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Research article/Araştırma makalesi

Three new records for Turkish *Cortinarius* from Bingöl province

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Abstract

Cortinarius albonigrellus J. Favre, *C. assiduus* Mahiques, A. Ortega & Bidaud and *C. percavus* J. Favre are reported from Bingöl province as new records for Turkish mycobiota. Short descriptions and the photographs of the taxa are provided and discussed briefly.

Key words: New records, *Cortinarius*, Bingöl, Turkey

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Türkiye *Cortinarius*'ları için Bingöl yöresinden üç yeni kayıt

Özet

Cortinarius albonigrellus J. Favre, *C. assiduus* Mahiques, A. Ortega & Bidaud ve *C. percavus* J. Bingöl yöresinden Türkiye mikobiotası için yeni kayıt olarak rapor edilmiştir. Taksonların kısa deskripsiyonu ve fotografları verilmiş ve kısaca tartışılmıştır.

Anahtar kelimeler: yeni kayıtlar, *Cortinarius*, Bingöl, Turkiye

1. Introduction

Bingöl province is located in the East Anatolian part of Turkey and has a surface area of 8253 km^2. The province is surrounded by Tunceli in the northwest, Erzincan in the north, Erzurum in the northeast, Muş in the east, Diyarbakır in the south and Elazığ in the east (Figure 1). The climate of the area is predominantly terrestrial. In other words, the summer months are hot and dry while the winter months are fairly cold and snowy. The vegetation in the area is dominated by oak, poplar and willow. Planted cedar and pine populations can also be seen especially around Genç district (Uzun et al., 2010).

Cortinarius is a widespread genus of order *Agaricales* and most members of the order are considered as ectomycorrhizal. It is the largest agaric genus containing over 2000 different taxa over the world. The most common features of the genus are the presence of cortina and rusty brown to cinnamon brown spore print (Arora, 1986; Kirk et al., 2008).

Members of the genus produce usually convex, dry to glutinosus, smooth, fibrillose or rarely scaly cap, emerginate to adnate, gills, usually clavate, clavate bulbose stem presence cobwebby or silky cortina, subglobose, ellipsoid, amygdaloid, fusoid or citriform, verrucose, pale ochre, fulvous to rusty tawny spores lacking an apical pore, rusty brown to cinnamon brown spore print, radial to filamentous cap cuticle. Pleurocystidia usually absent but cheliocystidia sometimes present on the gill edges (Hansen and Knudsen, 1992).

According to the literature on macromycota of Turkey (Akata, 2012; Akata et al., 2009;Atila and Kaya 2013; Kaya et al., 2012; Solak et al., 2007; Sesli et al., 2008; Sesli and Helfer, 2013), *Cortinarius albonigrellus* J. Favre, *C. assiduus* Mahiques, A. Ortega & Bidaud and *C. percavus* J. Favre have not yet been recorded from Turkey.

The aim of the study is to make a contribution to the Turkish mycobiota by adding new *Cortinarius* records.

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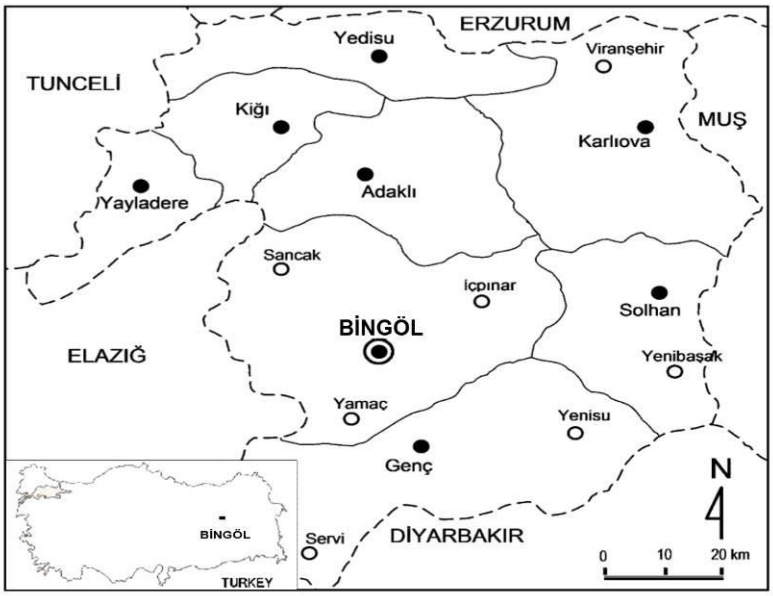

Figure1. Map of Study Area

2. Materials and methods

Samples were collected from Bingöl province between 2006 and 2008. Relevant morphological and ecological features of the specimens were recorded and they were photographed in their natural habitats. Afterwards the samples were taken to the fungarium. Necessary macroscopic and microscopic measurement data were carried out. Some reagents (distillate water, 5% KOH, Congo red etc.) were used for identification. Identification of the specimens was performed with the help of literature (Breitenbach and Kränzlin, 2000; Hansen and Knudsen, 1992; Ortega et al., 2007). The identified specimens were deposited at Fungarium of Van Yüzüncü Yıl University (VANF).

