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Research article/Araştırma makalesi

A new class record for Turkish *Pucciniomycotina*

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Abstract

Phleogena faginea (*Atractiellomycetes*) was reported for the first time from Turkey at class level. A short description with figures, locality, collection dates, ecology and distribution of the species based on the collected materials are provided and discussed briefly.

Key words: *Phleogena faginea*, *Pucciniomycotina*, new record, Turkey

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Türkiye *Pucciniomycotina*'ları için yeni bir sınıf kaydı

Özet

Phleogena faginea (*Atractiellomycetes*) Türkiye'den ilk defa sınıf düzeyinde rapor edilmiştir. Türe ait mantar örneklerinin şekilleri ile birlikte kısa tanımı, lokaliteleri, toplama tarihleri, ekoloji ve dağılımları verilmiş ve kısaca tartışılmıştır.

Anahtar kelimeler: *Phleogena faginea*, *Pucciniomycotina*, yeni kayıt, Türkiye

1. Introduction

Pucciniomycotina, a subdivison of the division *Basidiomycota*, contains 8 classes, 18 orders, 36 families and approximately 8000 species, distributed among 215 genera (Aime et al., 2006). Most *Pucciniomycotina* species are parasitic and phytopathogens, while a few are putatively saprotrophic and more than 95% of the species and 75% of the genera in the subdivision are placed in the class *Pucciniomycetes*

Atractiellomycetes is a class of *Pucciniomycotina* and it includes a single order, *Atractiellales*. Members of the order are saprotrophic, and they are characterized by having symplechosomes and phragmobasidia. The largest family of the order is *Phleogenaceae* which includes 39 species within 8 genera and 4 species incertae sedis with respect to familial placement (Bauer et al., 2006; Kirk et al., 2008).

Phleogena is a small genus, in the family *Phleogenaceae*, and contains two confirmed species, *Phleogena faginea* (Fr.) Link and *P. sphaerocephala* (Berk. & Broome) Killerm. (Kirk et al., 2008).

P. faginea is widely distributed in the north temperate and tropical climatic areas. The species produces greyish to brown basidiomes up to 12 mm tall, divided in to head and stem, subglobose to plane head, brownish to black, subcylindrical stem, pale brown, cylindric, 1-4 *transversally septate* basidia, ochraceous to pale brown, smooth, spherical and thick walled spores (Hansen and Knudsen, 1997; Szczepkowski et al., 2008).

According to the current checklists on Turkish mycobiota (Bahcecioğlu and Kabaktepe, 2012; Sesli Denchev, 2008; Solak et al., 2015), there are no records for Turkey of members belonging to class *Atractiellomycetes.*

The aim of this study is to make a contribution to the Turkish *Pucciniomycotina*.

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2. Materials and methods

Fungi samples were collected from İğneada (Kırklareli) and Belgrad Forest (İstanbul) in November 2010 and 2015. During field studies, macroscopic and ecological characteristics of the samples were noted and they were photographed in their natural habitats. In the laboratory, macroscopic and microscopic investigations were carried out. Identification was performed with the aid of literature (Asef, 2015; Hansen and Knudsen, 1997; Szczepkowski et al., 2008). The identified samples are deposited at Ankara University Herbarium (ANK).

3. Results

Pucciniomycotina R. Bauer, Begerow
Atractiellomycetes R. Bauer, Begerow
Atractiellales Oberw. & Bandoni
Phleogenaceae Weese
Phleogena Link
Phleogena faginea (Fr.) Link (1833) (Figure1).
Syn: *Aecidium petersii* Berk. & M.A. Curtis (1875), *Botryochaete faginea* (Fr.) Corda, (1854), *Cribraria onygena* Schumach. (1803), *Ecchyna faginea* (Fr.) Fr. ex Boud. (1885), *Ecchyna petersii* (Berk. & M.A. Curtis) Pat. (1900), *Onygena faginea* Fr. (1818), *Pilacre faginea* (Fr.) Berk. & Broome (1850), *Pilacre petersii* Berk. & M.A. Curtis (1859).
Basidiomes 5-10 × 0.5-1 mm, divided in to head and stem. **Head** 1-3 mm broad, globose to subglobose, sometimes plane, whitish grey when young, pale brown to greyish brown when mature. **Stem** 4-7 mm long, whitish grey at first, becoming brown to blackish, subcylindrical usually tapering the base (Figure 1a,b,c).
Basidia 20-30 × 4-6 µm, thick walled, light brown, cylindrical, disintegrated by 1-4 transvers septa. **Spores** 5-10 µm, thick walled, smooth, light brown and globose (Figure 2). **Hyphae** brownish, thick walled and clamped. (Figure 3).
Ecology: Widely distributed but rare species, July to February, on dead wood of deciduous trees.
Material examined: TURKEY— Kırklareli: İğneada, Demir village, on a dead standing trunk of beech (*Fagus orientalis* Lipsky), N 41º 52'- E 27º 49', 350 m, 21.11.2010, Işıloğlu 9132; İstanbul: Belgrad Forest, Neşet Suyu, on dead standing trunk of oriental beech, N 41° 11'- E 28° 58', 90 m, 13.11.2015, Akata 6395.

