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Research article/Araştırma makalesi

Pulvinula Boud., a new genus and three pulvinuloid macrofungi taxa new for Turkey

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Abstract

The genus *Pulvinula* Boud. is recorded from Turkey for the first time, based on the collections of three pulvinuloid taxa, *Pulvinula archeri* (Berk.) Rifai, *Pulvinula carbonaria* (Fuckel) Boud. and *Pulvinula laeterubra* (Rehm) Pfister, from Gaziantep. Newly recorded taxa are described briefly and their photographs related to their macro and micromorphologies are provided.

Key words: new record, *Pulvinula*, Gaziantep, Turkey

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Pulvinula Boud., Türkiye için yeni bir cins ve üç pulvinuloid makromantar taksonu

Özet

Pulvinula Boud. cinsi Gaziantep'ten üç pulvinuloid taksonun, *Pulvinula archeri* (Berk.) Rifai, *Pulvinula carbonaria* (Fuckel) Boud. ve *Pulvinula laeterubra* (Rehm) Pfister, toplanmasıyla Türkiye'den ilk kez kaydedilmiştir. Yeni kayıt taksonlar kısaca betimlenmiş ve taksonların makro ve mikro morfolojilerine ait fotoğrafları verilmiştir.

Anahtar kelimeler: yeni kayıt, *Pulvinula*, Gaziantep, Türkiye

1. Introduction

Pulvinula Boud. is a genus of the family *Pyronemataceae* within the order *Pezizales*. It is mainly characterized with discoid to pulvinate apothecia, presence of carotenoid pigments, apically curved or hooked to deformed paraphyses and globose (rarely ellipsoid) ascospores (Pfister, 1972). Though the genus *Pulvinula* was first mentioned in 1885 (Yao and Spooner, 1996) and reconsidered in 1907 by Boudier, it was not acknowledged until the treatment of it by Le Gal in 1953 (Pfister, 1976). Pfister (1976) revised the genus considering the size of the apothecia, asci and ascospores, apothecial color, the presence or absence of croziers and the type of substrate on which apothecia are produced.

Three pulvinuloid macrofungi samples were collected from Gaziantep province in 2015 and identified as *Pulvinula archeri* (Berk.) Rifai, *Pulvinula carbonaria* (Fuckel) Boud. and *Pulvinula laeterubra* (Rehm) Pfister. Tracing the current checklists (Solak et al., 2007; Sesli and Denchev, 2008) and latest records (Akata et al., 2014; Güngör et al., 2014; Keleş et al., 2014; Sesli, 2014; Sesli et al., 2014; Uzun et al., 2014; Kaya, 2015; Kaya and Uzun, 2015; Sesli et al., 2015; Türkoğlu et al., 2015; Acar et al., 2015) it was found that none of the three taxa and any member of the genus *Pulvinula* was recorded from Turkey before.

The aim of the present study is to make a contribution to Turkish mycobiota.

2. Materials and methods

Fungal specimens were collected from Nizip and Şehitkâmil (Gaziantep) districts between 2014-2015. During periodical field trips, the samples were photographed in their natural habitats and necessary morphological and ecological characteristics were recorded. Then the samples were transferred to the fungarium and further macroscopic

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and microscopic investigations. Microstructural data was obtained by using a Nikon Eclipse Ci trinocular microscope and photographed by a DS-Fi2 digital camera. Identification was performed according to Pfister (1976) and Yao and Spooner (1996). The samples are kept at Karamanoğlu Mehmetbey University, Kamil Özdağ Science Faculty, Department of Biology.

3. Results

The systematic of the taxa is given according to Kirk et al. (2008) and Index fungorum (www.indexfungorum.org: accessed 20 May 2015).

Ascomycota R.H. Whittaker
Pezizales J. Schröt.
Pyronemataceae Corda
Pulvinula Fr.

3.1. *Pulvinula archeri* (Berk.) Rifai (1968)

Syn: *Barlaea archeri* (Berk.) Sacc., *Barlaeina archeri* (Berk.) Sacc. & Traverso, *Peziza archeri* Berk.

Macroscopic and microscopic features: Apothecia 4-7 mm in diameter, convex to somewhat vavy (Figure 1a), margin almost smooth, orange. Asci 135-145 × 10-11 µm, cylindrical and usually tapering toward the base. Paraphyses slender, 1-2 µm in diameter, curved apically and mostsly branched (Figure 1b). Ascospores 9-11 µm, globose, smooth, generally with a single large oil droplet (Figure 1c).

Specimen examined: TURKEY — Gaziantep: Nizip, Sekili village, on damp soil among mosses, 36°58'N, 37°40'E, 600 m, 13.12.2014, K. 11074; Şehitkâmil, cemetery, among mosses, 37°04'N, 37°23'E, 845 m, 06.03.2015, K. 11376.

