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First Report of *Octospora neerlandica* from Asian Continent

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Abstract: The bryophilic ascomycete species, *Octospora neerlandica* Benkert & Brouwer, is reported as a new record from Turkey, based on the identification of the samples collected from Niğde province. A brief description and photographs, related to the macroscopy and microscopy of the species, are provided.

Key words: Biodiversity, bryophilic ascomycete, new record, *Pyronemataceae*, Turkey

Octospora neerlandica'nın Asya Kıtasından İlk Kaydı

Öz: Briyofilik askomiset türü olan, *Octospora neerlandica* Benkert & Brouwer, Niğde'den toplanan örneklerin teşhis edilmesiyle, Türkiye'den yeni kayıt olarak rapor edilmiştir. Türün kısa bir betimlemesi ve makroskopi ve mikroskobisine ilişkin fotoğrafları verilmiştir.

Anahtar kelimeler: Biyoçeşitlilik, briyofilik askomiset, yeni kayıt, *Pyronemataceae*, Türkiye

Introduction

Octospora Hedw is an ascomycete genus within the family Pyronemataceae Corda. Moss associated apothecia, typical marginal hyphae, and ellipsoid to globose or rounded, sometimes ornamented, guttulate spores generally characterize the genus (Yao and Spooner, 1996). Kirk et al. (2008) reports the presence of 84 species of the genus, eighty one of which also exist in Europe (Benkert, 2007).

Octospora itzerottii Benkert and *O. leucoloma* Hedw. were the first two *Octospora* species reported in Turkey (Çolak and Kaygusuz, 2017; Uzun et al., 2017). In the following two years, eleven members of the genus, *O. areolata* (Seaver) Caillet & Moyne, *O. axillaris* (Nees) M.M. Moser, *O. coccinea* (P. Crouan & H. Crouan) Brumm., *O. excipulata* (Clem.) Benkert, *O. gemmicola* Benkert, *O. grimmiae* Dennis & Itzerott, *O. lilacina* (Seaver) Svrček & Kubička, *O. musci-muralis* Graddon, *O. orthotrichi* (Cooke & Ellis) K.B. Khare & V.P. Tewari, *O. polytrichi* (Schumach.) Caillet & Moyne and *O. rustica* (Velen.) J.Moravec were also presented as new records

for the mycobiota of Turkey by Uzun et al. (2018) and Uzun and Kaya (2019). But the current checklists (Sesli and Denchev, 2014; Solak et al., 2015) on Turkish macromycota and the later contributions (Alkan et al., 2018; Doğan et al., 2018; Işık and Türkecul, 2018; Acar et al., 2019; Allı et al., 2019; Berber et al., 2019; Keleş, 2019; Şelem et al., 2019; Türkecul and Işık, 2019; Akçay, 2020; Çağlı and Öztürk, 2020; Çelik et al., 2020; İleri et al., 2020; Sadullahoğlu and Uzun, 2020; Sesli, 2020; Uzun et al., 2020), indicate that, *O. neerlandica* hasn't been reported from Turkey before.

The study aims to make a contribution to the mycobiota of Turkey.

Material and method

The fruit body of *O. neerlandica* was collected from Ulukışla district of Niğde province, in 2018, during a routine field trip performed to determine the macrofungal biodiversity of the district. The sample was photographed at its natural habitat, and ecological characteristics and geographic position were noted. Then it was put in a



paper box and transferred to the fungarium where it was dried and prepared as fungarium material. Microscopic investigations were carried out on dry samples. A Nikon Eclipse Ci-S trinocular microscope was used for microscopic investigation and a DS-Fi2 digital camera was used to get microstructural photographs. The sample was identified with the help of Benkert and Brouwer (2004). The specimen is kept at Karamanoğlu Mehmetbey University, Kâmil Özdağ Science Faculty, Department of Biology.

Results

Ascomycota Caval-Sm

Pezizomycetes O.E.Erikss. & Winka

Pezizales J.Schröt.

Pyronemataceae Corda

Octospora neerlandica Benkert & Brouwer, Persoonia 18(3): 381 (2004)

Macroscopic and microscopic features:

Apothecium 1.8 mm, margin fimbriate, membranaceous, hymenial surface pinkish-orange to pale orange (Figure 1a), outside portion somewhat paler. Asci 210-290 × 13-18 μm, cylindrical, 8-spored, spores uniseriate Paraphyses slender, generally straight, some slightly curved, enlarged up to 3-7 μm, at the apex (Figure 1b). Ascospores 16-18 × 11-12.8 μm, ellipsoid, one oil drop generally accompanied by smaller droplets, spore ornamentation consists of an irregular reticulum with variably formed meshes (Figure 1c).