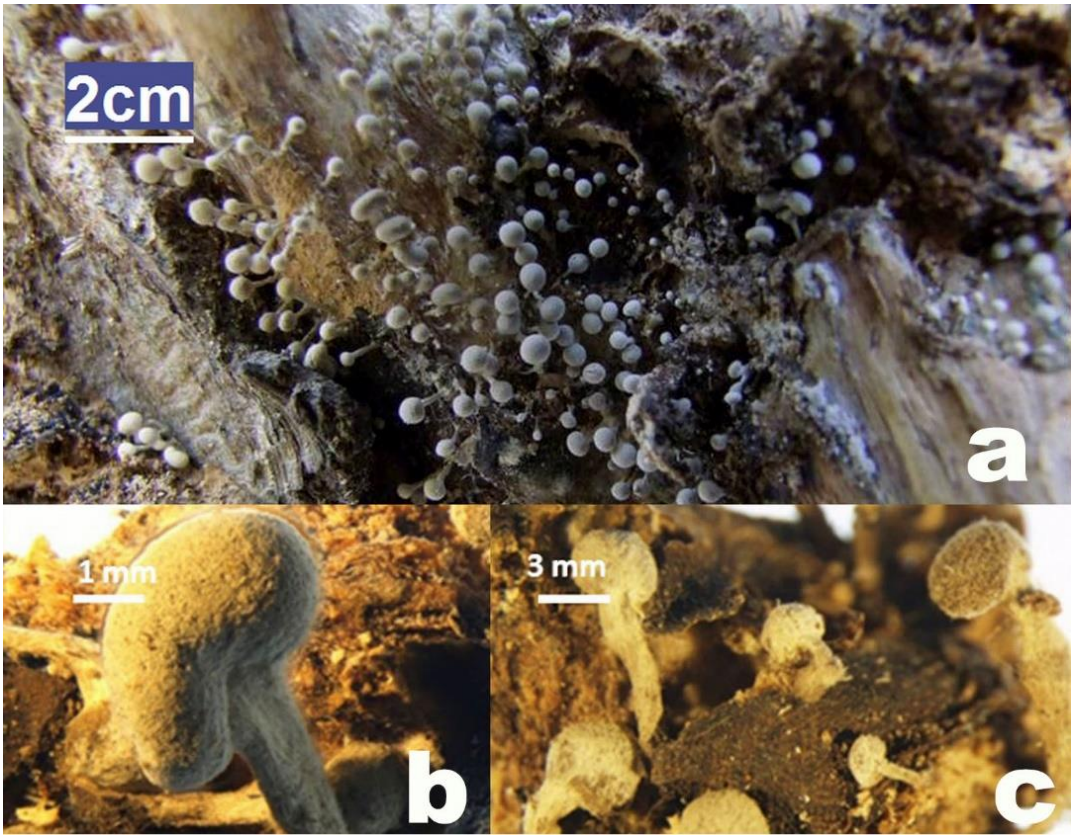

Figure 1. **a,b,c.** basidiomes of *Phleogena faginea*

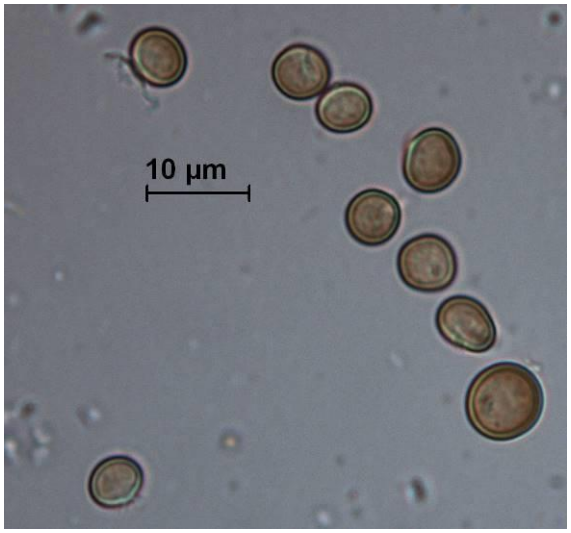

Figure 2. Spores of *Phleogena faginea*

Figure 3. hyphae of *Phleogena faginea*

4. Conclusions and discussion

P. faginea is a saprobe, potentially a weak parasite often growing on bark stumps, trunks and branches of dead broadleaved trees (occasionally on living or drying trees), more rarely on coniferous trees. This species is known in Asia, America, Australia and Europe. It has so far been recorded in 18 European countries (Austria, Czech Republic, Denmark, Estonia, France, Finland, Germany, Montenegro, Norway, Poland, Russia, Slovakia, Slovenia, Spain, Sweden, The Netherlands, Ukraine and United Kingdom) on bark, stumps, trunks and branches of various trees such as *Acer campestre* L., *A. platanoides* L., *Alnus glutinosa* (L.) Gaertn., *A. incana* (L.) Moench, *Betula pendula* Roth, *B. pubescens* Ehrh., *Carpinus betulus* L., *Corylus avellana* L., *Fagus sylvatica* L, *Padus avium* Mill., *Populus tremula* L., *Prunus spinosa* L., *Pyrus communis* L., *Quercus robur* L., *Salix cinerea* L., *Tilia cordata* Mill., *Ulmus laevis* Pall., *U. glabra* Huds., *Abies alba* Mill. and *Picea abies* (L.) Karst. (Kudławiec, 2014; Szczepkowski et al., 2008; Wilga, 2010).

This fungus can also be observed on the fruit bodies of *Fomes fomentarius* (L.) Fr. and *Inonotus obliquus* (Ach. ex Pers.) Pilát and rhizomorphs of *Armillaria* sp. Its basidiomes were found on trunk of *Fagus sylvatica* colonized by *Bjerkandera adusta* (Willd.) P. Karst., *Pleurotus ostreatus* (Jacq.) P. Kumm., *Trametes gibbosa* (Pers.) Fr. and *T. hirsuta* (Wulfen) Lloyd (Tallasch and Jahn, 1970). According to Szczepkowski et al. (2008), basidiomes of *P. faginea* were reported