



Presence of *Cortinarius atroalbus* M.M.Moser and *C. duracinobtus* Rob. Henry (*Basidiomycota, Cortinariaceae*) in Turkey

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Received : 08.09.2020
Accepted : 03.10.2020
Online : 07.10.2020

Cortinarius atroalbus M.M.Moser ve *C. duracinobtus* Rob. Henry (*Basidiomycota, Cortinariaceae*)'nin Türkiye'deki varlığı

Abstract: Basidiomata were collected during the field trips in 2012 and 2015 from Trabzon, Turkey and identified based on morphological data. As a result, *Cortinarius atroalbus* M. M. Moser and *C. duracinobtus* Rob. Henry are recorded for the first time from Turkey and provided here with descriptions, figures and a short discussion. *C. atroalbus* has a conical, convex to applanate and umbonate; dark chestnut brown to blackish brown, hygrophanous pileus; adnate to nearly arcuate, pale brown to rusty brown crowded lamellae; cylindrical, slightly curved, silvery whitish to very pale brown stipe and ellipsoid, slightly verrucose basidiospores. *C. duracinobtus* has a conical to campanulate with a typically broad and umbonate, brown, dark yellow to brown pileus; sub-decurrent to adnate, sparse, dark yellow to orange brown, smooth, moderately thick and regular lamellae; cylindrical, generally curved, sometimes hollow, orange brown to dark yellowish stipe and ellipsoid, slightly verrucose and granulate basidiospores.

Key words: *Cortinarius*, field study, identification, new record, taxonomy

Özet: Bazidiyomalar 2012 ve 2015 yıllarında Trabzon, Türkiye'de yapılan arazi çalışmaları sırasında toplandı ve morfolojik yöntemlere göre teşhis edildi. Çalışmalar sonucunda *Cortinarius atroalbus* M. M. Moser ve *C. duracinobtus* Rob. Henry Türkiye'den ilk kez kaydedildi ve bu çalışmada tanımlar, şekiller ve kısa bir tartışma ile birlikte verildi. *C. atroalbus* konik, konveks veya düz, tepe çıkıntılı, koyu kestane renginden siyahımsı kahverengiye doğru değişen, higroskopik bir şapkaya; adnat veya hemen hemen arkuat, soluk kahveden paslı kahveye doğru değişen kalabalık lamellere; silindirik, hafif kıvrık, gümüş beyazından oldukça soluk kahveye değişen bir sapa ve eliptik, hafif dikenli bazidiyosporlara sahiptir. *C. duracinobtus* konikten çana doğru değişen, geniş tepe çıkıntılı, kahverengi, koyu sarıdan kahveye doğru değişen renkte bir şapkaya; dekürrent veya adnat, seyrek, koyu sarı veya portakalımsı kahverengi, düz, orta kalınlıkta, düzgün lamellere; silindirik, genellikle eğri, bazen içi boş, portakalımsı kahveden koyu sarıya doğru değişen bir sapa ve eliptik, hafif dikenli ve granüllü bazidiyosporlara sahiptir.

Anahtar Kelimeler: *Cortinarius*, arazi çalışması, teşhis, yeni kayıt, taksonomi

Citation: Sesli E (2020). Presence of *Cortinarius atroalbus* M.M.Moser and *C. duracinobtus* Rob. Henry (*Basidiomycota, Cortinariaceae*) in Turkey. *Anatolian Journal of Botany* 4(2): 92-95.

1. Introduction

Cortinarius (Pers.) Gray is one of the largest macromycete genus and more than 130 species have been recorded in Turkey up to date. *Cortinarius atroalbus* M.M. Moser was first collected in 1991 from alpine zone of Union Peak, Windriver Mountains, Shoshone Natural Forests, Wyoming, USA; described by Moser and published in *Sydowia*. According to Moser (1993) it has relatively small, hygrophanous, dark chestnut brown pileus and ellipsoid, verrucose basidiospores. *Cortinarius duracinobtus* Rob. Henry was first described by Henry (1970) based on the samples collected from damp fir forest and characterised by small, ochre to noisette and umbonate pileus; fleshy smell and middle sized basidiospores (Henry, 1970; Tartarat, 1988).

