



Two new basidiomycete records for the Mycobiota of Turkey

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Türkiye Mikobiyotası için iki yeni bazidiyomiset kaydı

Abstract: Two basidiomycetous taxa, *Conocybe velutipes* (Velen.) Hauskn. & Svrček and *Entoloma ameides* (Berk. & Broome) Sacc, were collected from Muradiye district of Van province and reported for the first time from Turkey. The macroscopic and microscopic features of the species were described briefly and the photographs related to their macro and micromorphologies were provided.

Key words: Biodiversity, new record, macrofungus, Van, Turkey

Özet: İki basidiyomiset taksonu olan *Conocybe velutipes* (Velen.) Hauskn. & Svrček ve *Entoloma ameides* (Berk. & Broome) Sacc, Van ilinin Muradiye ilçesinden toplanmış ve Türkiye'den ilk kez rapor edilmiştir. Türlerin makroskobik ve mikroskobik özellikleri kısaca betimlenmiş ve makro ve mikromorfolojilerine ilişkin fotoğrafları verilmiştir.

Anahtar Kelimeler: Bıyoçeşitlilik, yeni kayıt, makromantar, Van, Türkiye

1. Introduction

Conocybe Fayod and *Entoloma* P.Kumm. are the two basidiomycetous genera within the order *Agaricales*. The genus *Conocybe* takes place within the family *Bolbitiaceae* and have a worldwide distribution. The members of the genus generally prefer fertile soils and grow in grasslands on dead moss, dead grass, sand dunes, decayed wood and dung. *Conocybe* species are generally characterised by a long, thin stipe, lecythiform cheilocystidia with round capitellum (Amandeep and Munruchi, 2015).

Entoloma is the type genus of the family *Entolomataceae* and generally characterised by pinkish-brownish spore print and pink spores that are angular in all views. The genus has a worldwide distribution, especially in the temperate and cold regions. Though most member of the genus grow saprophytically in humus etc, rarely wood-inhabiting, some are mycorrhizal (Noordeloos, 1981).

Due to the geophraphic position, Turkey has a considerably rich biological diversity. It is among the very rare countries showing continental character in terms of biodiversity. As well as plant and animal diversity, Turkey is also supposed to be rich in terms of macrofungal biodiversity. Though the determined macrofungi number is still not as much as supposed to be, macrofungal biodiversity studies are continuing in an increasing manner. Almost 2.400 macrofungi growing in Turkey were listed by Sesli and Denchev (2014) and Solak et al. (2015). After these checklists some local studies (Kaşık et al., 2013; Demirel and Kocak 2014; Acar et al., 2015; Demirel et al., 2015; Güngör et al., 2015; Uzun et al., 2015; Demirel et al., 2016; Acar and Uzun 2016; Akçay and Uzun 2016; Kaya et al., 2016; Sesli et al., 2016; Türkekül and Işık, 2016; Akata and Uzun 2017; Sesli and Vizzini, 2017; Demirel et al., 2017, Kaşık et al., 2017; Uzun et al., 2017) were also presented and some new records (Keleş et al., 2017; Işık and Türkekül, 2018; Kaya and Uzun, 2018; Akçay et al., 2018) were also presented.

The study aims to make a contribution the basidiomycete biodiversity of Turkey by reporting two new records.

2. Materials and Method

Macrofungi samples were collected from the region within the boundaries of Muradiye districts of Van province. Morphological and ecological properties of the samples were recorded and they were photographed at their natural habitats. A Leica DM500 trinocular light microscope were used for the investigation and photographing the micromorphology. The obtained data were compared to those given in literature (Breitenbach and Kränzlin, 1995; Jordan, 1995; Prydiuk, 2007; Amandeep and Munruchi, 2015) and the specimens were identified. The samples are kept at the fungarium of Van Yüzüncü Yıl University, Science Faculty, Department of Biology.

3. Results

The systematics of the newly recorded species are in accordance with www.indexfungorum.org (accessed on 15 November 2018).

Basidiomycota R.T.Moore

Agaricomycetes Doweld

Agaricales Underw.

Bolbitiaceae Singer

Conocybe velutipes (Velen.) Hauskn. & Svrček

Syn.: *Conocybe kuehneriana* Singer, *Conocybe velutipes* (Velen.) Hauskn. & Svrček var. *velutipes*, *Galera velutipes* Velen.

