new additions to Turkish mycobiota from Sakarya region. *Biological Diversity and Conservation*, 9(1), 97-100.
- [24] Breitenbach, J., Kränzlin, F. 1984. *Fungi of Switzerland*, vol. 1. Ascomycetes. Verlag Mykologia, Lucerne, Switzerland. 310 p.