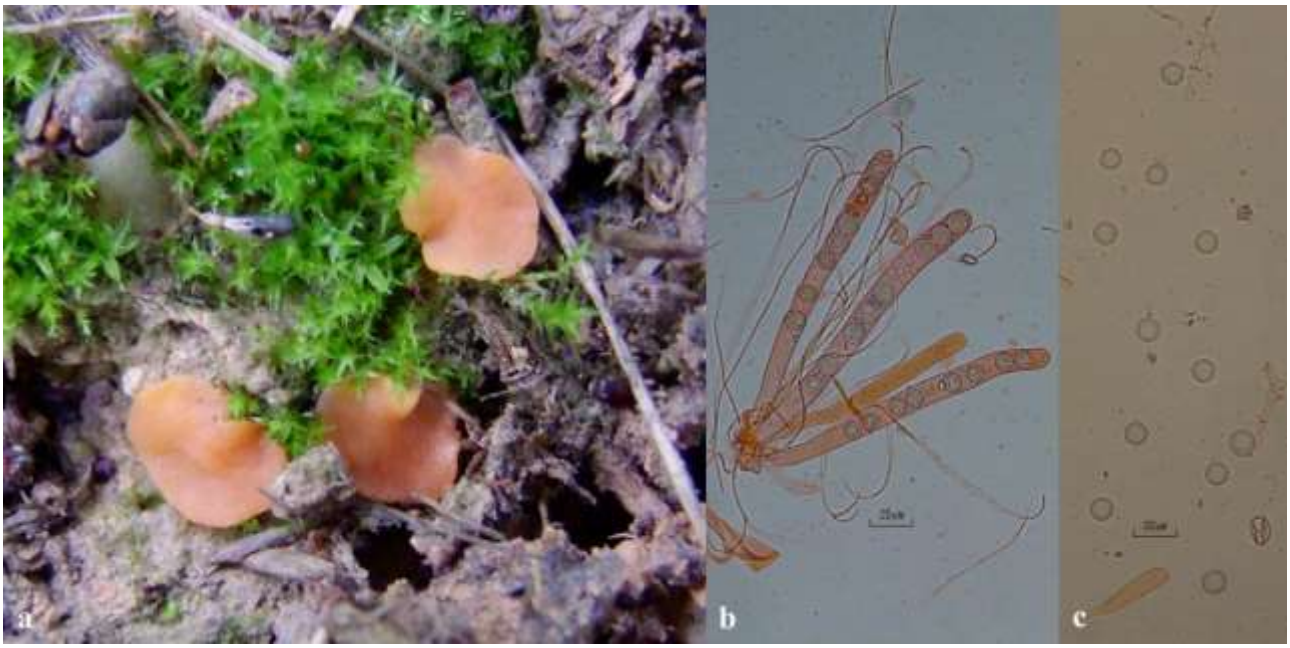

Figure 1. *Pulvinula archeri*: a. ascocarps, b. asci and paraphyses, c. ascospores

3.2. *Pulvinula carbonaria* (Fuckel) Boud. (1885)

Syn: *Barlaea carbonaria* (Fuckel) Sacc., *Barlaeina carbonaria* (Fuckel) Sacc. & Traverso, *Crouania carbonaria* Fuckel, *Lamprospora carbonaria* (Fuckel) Seaver, *Octospora carbonaria* (Fuckel) Caillet & Moyne, *Pulvinula carbonaria* var. *brevispora* L.R. Batra, *Pulvinula carbonaria* (Fuckel) Boud., var. *carbonaria*.

Macroscopic and microscopic features: Apothecia 1-4 mm in diameter, cup-shaped or subconcave at first then flat, pale orange, outer surface smooth and lighter than the disc (Figure 2a). Asci 190-240 × 18-20 µm, almost cylindrical, 4-8 spored, base moderately broad with a prominent crozier. Paraphyses slender, 1.5-2.5 µm in diameter, generally longer than the young asci and strongly bent or curved apically (Figure 2b). Ascospores 15-17 µm, globose, smooth, hyaline, with a single large guttule and some with smaller satellite guttules (Figure 2c).

Specimen examined: TURKEY — Gaziantep: Şehitkâmil, cemetery, on ash, 37°04'N, 37°23'E, 845 m, 04.01.2015, K. 11155.

3.3. *Pulvinula laeterubra* (Rehm) Pfister (1976)

Syn: *Barlaea laeterubra* Rehm

Macroscopic and microscopic features: Apothecia 1-4 mm in diameter, disc shaped, salmon-red (sometimes yellow) (Figure 3a). Asci 150-180 × 15-17 µm, cylindrical, generally eight spored (Figure 3b), base with a prominent two-pronged croziers. Paraphyses thin, 1-1.5 µm in diameter, commonly curved. Ascospores 11-14 µm in diameter, globose, smooth, uniseriate, hyaline generally with indiscrete oil droplets (Figure 3c).

