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New Records of *Tricholomataceae* and *Cortinarius* (Pers.) Gray from Turkey

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Abstract: *Lyophyllum multifforme* (Peck) H.E.Bigelow, *Cortinarius caesiocanescens* M.M.Moser and *C. corrosus* Fr. were collected for the first time from Turkey.

Key Words: Fungal diversity, taxonomy, *Tricholomataceae*, *Cortinarius*, Turkey

Türkiye için Yeni *Tricholomataceae* ve *Cortinarius* (Pers.) Gray Kayıtları

Özet: *Lyophyllum multifforme* (Peck) H.E.Bigelow, *Cortinarius caesiocanescens* M.M.Moser ve *C. corrosus* Fr. Türkiye'de ilk kez toplanmıştır.

Anahtar Sözcükler: Fungal çeşitlilik, Taksonomi, *Tricholomataceae*, *Cortinarius*

Introduction

The beauty of fungi is diverse and sometimes surprising and they can be bio- indicators. Species of *Tricholomataceae* represent a significant component of the ectotrophic mycorrhizal fungi that occur both in the deciduous and coniferous forests at the collection site. In August-September 2002, field trips for the collecting of fungi were carried out in the forests of Torul and Kürtün district in Gümüşhane province.

Although there are many edible wild mushroom species growing at the collection site, their consumption is mainly confined to an area of the Eastern Black Sea region. Most of these are eaten only in autumn, when they are abundantly available. Some people in this area dry fresh mushrooms in order to preserve them for future use.

The fungi were identified according to Breitenbach & Kränzlin (1991, 2000), Thorn & Malloch (1994), Bessette et al. (1997), Sesli et al. (2000) and McKenny & Stutz (2002). The apparent properties of the fungi, such as colour and odour, were noted and they were photographed in the field. The distribution is given in accordance with Breitenbach & Kränzlin (1991).

The aim of the present study was to make contributions to the Turkish mycota. The authors of fungal names are cited according to Kirk & Ansell (1992).

Materials and Methods

The specimens were examined in the laboratory at the earliest convenient time after collection. All the spore measurements were calculated and averaged from at least 20 individual measurements using Nikon microscopes. Excised pieces of fungus pileus were moistened by the addition of a few drops of Clémençon's solution (20 ml of concentrated ammonia + 1 g of glycerine + 80 ml of 96% ethanol) to soften them completely and they were then sectioned. The sections were prepared using a razor blade (Breitenbach & Kränzlin 1991, 2000).

Spores were photographed under the light microscopes and SEM photomicrographs obtained with a Phillips instrument. Spores were mounted in 70% ethyl alcohol and dispersed with a fine needle on either a copper or an aluminium stub and air dried. The stubs were coated with a layer of gold-palladium or gold alone,

and processed in a standard sputter coater. Observations were made at either 15 or 20 kV, according to the conditions of the sample (Sesli et al., 2000).

The specimens are kept in the Fungarium of Fatih Faculty of Education of Karadeniz Technical University in Trabzon.

Results

Tricholomataceae

Lyophyllum multifforme (Peck) H.E. Bigelow in *Rhodora* 62: P.193 (1960), [Syn. *Clitocybe multifformis* Peck, in *New York State Mus. Mem* 4: (1900)]

Pileus 30-100 mm wide, hemispherical when young, later convex with an incurved margin, eventually plane and irregularly undulating, surface smooth, dull satiny, white, grey-white to pale brownish orange at first, fading to dingy grey with age (Figure 1a). Flesh whitish, thin, odour pleasantly perfumy, taste mild. Lamellae attached, crowded, narrow, white when young, later cream-coloured to yellowish. Stipe 30-75 x 5-10 mm, cylindrical to ventricose, base often tapered, white, dull, finely appressed-fibrillose, yellowish and longitudinally fibrillose with age, solid when young, often eccentric, hollow, becoming fibrous with age. Spores elliptical, smooth, hyaline, inamyloid, 5-6 x 3-3.5 μ m (Figure 1b). Basidia slenderly clavate, 20-35 x 4-6 μ m, with 4 sterigmata, basal clamp-connection and containing siderophilous granules. Pileipellis of parallel hyphae 2-4 μ m broad.