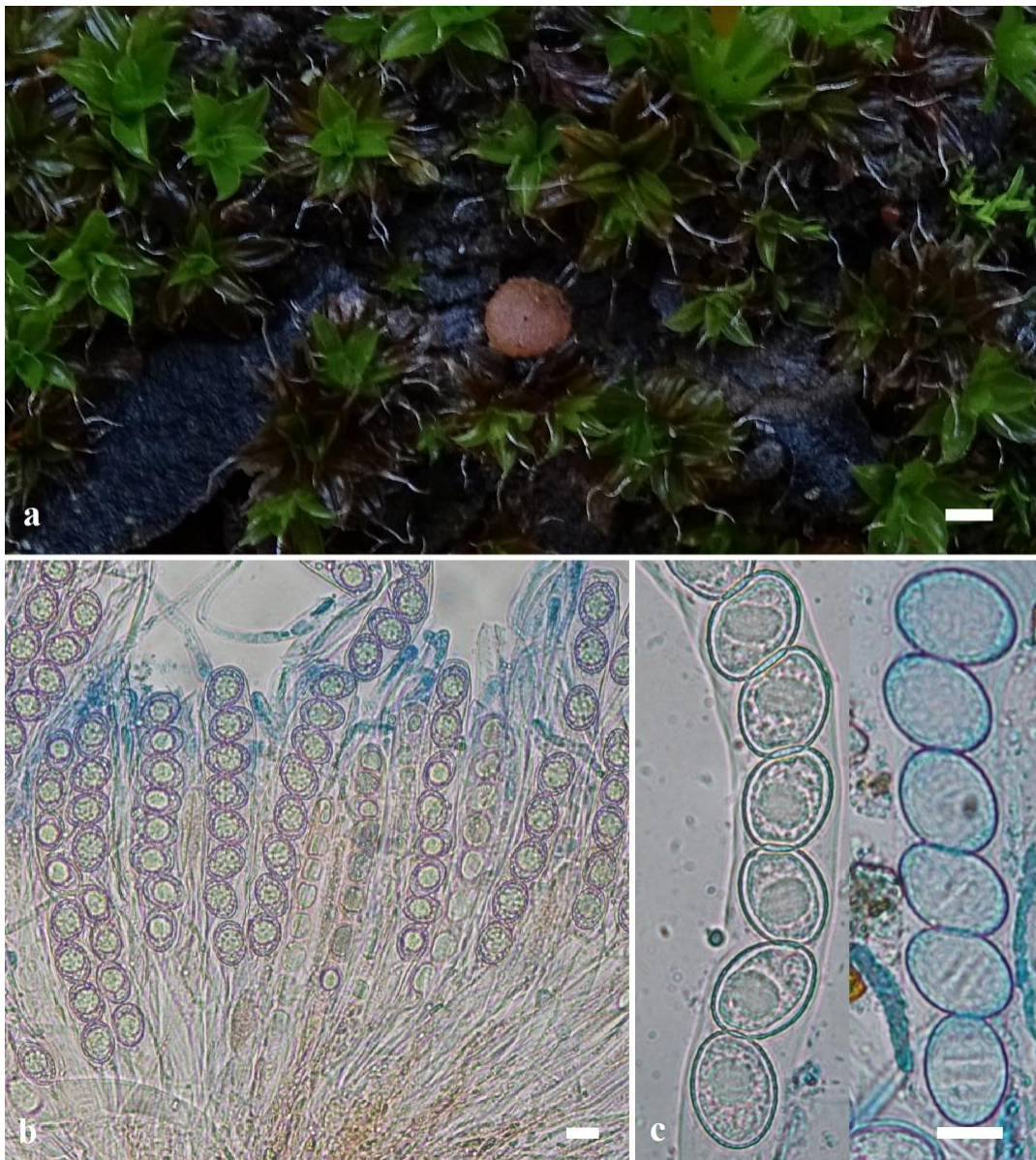


Figure 1. Ascocarp (a), asci and paraphyses (b) and ascospores (c) of *Octospora neerlandica* (bars: a- 1 mm, b,c- 10 μm)



Octospora neerlandica was reported to grow on sandy soil among or directly on the stems of the mosses *Tortula ruralis* (Hedw.) Gaertn., Meyer, & Scherb., *T. ruraliformis* (Besch.) Ingham or *T. virescens* (De Not.) De Not. (Benkert and Brouwer, 2004).

Specimen examined: Turkey, Niğde, Ulukışla, Çiftahan village, on soil among mosses under *Pinus* sp., 37°30'N, 34°47'E, 930 m, 07.01.2018, O.Ber-108.

Discussion

Octospora neerlandica is reported for the first time for the mycobiota of Turkey. It is the 14th member of the genus *Octospora* in Turkey (Çolak and Kaygusuz, 2017; Uzun et al., 2017, 2018; Uzun and Kaya, 2019). Macroscopic, microscopic and habitat characteristics of Turkish collection are in agreement with Benkert and Brouwer (2004).

Due to their morphological similarities and very small size, *Octospora* species can easily be overlooked and it is very hard to separate their species from each other morphologically (Itzerott, 1977). But the spore characteristics and substrate preferation of *O. neerlandica* makes it a very distinctive species. The spore ornamentation of this species consists of an irregular reticulum with variably formed meshes. Though *Lamprospora seaveri* Benkert has a remarkable similar spore ornamentation, it has globose spores and is associated with other moss species. Likewise very little is known about the infection of the members of the moss genus *Tortula* Hedw. by *Octospora* species. Although *O. crosslandii* (Dennis & Itzerott) Benkert, has been observed in association with *Tortula* species together with many other moss species, the globose spores of this species easily differentiates it from *O. neerlandica* (Benkert and Brouwer, 2004).

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