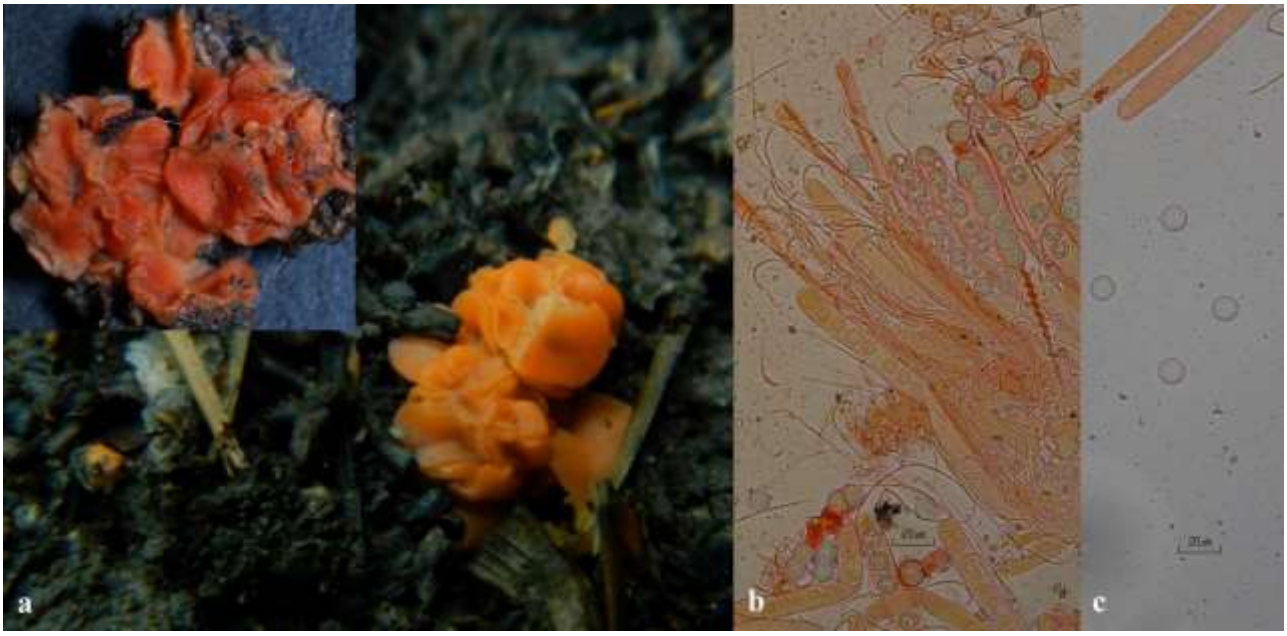

Figure 2. *Pulvinula carbonaria*: a. ascocarps, b. asci and paraphyses, c. ascospores

Specimen examined: TURKEY — Gaziantep: Nizip, Sekili village, cemetery, on dead *Cupressus* sp. twigs, 36°58'N-37°40'E, 600 m, 28.02.2015, K. 11347; Şehitkamil, cemetery, on dead *Cupressus* sp. twigs, 37°04'N, 37°23'E, 845 m, 04.01.2015, K. 11158.

Figure 3. *Pulvinula laeterubra*: a. ascocarps, b. asci and paraphyses, c. ascospores

4. Conclusions

With this study, three pulvinuloid taxa *Pulvinula archeri* (Berk.) Rifai, *Pulvinula carbonaria* (Fuckel) Boud. and *Pulvinula laeterubra* (Rehm) Pfister are recorded for the first time from Turkey. Since no member of it have so far been recorded from Turkey (Solak et al., 2007; Sesli and Denchev, 2008), the genus *Pulvinula* is also new for the mycobiota of Turkey at genus level.

Pulvinula archeri is similar to *P. johannis* Lantieri in terms of apothecial shape. But it differs from the latter species by its orange to yellow orange hymenium, smaller asci and ascospores. Though Spooner (2004) reported *P. archeri* to develop generally on burnt grounds, we collected it on damp soil among mosses.

Pulvinula carbonaria is similar to *P. miltina* (Berks.) Rifai in spore size and ascus shape but differs in having smaller apothecia and paraphyses (Yao and Spooner, 1996).

Pulvinula laeterubra has similar-sized apothecia with *P. johannis*, but the larger ascospores of it differentiate the two specices from each other. Lantieri (2008) generalizes this specis to grow only on burnt places. But our samples were collected on dead *Cupressus* L. sp twigs.

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