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***Eocronartium muscicola*, A New Bryophilic Fungus Record for Turkish Mycota**

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Abstract: The bryophilic heterobasidiomycete fungus *Eocronartium muscicola* (Pers.) Fitzp., belonging to the family *Eocronartiaceae*, is reported as a new record for Turkish mycobiota based on the identification of the sample collected from İstanbul province. This is the first finding of a species belonging to the *Eocronartiaceae* family in Türkiye. A brief description of the identified collection is provided together with the photographs, related to its macromorphology and basidiospores.

Keywords: Biodiversity, New record, *Platyglloeales*, *Pucciniomycetes*, Türkiye

***Eocronartium muscicola*, Türkiye Mikotası İçin Yeni Bir Yosunsever Mantar Kaydı**

Öz: Karayosunlarıyla ilişkili gelişen ve *Eocronartiaceae* familyasına ait bir heterobazidiyomiset türü olan *Eocronartium muscicola* (Pers.) Fitzp., İstanbul'dan toplanan ve teşhis edilen örneğe bağlı olarak Türkiye için yeni kayıt olarak rapor edilmiştir. Bu *Eocronartiaceae* familyası üyesi bir türe ilişkin Türkiye'deki ilk bulgudur. Teşhis edilen örneğin kısa bir betimlemesi, makromorfolojisi ve bazidiyosporlarına ilişkin fotoğraflarıyla birlikte verilmiştir.

Anahtar kelimeler: Biyoçeşitlilik, Yeni kayıt, *Platyglloeales*, *Pucciniomycetes*, Türkiye

Introduction

Bryophylous fungi grow on gametophytic or sporophytic organs of mosses, liverworts and hornworts. Though some live in symbiotic association (Schüssler, 2000), many genera of these fungi are obligate parasites. A wide range of fungi are involved in this associations (Sandoval et al., 2012). Beside the Basidiomycetes and Zygomycetes, Ascomycetes are the most diverse group

of fungi in this association (Döbbeler, 1997, 2002; Sandoval et al., 2012).

Research on bryoparasitic species has a long tradition in some European countries (Egertova et al., 2015) and the presence of about 350 species of ascomycetes growing on the gametophytes of mosses or hepatics were reported (Kirk et al., 2008; Döbbeler, 1997).



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Bryophylous fungi have not received much attention in Türkiye. Uzun et al. (2018a) mentioned about the existence of 31 basidiomycete species growing on or around the Bryophytes. Later on, *Rimbia* *neckeræ* (Fr.) Redhead and *Bryoperdon acuminatum* (Bosc) Vizzini, in Vizzini & Ercole were also added to this list (Uzun et al., 2018b; Kaya and Uzun, 2020). These data and the current checklist (Sesli et al., 2020) indicate the existence 26 ascomycete and 33 basidiomycete species growing on or around the bryophytes are known to exist in Türkiye.

During a field trip in Beykoz (İstanbul) district, some small, clavarioid fruit bodies, growing on moss gametophytes, were collected and identified as *Eocronartium muscicola* (Pers.) Fitzp. The check of the current checklist (Sesli et al., 2020) and the latest contributions (Polat and Keleş, 2022; Şengül Demirak et al., 2022; Çelik and Alma, 2023; Sesli, 2023; Yeşilyurt et al., 2023) revealed that the taxon has not been reported from Türkiye before.

The study aims to contribute to the mycobiota of Türkiye.

Material and method

The fruiting organs of *Eocronartium muscicola* specimens were collected from Göknaçık Nature Protection area in Beykoz (İstanbul) district, during a routine field study in 2023. The material was photographed at its natural habitat using a digital camera. Extensive notes were taken related to ecology, morphology and geography of the collection. Documentation and preservation were made in accordance with standard methods.

Microscopic investigations of the material was performed under a Leica DM 2500 trinocular compound microscope. Measurements related to spore morphology were made from dried material which was rehydrated in 3% KOH. More than 20 measurements were made for each microstructure, and digital microphotographs were taken using a digital camera attached to the microscope. The specimens were identified by comparing the obtained macroscopic and microscopic characteristics with

Atkinson (1902), Fitzpatrick (1918), Boehm and McLaughlin (1988, 1989), Reid (1990), Sandoval et al. (2012) and Læssøe and Petersen (2019).

The specimens are kept at Karamanoğlu Mehmetbey University, Kâmil Özdağ Science Faculty, Department of Biology.

Results

Fungi R.T. Moore

Basidiomycota R.T. Moore

Pucciniomycetes R. Bauer, Begerow, J.P. Samp., M. Weiss & Oberw.

Platyglloeales R.T. Moore

Eocronartiaceae Jülich

Eocronartium muscicola (Pers.) Fitzp., *Phytopathology* 8: 197 (1918)

Synonymy: *Clavaria muscicola* Pers., *Clavaria muscigena* P. Karst., *Clavaria uncialis* subsp. *muscigena* Sacc., *Eocronartium muscigena* (Sacc.) Höhn., *Eocronartium typhuloides* G.F. Atk., *Helicobasidium typhuloides* (G.F. Atk.) Pat., *Helicobasidium typhuloides* var. *orientale* Pat., *Pistillaria muscicola* (Pers.) Fr., *Typhula muscicola* (Pers.) Fr.

Macroscopic and microscopic features:

Basidiomata 10-17 × 0.5-1.2 mm, erect, club-shaped to filiform or somewhat clavate, somewhat larger above, tapering towards the base, whitish to pale cream, slightly darkening towards the apex of fertile portion. Basidia 35-50 × 5.5-7.2 µm somewhat auricularioid, irregularly cylindrical to sinuous. Basidiospores (19-)19.3-28.9 × 3.9-4.5(-6) µm, navicular, subfalcate to falcate or curved spindle-shaped, hyaline.

Specimen examined: İstanbul, Beykoz, Tokatköy village, an gametophytes of *Brachythecium* Schimp. sp. in a mixed forest dominated mainly by *Abies nordmanniana* subsp. *equi-trojani* Asch. & Sint. ex Boiss. and *Castanea sativa* Mill. with scattered *Laurus nobilis* L., 41.156229N, 29.098107E, 20.06.2023, YKaraduman 2.

Suggested Turkish name for this species is "Yosun çomağı".



Figure 1. *Eocronartium muscicola*. a,b- basidiocarps, c,d- basidiospores (bars: c- 20 µm, d- 10 µm) (c,d in LPCB).

Discussions

Eocronartium muscicola was reported as the first member of the family *Eocronartiaceae* in Türkiye. General characteristics of Turkish collection are generally in agreement with those presented before.

Eocronartium muscicola is an obligate bryophilous fungus recorded on more than 20 moss species mainly from the Northern Hemisphere (Boehm and McLaughlin, 1988; Reid, 1990).

According to Reid (1990) *Eocronartium muscicola* is of widespread occurrence in Europe, and known in numerous European countries. Collections were also represented in some Asian and American countries as well (Reid, 1990). On the other hand, Wojewoda (2000) mentions about the rarity of this fungus. In fact, the particular ecology, small size and inconspicuous appearance may let the mycologist overlook the fruit

bodies of this species. Its similarity to *Typhula* (Pers.) Fr. or *Clavaria* Vaill. ex L. species may also cause this situation (Holec, 2008).

Author contributions

The authors have equal contribution.

Conflicts of interest

The authors declare no competing interests.

Ethical Statement

It is declared that scientific and ethical principles have been followed while carrying out and writing this study and that all the sources used have been properly cited (Yakup KARADUMAN, Faruk YEŞİLYURT, Yasin UZUN, Abdullah KAYA).

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