The aim of the present study is to contribute to Turkish Mycota by introducing two *Cortinarius* species collected from Trabzon. Many *Cortinarius* species had been presented from different regions of Turkey (Türkecul, 2003; Kaya et al., 2009; Kaşık et al., 2011; Uzun et al., 2013; Akata et al., 2015; Doğan and Kurt, 2016; Sesli and Liimatainen, 2018) but *C. atroalbus* and *C. duracinobtus* haven't been reported before.

2. Materials and Method

About 30% of the collecting site is covered by forests and the important trees in the field are *Fagus orientalis* Lipsky, *Quercus petraea* (Mattuschka) Liebl., *Picea orientalis* (L.) Link, *Carpinus betulus* L., *C. orientalis* Mill., *Rhododendron ponticum* L., *R. luteum* Sweet, *Corylus avellana* L. and *Alnus glutinosa* (L.) Gaertn. Samples were collected from Akçaabat and Maçka districts, Trabzon, Turkey. Microscopic studies were performed according to Clémençon (2009). For these studies, a piece of basidioma is placed in 3% ammoniated water. After a while it was compressed with the help of a forceps letting the basidiospores fall on the slide. For the other structures, cross sections were obtained by a razor blade, mounted in 3% NH₃ solution, stained with aqueous 5% Congo red, examined under a Zeiss Axio Imager A2 trinocular microscope and the images were obtained by a Zeiss AxioCam 105 colour camera. The samples were identified with the help of the relevant literature (Henry, 1970; Moser, 1993; Breitenbach and Kränzlin, 2000; Knudsen and Vesterholt, 2008).

3. Results

Cortinariaceae R.Heim ex Pouzar

Cortinarius atroalbus M. M. Moser, Sydowia 45(2): 282 (1993) (Fig. 1)

(Syn. *Cortinarius atroalbus* var. *nigripes* M.M.Moser, Sydowia 45(2): 284 (1993))

Pileus 10-50 mm, conical, obtusely conical, convex to applanate; when young typically umbonate; dark chestnut brown to blackish brown, becoming black with 3% potassium hydroxide solution; hygrophanous; margin paler, silvery; centre dark; margin in young specimens covered by silky whitish veil remnants. Lamellae adnate to nearly arcuate, pale brown to rusty brown, moderately crowded, L= 35-50, I=1-3. Stipe 30-50(-70) × 2-5 mm, cylindrical, slightly curved, silvery whitish to very pale brownish, equal or slightly tapered towards base. Content compact, pale brownish. Odour not distinctive. Taste mild. Basidiospores [n= 48] (7-)7.5-8.5(-8.7) × (3.7-) 4-4.8 μm; on average 7.7 × 4.3 μm; Q= 1.6-2.0, Qm= 1.83, ellipsoid, slightly verrucose. Basidia 22-27(-32.5) × (6.5-)7.5-8.5(-9.6) μm; on average 25.6 × 7.9 μm, 4-spored, clavate, some with brownish contents. Cheilocystidia absent. Pileipellis consists of elongate, cellular elements. Marginal cells 15-17.7 × 4-7.4 μm. Clamp connections present at all tissues.

Specimens examined: TURKEY, Trabzon, Maçka, Sevinç neighborhood, gregarious in alpine meadow, among moss,

40°52'02.97"N, 39°36'05.50"E, 1347 m, 26 Oct. 2015, E. Sesli, KATO Fungi 3601.