Specimen examined: From roadside in *Picea orientalis* forest, Torul district of Gümüşhane province, September 2002 (Ses 2121). Distribution: Europe and Asia.

Cortinariaceae

Cortinarius caesiocanescens M.M. Moser in *Sydowia* 6: P.151 (1952)

[Syn. *Phlegmacium caesiocanescens* (Moser) Moser in *Helmut Gams Kleine Kryptogamenflora von mitteleuropa* 2: (1953)]

Pileus 30-70 mm across, convex when young, plane when mature, surface ash coloured when dry, slimy when moist, pale lilac tones toward the margin when young, later mouse-grey to discolouring ochraceous from crown, margin incurved (Figure 2a). Flesh whitish to ochraceous, thick in the centre and thin toward the margin; Odour slightly mushroomy, taste mild. Lamellae grey-bluish to slightly lilac, grey-brownish when mature, broad, narrowly attached. Stipe 25-50 x 10-20 mm, cylindrical, fragile, solid, base with marginate bulb 15-25 mm diam, surface grey-bluish to slightly lilac, bulb with ochraceous, sometimes almost membranous veil. Spores 7.5-10 x 5-6 μ m, amygdaliform, verrucose, yellow-brown (Figure 2b, 2c). Basidia 25-35 x 9-12 μ m, clavate, with 4 sterigmata. Pileipellis of hyaline and strongly gelatinised hyphae, 4-10 μ m broad; marginal cells 10-20 x 5-8 μ m, cylindrical to clavate.

Specimen examined: under *Picea orientalis*, Torul district of Gümüşhane province, August 2002 (Ses 2056). Distribution: Europe.



Figure 1. *Lyophyllum multifforme*: a. Basidiomes, b. Spores in LM. Scale bars: a = 2 cm; b = 5 μ m.

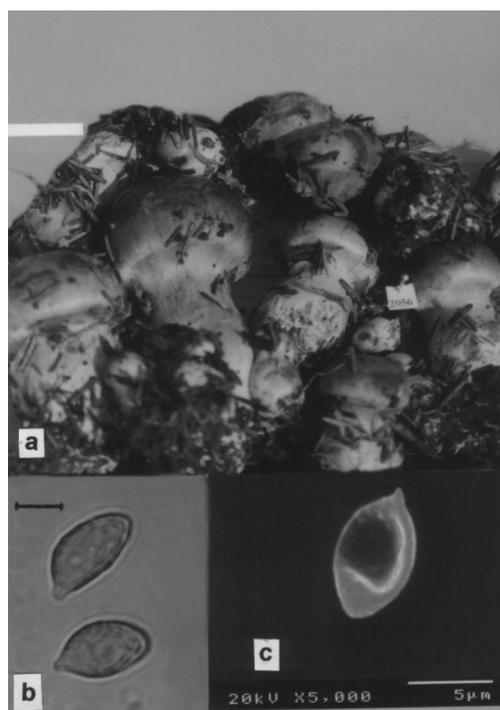


Figure 2. *Cortinarius caesiocanescens*. a. Basidiomes, b. Spores in LM. c. Spores in SEM. Scale bars: a = 3.5 cm; b, c = 5 µm.