3. Results

Cortinariaceae R. Heim

Cortinarius albonigrellus J. Favre (Figure 2)

Macroscopic and microscopic features:

Pileus 15-20 mm across, conical at first, then campanulate with distinct umbo, surface hygrophanous, radially fibrilose, when moist dark reddish brown, darker in the centre, when dry brown ocher from the edge, margin slightly undulating and with remnants of whitish veil. **Flesh** reddish brown, **Odor** fungoid. **Taste** mild and sweet. **Lamellae** adnate, marginate, yellow reddish brown when young, then rust brown. **Stipe** 20-35 × 3-4 mm, cylindrical, with membranous annulus, slightly enlarged toward the base, solid at first, then hollow, surface ocher brown to brown to dark-brown above the ring, whitish circumcinct from the base to the middle. **Basidia** 30-40 × 10 µm, cylindrical to clavate, 4 spored and with basal clamp. **Basidiospores** 7-9 × 5-5.5 µm, elliptical, verrucose, light yellow to yellowish. **Marginal cells** cylindrical. **Cystidia** not seen.

Ecology: Summer to fall, subalpine to alpine, on soil among mosess and near willow.

Specimen examined: TURKEY—Bingöl, Ekinyolu village, on soil, near *Salix herbacea* L., 38°54'523"N-40°34' 039"E, 1110 m, 05.05.2007, Uzun –Bingöl 229.

Figure 2. *Cortinarius. albonigrellus* **a.** Basidiocarps **b**. Basidiospores

C. assiduus Mahiques, A. Ortega & Bidaud (Figure 3)

Macroscopic and microscopic features:

Pileus 20-50 mm across, hemispherical to conical when young, later expanded from plano-convex to applanate with a umbo, surface hygrophanous, shiny and viscid when moist, reddish-brown, paler then at margin. Margin incurved at first, then straight. **Flesh** whitish **Odor** and **Taste** subraphanoid. **Lamellae** adnate to adnate-sinuate or decurrent, cinnamon brown to rusty brown. **Stipe** 35-50 x 10-20 mm, cylindrical to clavate, slightly enlarged toward the base, white, sometimes with brownish spots, surface fibrillose. **Basidia** 25-30 × 10 µm, clavate to subcylindrical, 4-spored and with basal clamps. **Basidiospres** 8-10 × 5-6 µm, ellipsoid, ocher brown to light brown, slight verrucose. **Cystidia** not seen.

Ecology: Spring, summer to fall, on soil, near *Quercus* L. and *Cistus* L.

Specimen examined: TURKEY—Bingöl, Kardeşler village, on soil, under *Quercus*, 38°55'255"N-40°39' 455"E, 1255 m, 11.11.2006, Uzun –Bingöl 113.

Figure 3. *Cortinarius assiduus* **a.** Basidiocarps **b.** Basidiospores

C.percavus J. Favre (Figure 4)

Macroscopic and microscopic features:

Pileus 10-20 mm across, conical at first, later convex to expanded with a umbo, surface hygrophanous, smooth, dull to satiny, fibrillose, reddish brown to black brown when moist, ocher brown when young, margin acute. **Flesh** ocher brown to dark brown. **Odor** raphanoid. **Taste** mild. **Lamellae** adnate, marginate, yellow brown at first, later light rust brown. **Stipe** 25-30 × 5-6 mm, cylindrical, flexible, solid at first, then hollow, surface longitudinally whitish fibrillose on brownish background. **Basidia** 35-40 × 9-10 µm, clavate, 4 spored and with basal clamp. **Basidiospores** 9-11 × 6-7 µm, oval to elliptical, verrucose, light yellow to yellowish brown. **Marginal cells** cylindrical. **Cheliocystidia** cylindrical with 1-2 septa. **Pleuroystidia** not seen.

Ecology: Spring to summer, solitarty to gregarious at alpine elevations, on soil under willow.

Specimen examined: TURKEY— Bingöl, Karlıova village, on soil, near *Salix herbacea* L., 39°08'829"N-40°52' 477"E, 1720 m, 24.05.2008, Uzun –Bingöl 783.

Figure 4. *Cortinarius percavus* **a.** Basidiocarps **b.** Basidiospores

4. Discussion

C. albonigrellus is well characterized by a dark pileus covered with fibrillose veil on margin and a white-circumcint stem. *Cortinarius decipiens* (Pers.) Fr., can be confused with *C. albonigrellus* due to .its morphological and ecological features. It is a mountain to subalpine species growing in deciduous woodlands primarily under *Salix* L. and *Betula* L., *Populus* L. and *Quercus* L. but also under conifers such as *Pinus* L. and *Picea* Link. *C. albonigrellus* can be distinguished from C. decipiens by its abundant white cortina which constitutes a differentiated ring on the stipe (Breitenbach and Kränzlin, 2000; Suarez-Santiago, 2009).

C. assiduus produces strongly hygrophanous basidiocarps and shows bluish-violaceous or bluish lilac tinges on gills, upper stipe, context, even on the cap surface. This fungus is macroscopically very close to *C. saturninus* (Fr.) Fr.but it differs from the latter species due to its ecological preferences. While *C. assiduus* grows under *Quercus* and *Cistus*, both in acid and basic soil, *C. saturninus* prefers hardwood and coniferous forests, especially *Picea, Pinus, Salix, Populus*, and also under bushes in grassy places (Breitenbach and Kränzlin, 2000; Ortega et al., 2007).

C. percavus morphologically resembles *C. levipileus* J. Favre and can be seen in same habitats but the latter species does not have cheilocystidia (Breitenbach and Kränzlin, 2000).

Tracing to the current checklists (Solak et al., 2007; Sesli et al., 2008), 93 taxa of the genus *Cortinarius* (Fr.) P. Kumm. have so far been reported from Turkey.

With the present study, *Cortinarius albonigrellus*, *C. assiduus* and *C. percavus* are added to Turkish mycobiota and the number of Turkish *Cortinarius* taxa increased to ninetysix.

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