Cortinarius duracinobtusus Rob. Henry, Bull. Trimest. Soc. Mycol. Fr. 85(4): 446 (1970) (Fig. 2)

Pileus conical to campanulate with a typically broad and large umbo, 20-30 mm, brown, orange brown, dark yellow to brown, darker at the centre, paler towards the wavy, whitish and fibrillose margin, not regular. Lamellae sub-decurrent to adnate, sparse, dark yellow to orange brown, smooth, moderately thick, margin regular, L= 15-20, I= 1-2. Content fragile, thin, pale brown or yellowish brown. Smell raphanoid, taste indistinct. Stipe cylindrical, generally curved, sometimes hollow, 40-70 × 5-8 mm, lighter than pileus, brown, orange brown with slightly whitish tint to dark yellowish, fibrillose and hard. Basidiospores [n= 45] ellipsoid, (7.3-)7.5-9(-9.6) × (4.4-)5-6(-6.5) μm; on average 8.4 × 5.2 μm, slightly verrucose and granulated. Basidia clavate, (24-)24.8-31.4(-40) × (8.2-)9.5-11.5 μm, on average 26.7 × 10.1 μm. Pileipellis consists of cylindrical and parallel hyphae. Clamp connections present at all tissues.

Specimen examined: TURKEY, Trabzon, Akçaabat, Hıdırnebi Plateau, gregarious to caespitose under spruce (*Picea orientalis* L.), 40°57'17.64" N, 39°25'39.75"E, 1422 m, 4 Sept. 2012, E. Sesli, KATO Fungi 3074.

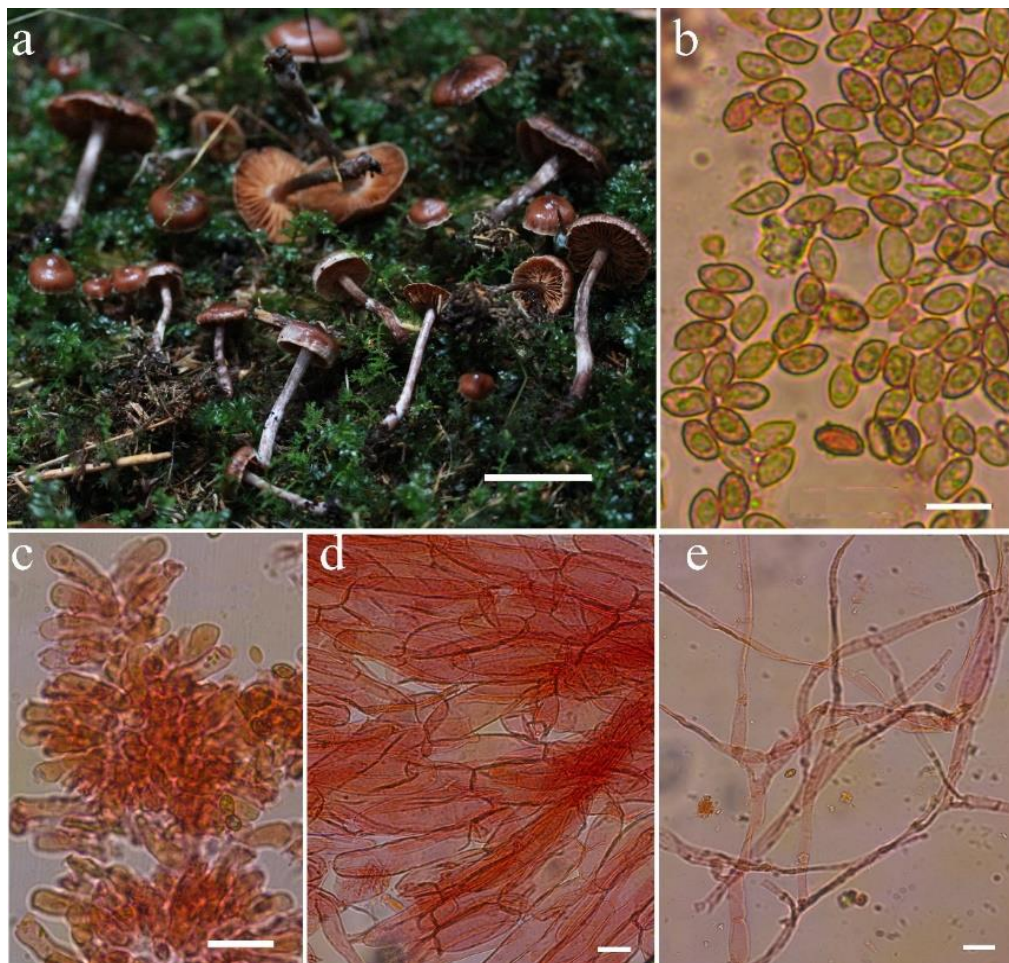


Figure 1. *Cortinarius atroalbus*: a- basidiomata, b- basidiospores, c-basidia and basidiole, d,e-pileipellis (bars: a= 50 mm, b= 10 μm, c-e= 20).