Macroscopic features: Pileus 17-25 mm in diameter, conical, brownish orange when young, grayish yellow when mature, surface smooth, margin irregular, striate, splitting at maturity. Flesh thin, taste and odor not distinctive. Lamellae pale yellowish when young, dirty pinkish when mature, adnexed, fragile. Stipe 30-52 × 5-7

mm, cylindrical, somewhat bulbous at the base, solid, surface whitish fibrillose.

Microscopic features: Basidia 19–30 × 10–13.5 μm, clavate, 4-spored, thin-walled, hyaline. Cheilocystidia 18–20 × 5–7.5 μm, lecythiform, hyaline. Basidiospores 9–12.5 × 6.5–7.5 (8.5) μm, ellipsoidal with germ pore, smooth, brownish yellow.

Ecology: *Conocybe velutipes* grow among grasses and mosses in deciduous and coniferous forests, in grassy habitats, in meadows (Jordan, 1995; Hausknecht et al., 2009; Amandeep and Munruchi, 2015).

Specimen examined: Van, Muradiye, Değerbilir village, under poplar (*Populus* sp.) trees, 39°03'N, 43°45'E, 1827 m, 20.10.2014, ÇAGLI. 113.

Entolomataceae Kotl. & Pouzar *Entoloma* P. Kumm.

Entoloma ameides (Berk. & Broome) Sacc

Syn.: *Agaricus ameides* Berk. & Broome, *Entoloma ameides* (Berk. & Broome) Sacc var. *ameides*, *Entoloma ameides* var. *tenuis* Arnolds & Noordel. *Nolanea ameides* (Berk. & Broome) P.D.Orton, *Rhodophyllus ameides* (Berk. & Broome) Quél.

Macroscopic features: Pileus 20–40 mm in diameter, conic when young, broadly conic when mature, umbonate at the center, surface grey to grey-brown and striate when young, grey-beige to silvery and fibrillose when mature, darker towards the center. Flesh thin and white, odor sweetish. Lamellae grey-beige when young, pink-brown when mature, adnate, edges crenate. Stipe 50–70 × 5–7 mm, cylindrical, thickened towards the base, fragile, hollow, white tomentose at the base and longitudinally fibrillose toward the apex.

Microscopic features: Basidia 39–43 × 10–12 μm, cylindrical, generally 4-spored. Basidiospores 8.5–11 × 6.5–8.5 μm, orange-brown to yellowish-brown, 5–6 angled.

Ecology: *Entoloma ameides* grows among leaf litter and grasses in and outside the forests, in meadows (Breitenbach and Kränzlin, 1995; Jordal et al., 2016).

Specimen examined: Van, Muradiye, Görecek old village, meadow, 39°04'N, 43°45'E, 1813 m, 19.05.2015, ÇAGLI. 256.



Figure 1. *Conocybe velutipes*: a- basidiocarps, b- basidia, c- basidiospores (bars a: 10 mm, b,c: 10 μm)



Figure 2. *Entoloma ameides*: a- basidiocarps, b- basidia, c- basidiospores (bars a: 10 mm, b,c: 10 μm)

4. Discussions

Conocybe velutipes (Velen.) Hauskn. & Svrček and *Entoloma ameides* (Berk. & Broome) Sacc, were reported for the first time from Turkey. In general the macroscopic and microscopic characters agree with those given in literature (Breitenbach and Kränzlin, 1995; Jordan, 1995; Prydiuk, 2007; Amandeep and Munruchi, 2015). Due to the photographic perspective, the umbo at the center of the fruit bodies seems not to be visible, but it is distinctly visible on dry materials.

Conocybe siennophylla (Berk. & Broome) Singer ex Chiari & Papetti is a similar species to *C. velutipes*, but the uniformly ochre colored pileus and smaller

basidiospores differs it from the latter species (Watling, 1982; Amandeep and Munruchi, 2015). *Conocybe velutipes* is distinguished from closely related taxa by the relatively large, thickwalled, lentiform but not hexagonal spores (Hausknecht et al., 2009).

Entoloma sacchariolens (Romagn.) Noordel, has similar macroscopic and microscopic features, and odor with *E. ameides*, but this species has cheilocystidia (Breitenbach and Kränzlin, 1995).

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