Cortinarius caperatus (Pers.) Fr., A New Record For Turkish Mycobiota

***Ilgaz AKATA[1], Şanlı KABAKTEPE[2], Hasan AKGÜL[3]**
Ankara University, Faculty of Science, Department of Biology, 06100, Tandoğan, Ankara Turkey
İnönü University, Battalgazi Vocational School, TR-44210 Battalgazi, Malatya, Turkey
Gaziantep University, Department of Biology, Faculty of Science and Arts, 27310 Gaziantep, Turkey
*Corresponding author: akata@science.ankara.edu.tr

Received date: 03.02.2015

Abstract
In this study, *Cortinarius caperatus* (Pers.) Fr. belonging to the family *Cortinariaceae* was recorded for the first time from Turkey. A short description, ecology, distribution and photographs related to macro and micromorphologies of the species are provided and discussed briefly.
Keywords: *Cortinarius caperatus*, mycobiota, new record, Turkey

Cortinarius caperatus (Pers.) Fr., Türkiye Mikobiyotası İçin Yeni Bir Kayıt

Özet
Bu çalışmada, *Cortinariaceae* familyasına mensup *Cortinarius caperatus* (Pers.) Fr. Türkiye'den ilk kez kaydedilmiştir. Türün kısa deskripsiyonu, ekolojisi, yayılışı ve makro ve mikro morfolojilerine ait fotoğrafları verilmiş ve kısaca tartışılmıştır.
Anahtar Kelimeler: *Cortinarius caperatus*, Mikobiyota, Yeni kayıt, Türkiye

Introduction

Cortinarius is a large and complex genus of family *Cortinariaceae* within the order *Agaricales*, The genus contains approximately 2 000 species recognised worldwide. The most common features among the members of the genus are the presence of cortina between the pileus and the stipe and cinnamon brown to rusty brown spore print (Arora, 1986; Kirk et al., 2008; Uzun et al., 2013).

Cortinarius species are characterized by small to large, convex then expanded, often umbonate, glutinosus or dry, smooth or fibrillose, rarely scaly pileus, emerginate to adnate, but not often decurrent lamellae, equal, clavate or marginatcly bulbous stipe having cobwebby or silky cortina, typically rough but sometimes almost smooth, ovate, elliptic, pruniform, amygdaliform, pale ochre, fulvous to rusty tawny spores lacking an apical pore, usually clavate, often, 4 more rarely 2-spored basidia usually with basal clamps. Pleurocystidia usually absent but cheliocystidia sometimes present on the lamellae edges (Arora, 1986; Hansen and Knudsen, 1992; Orton, 1984; Uzun et al., 2013).

According to the literature (Sesli and Denchev, 2008, Uzun et al, 2013; Akata et al; 2014), 98 species in the genus *Cortinarius* have so far been recorded from Turkey but there is not any record of *Cortinarius caperatus* (Pers.) Fr.

The present study aims to make contribution to the mycobita of Turkey.

Materials and methods

Fungi samples were collected from Pamukova (Sakarya) in October 25, 2014. Necessary ecological and morphological features of the samples were noted and they were photographed in their natural habitats. Then the samples were taken to the fungarium for further investigations. The identification of fungi was done by light microscopy. Reagents such as Melzer reagent, 5 % KOH, congo red and cotton blue were used. Identification was performed with the aid of literature (Hansen and

Knudsen, 1992; Breitenbach and Kränzlin, 2000) The identified samples are deposited at Ankara University Herbarium (ANK).

Results

Cortinariaceae R. Heim ex Pouzar

Cortinarius (Pers.) Gray

Cortinarius caperatus (Pers.) Fr. **Syn.:** *Agaricus caperatus* Pers. (1796) *Dryophila caperata* (Pers.) Quél. (1886), *Pholiota caperata* (Pers.) Gillet, (1874) [1878], *Rozites caperatus* (Pers.) P. Karst. (1879), *Togaria caperata* (Pers.) W.G. Sm. (1908).