4. Discussions

Cortinarius atroalbus and *C. duracinobtusus* are recorded for the first time from Turkey and provided here with descriptions, and photographs related to their macroscopy and microscopy. Main characteristics of the new records generally matched very well with the original descriptions. The size, shape and colour of the pileus, lamellae colour, and size and shape of basidiospores of KATO F. 3601 almost overlap with Moser (1993)'s sample. According to Mcknig and Moser (1993) *C. atroalbus* is one of the most striking species, readily identifiable in the field and known from the alpine zone under dwarf willow in Austria. Moser (1993) described this species from alpine tundra, USA. A close, but different species, *C. depressus* Fr. has $6.5-7.5 \times$

$3.5-4 \mu\text{m}$, narrowly ellipsoid basidiospores; 15-60 mm, dark reddish brown pileus and ochraceous to light yellowish lamellae (Knudsen and Vesterholt, 2008). *Cortinarius duracinobtusus* described by Henry (1970) shares very similar morphological characters with the one we observed in KATO Fungi 3074. A similar, but different species, *C. azureus* has an obtusely conical to plane, gray-violet or lilac-brown pileus; broadly attached lamellae and $7-10 \times 5-8 \mu\text{m}$, elliptical to subglobose basidiospores (Breitenbach and Kränzlin, 2000).

Acknowledgments

This work was financed by the Trabzon University (TAP: 20TAP00123).