on trees and logs colonized by several wood-decaying fungi (*Armillaria* sp., *Chondrostereum purpureum* (Pers.) Pouzar, *Fomes fomentarius* (L.) Fr., *Inonotus radiatus* (Sowerby) P. Karst., *Panellus serotinus* (Pers.) Kühner, *Phellinus* sp., *Pleurotus ostreatus* (Jacq.) P. Kumm, *Schizophyllum commune* Fr. and *Fomitopsis pinicola* (Sw.) P. Karst.) in Poland.

Despite extensive geographical distribution in the world, *P. faginea* is considered a rare species in Europe and red listed in Czech Republic, Denmark, Estonia, Finland, Germany, Montenegro, Norway, Poland, Russia, Slovakia, Slovenia, Sweden, Ukraine and United Kingdom (Asef, 2015; Bregazzi, 1980; Heilmann-Clausen and Walleyn, 2007; Kudławiec, 2014; Szczepkowski et al., 2008; Veerkamp, 2007).

P. faginea is certainly the best known member of the auricularioid, gasteroid *Atractiellomycetes* with stilboid basidiomes and it produces brown, clamped hyphae, forming thick walled and brown spores (Oberwinkler & Bandoni, 1982). *Atractiella* members are also known as a gasteroid, auricularioid group of *Atractiellomycetes* but they can easily be seperated from *Phleogena faginea* by lacking of thick-walled or only moderately thickened hyphae and hyaline spores (Oberwinkler and Bauer, 1989).

Tracing to current literature on Turkish *Pucciniomycotina* (Bahcecioglu and Kabaktepe 2012; Berner and Tunali 2008; Denchev, 2007; Kabaktepe, 2015; Kabaktepe et al., 2015a; 2015b; 2015c; Özaslan et al., 2015), 364 species, 28 genera, 10 families, 2 orders and 2 classess have previously been reported from Turkey.

With this study, *Phleogena faginea* was reported for the first time from Turkey at class level and it was the first observation on the trunk of oriental beech (*Fagus orientalis*).

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