Macroscopic and microscopic features: Pileus 60-80 mm across hemispherical at first, then broadly convex to plane, or obscurely umbonate. Surface dry, dull, smooth in the centre, usually wrinkled or corrugated radially, light ochre, yellowish ochre to beige brown, margin acute and usually paler (Figure 1a,b,c,d). Flesh whitish, firm, thick in the centre of pileus, thinner toward to margin. Taste and odor are mild and pleasant. Lamellae adnate or notched, pale ochre to cream beige (Figure 1e,f). Stipe 60-90 × 10-20 mm, cylindrical, sometimes enlarged at base, solid, firm, fibrillose, annulus whitish and membranous (Figure 1g). Basidia 40-50 × 12-13 µm, clavate, 4 spored with basal clamp (Figure 2h,i). Spore print rusty brown. Spores 11- 13 × 7-9 µm, broadly ellipsoid to amygdaloid, verrucose, light ochre brown (Figure 2j,k). Marginal cells are cylindrical to clavate. Pileipellis is composed of periclinal hyphae 4-10 µm across, hyaline to light ochre, septa with clamps. **Edibility:** Edible, commercial value in Finland (Pelkonen et al., 2008).

Ecology: Common, summer to fall, gregarious or grouped on soil, forming mycorrhiza with coniferous and deciduous trees but also with woody shrubs, especially near Bilberry (*Vaccinium myrtillus* L.) (Arora, 1986; Hansen and Knudsen, 1992; Breitenbach and Kränzlin, 2000).

Material examined: TURKEY—Sakarya, Pamukova, Hüseyinli village, on soil, near uludağ fir and oriental beech mixed forest, under bilberry (*Vaccinium myrtillus* L.), 40° 34' 96" N -30° 00' 09" E, 1096 m, 25.10.2014, Akata 6147 (ANK).

Discussion

Cortinarius caperatus, known as the gypsy mushroom, is an edible and widespread in northern regions of Europe and North America. It has mycorrhizal relation with conifers, hardwoods and bushes, especially with Bilberry (*Vaccinium myrtillus* L.). This species is mentioned as "*Rozites caperatus*" in many old papers and books but after molecular studies, it has been transferred to genus *Cortinarius* (Breitenbach and Kränzlin, 2000; Peintner et al., 2002).

This species is characterized by beige brown to yellowish pileus with wrinkled marginal zone, pale ochre to cream beige lamellea and annulate stipe. It is widespread and very difficult to confuse with other *Cortinarius* members due to its wrinkled or furrowed marginal zones on pileus and with a membranous annulus (Arora, 1986; Breitenbach and Kränzlin, 2000; Hansen and Knudsen, 1992).

Agrocybe praecox (Pers.) Fayod macroscopically resembles *C. caperatus*, but the former species does not have a wrinkled pileus and is usually found in cultivated areas. *C. caperatus* can also be confused with *Phaeolepiota aurea* (Matt.) Maire in terms of morphology and ecology, but the latter species has a more powdery-granulose pileus and stipe (Arora, 1986; Breitenbach and Kränzlin, 2000).

Acknowledgements

We would like to thank to Jilber Barutçiyan for his valuable help in field trip and taking macroscopic photos of the samples.

Figure1. *Cortinarius caperatus*: **a-d.** fruit bodies, **e,f.** lamellae, **g.** annulus