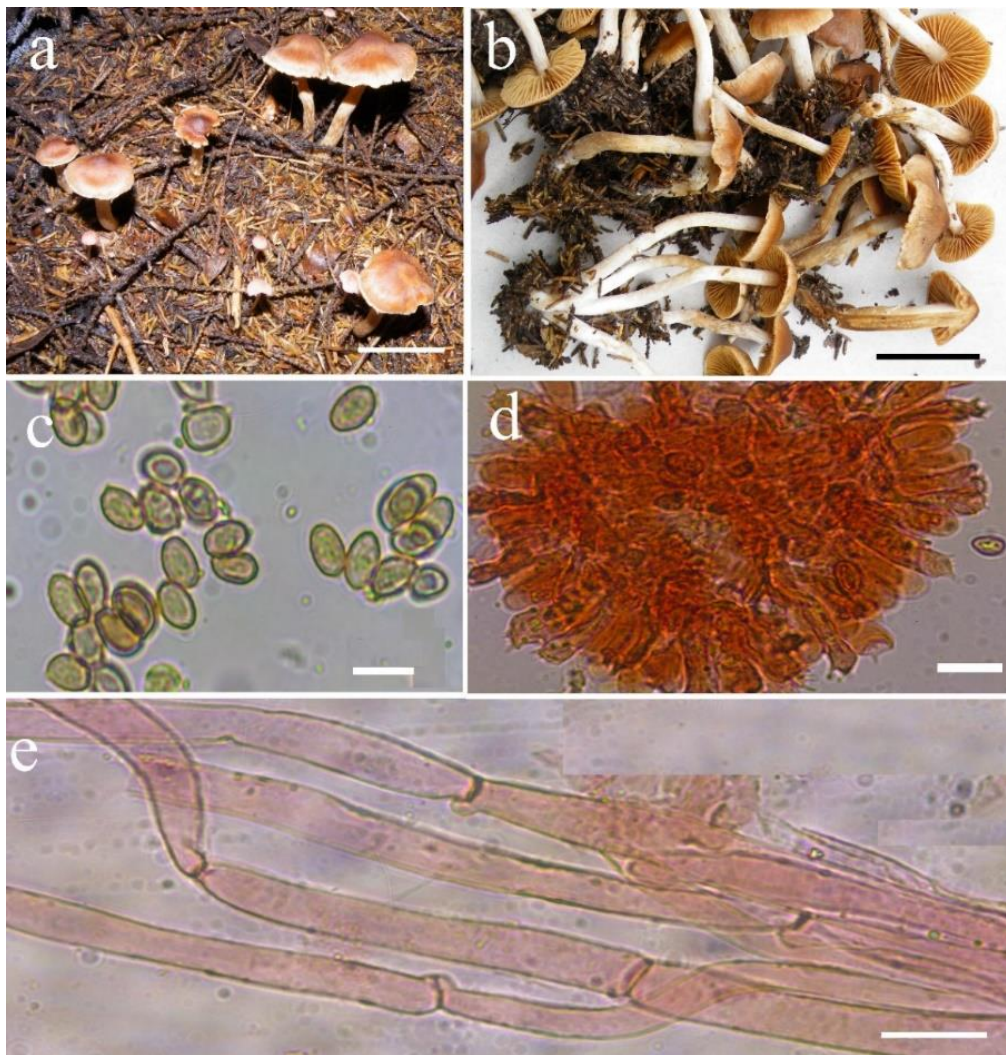


Figure 2. *Cortinarius duracinobtusus*: a,b- basidiomata, c- basidiospores, d-basidia and basidiole, e-pileipellis (bars: a and b= 30 mm, c= 10 μm , d and e= 20 μm).

References

- Akata I, Kabaktepe S, Akgül H (2015). *Cortinarius caperatus* (Pers.) Fr., a new record for Turkish mycobiota. Journal of Forestry Faculty of Kastamonu University 15(1): 86-89.
- Breitenbach J, Kränzlin F (2000). Fungi of Switzerland, Vol. 5. Lucerne: Verlag Mykologia.
- Cléménçon H (2009). Methods for Working with Macrofungi: Laboratory Cultivation and Preparation of Larger Fungi for Light Microscopy. Berchtesgaden, Germany: Berchtesgadener Anzeiger.
- Doğan HH, Kurt F (2016). New macrofungi records from Turkey and macrofungal diversity of Pozantı-Adana. Turkish Journal of Botany 40: 209-217.

- Henry R (1970). Étude provisoire des Hydrocybes a pied atténué à la base. Le groupe *Duracinus*. Bulletin Trimestriel de la Société Mycologique de France 85: 385-449.
- Kaşık G, Uçar S, Aktaş S (2011). Macrofungi of İskilip (Çorum) district. The Journal of Fungus 2(1-2): 9-13.
- Knudsen H, Vesterholt J (2008). Funga Nordica: Agaricoid, Boletoid and Cyphelloid Genera. Copenhagen: Narayana Press.
- Kaya A, Uzun Y, Karacan İH (2009). Macrofungi of Göksun (Kahramanmaraş) district. Turkish Journal of Botany 33: 131-139.
- Mcknig KH, Moser MM (1993). Taxonomy and Ecology of Ectomycorrhizal Macrofungi In The Vicinity of Grand Teton and Yellowstone National Parks. University of Wyoming National Park Service Research Center Annual Report, Vol. 17 Art. 12.
- Moser M (1993). Studies on North American *Cortinari*. III. The *Cortinarius* flora of dwarf and shrubby *Salix* associations in the alpine zone of the Windriver Mountains, Wyoming, USA. Sydowia 45(2): 282.
- Sesli E, Liimatainen K (2018). *Cortinarius conicoumbonatus* (*Cortinarius* subgen. *Telamonia* sect. *Hinnulei*): a new species from spruce-beech forests of the East Black Sea Region of Turkey. Turkish Journal of Botany 42: 327-334.
- Tartarat A (1988). Flore Analytique des Cortinaires. France: Dauphiné-Savoie Mycological Federation, p. 320.
- Türkecul İ (2003). A contribution to the fungal flora of Tokat Province. Turkish Journal of Botany 27: 313-320.
- Uzun Y, Acar İ, Akata I, Akçay ME (2013). Three new records for Turkish *Cortinarius* from Bingöl province. Biological Diversity and Conservation 6(3): 160-163.