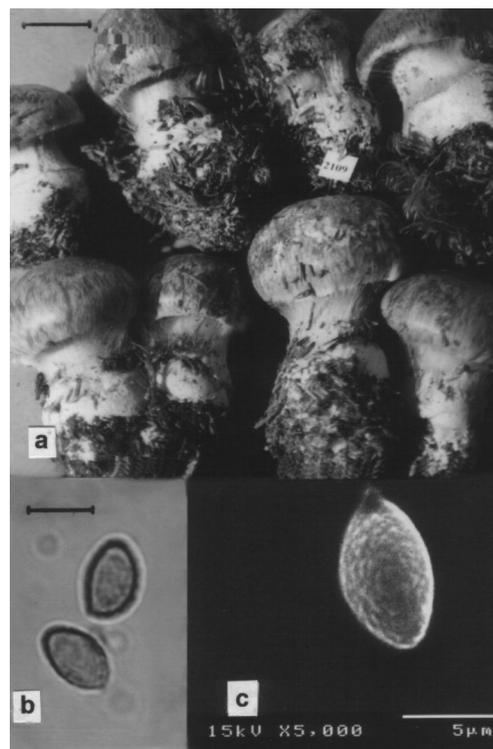


Figure 3. *Cortinarius corrosus*. a. Basidiomes, b. Spores in LM, c. Spores in SEM. Scale bars: a = 2 cm; b = 10 µm; c = 5 µm.

Cortinarius corrosus Fr. in *Epicrisis systematis mycologici* 266: P.347 (1838) [Syn. *Phlegmacium corrosus* (Fr.) Moser in *ibid* 125: (1960)]

Pileus 20-40 mm broad, hemispherical at first, later convex to plane, surface light ochre, ochre-brown, reddish ochre, margin for a very long time involute with filamentous cortina (Figure 3a). Flesh whitish, thick, odourless to slightly musty, taste often bitter or bitterish. Lamellae coarsely denticulate, whitish to grey-ochre or grey-brown, edges slightly crenate. Stipe 15-50 x 10-20 mm, whitish, yellowish, white-fibrillose, base yellowish-to reddish-brown, cylindrical, with bulb, fragile. Spores 9-11 x 6-7 µm, amygdaliform, verrucose, reddish ochre (Figure 3b, 3c). Basidia 25-35 x 8-10 µm, clavate, with sterigmata. Pileipellis of irregular hyphae, 2.5-8.5 µm broad, yellow, septa clamp-connected; marginal cells 15-40 x 3-5 µm, cylindric.

Specimen examined: under *Picea orientalis*, Kürtün district of Gümüşhane province, September 2002 (Ses 2109). Distribution: Europe

Discussion

The study yielded new records of *Tricholomataceae* (*Lyophyllum multiforme*) and *Cortinarius* (*C. caesiocanescens* and *C. corrosus*) to the Turkish mycota.

Before this study, 36 genera and 271 species of *Tricholomataceae* were recorded from different localities in Turkey. Among these genera, *Lyophyllum* P.Karst. is represented by 8 species in the Turkish mycota. The species of *Lyophyllum* are distributed in Mut and Kayseri (*Lyophyllum connatum* (Schumach.: Fr.) Singer), Samsun (*L. decastes* (Fr.: Fr.) Singer), İzmir (*L. favrei* (R.Haller Aar. & R.Haller Suhr) R. Haller Aar. & R.Haller Suhr), Karaman (*L. infumatum* (Bres.) Kühner, *L. leucophaeatum* (P.Karst.) P.Karst. and *L. semitale* (Fr.: Fr.) Kühner) and Alanya provinces in Turkey (*L. lorcatum* (Fr.) Kühner ex Kalamees, *L. transforme* (Britzelm.) Singer) (Sesli & Denchev, 2005).

Sixty-seven species of *Cortinarius* are known from Turkey. On the other hand, more than 500 species of *Cortinarius* have been recorded worldwide. A few Turkish *Cortinarius* species are edible, some are poisonous and

the edibility of the vast majority is unknown (Sesli & Denchev, 2005).

According to Breitenbach & Kränzlin (2000), *Cortinarius caesiocanescens* and *C. corrosus* are distributed in Europe in coniferous forests near *Picea* and *Abies*. In this study we collected both species under *Picea orientalis* at the collection site several times. Hence, we can say that the hyphae of *Cortinarius caesiocanescens*

and *C. corrosus* are related to the roots of *Picea orientalis*.

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