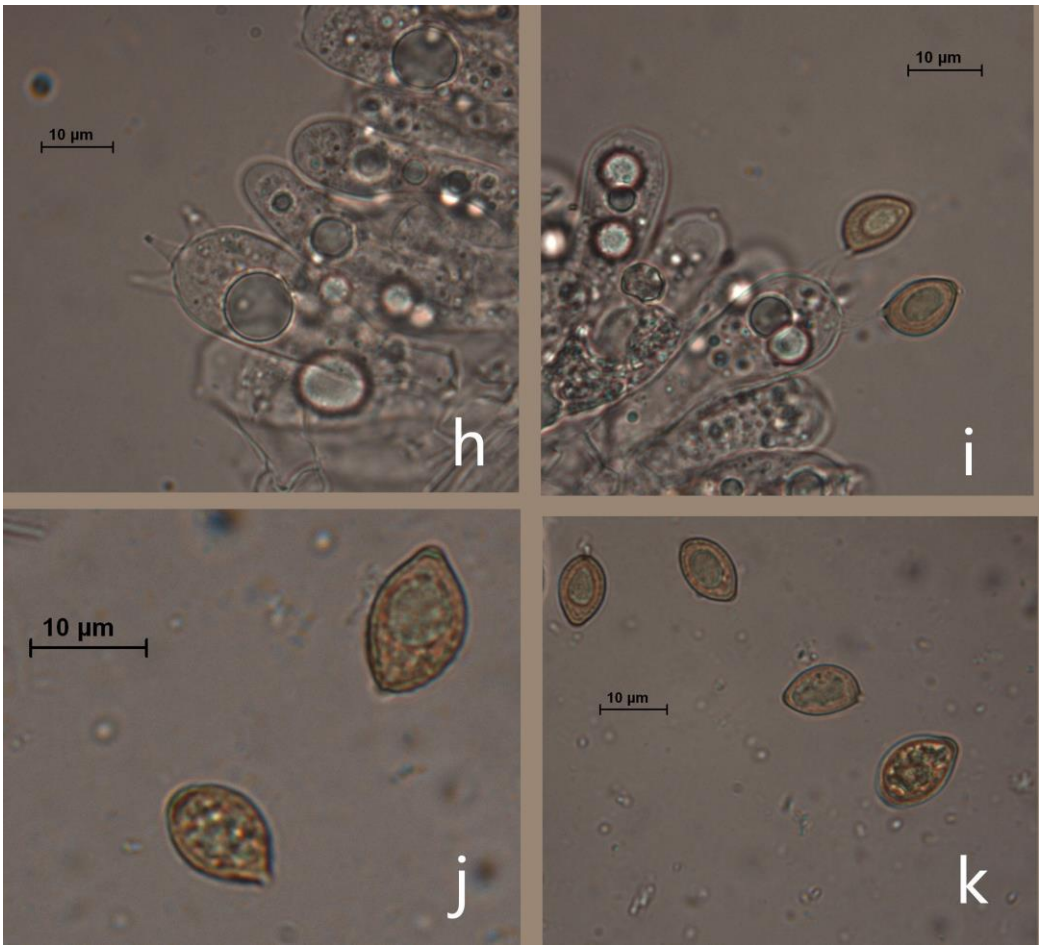

Figure 2. *Cortinarius caperatus*: h,i. basidia, j,k. spores

References

Akata I., Kaya A., Uzun Y. 2014. Macromycetes determined in Yomra (Trabzon) district. Turkish Journal of Botany, 38: 999-1012.

Arora D. 1986. Mushrooms demystified. ten speed press: Berkeley, CA.

Breitenbach, J., Kränzlin F. 2000. Fungi of Switzerland. Vol: 5, Agarics 3. Part, *Cortinariaceae*. Verlag Mykologia CH-6000 Luzern 9, 338 p., Switzerland.

Hansen, L., Knudsen H. 1992. Nordic Macromycetes. Volume 2. *Polyporales*, *Boletales*, *Agaricales*, *Russulales*. Nordsvamp, 474 p,. Copenhagen, Denmark.

Kirk P.F., Cannon, P.F., Minter D.W., Stalpers J.A. 2008. Dictionary of the fungi, 10th ed. CAB International. Wallingford, UK.

Orton P.D. 1984. Notes on British Agarics: 8 - Notes Royal Botanic Garden, Edinburgh, 41: 565-624.

Pelkonen R., Alfthan G., Järvinen O. 2008. Element concentrations in wild edible mushrooms in Finland. Finnish Environment Institute, Helsinki, Finland.

Peintner U., Horak E., Moser M., Vilgalys R. 2002. Rozites, Cuphocybe and Rapacea are taxonomic synonyms of Cortinarius: New combinations and new names. Mycotaxon 83: 447–51.

Sesli E., Denchev, C.M. 2008. Checklists of the myxomycetes, larger ascomycetes, and larger basidiomycetes in Turkey. – Mycotaxon 106: 65–67. + [complete version, 1–36, new version uploaded in February 2014].

Uzun Y., Acar İ., Akata I., Akçay M.E., 2013. Three new records for Turkish *Cortinarius* from Bingöl province. Biological Diversity and Conservation, 6 (3): 160-163.