



A new *Myxomycetes* record for *Physarum* genus from Turkey

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Abstract

Physarum javanicum Racib., is recorded for the first time from Turkey. It was treated with the moist chamber culture method in the laboratory. Microscopic structures of this species are provided by light microscopy and SEM.

Key words: Moist chamber culture, Myxomycetes, *Physarum javanicum*, Turkey

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Türkiye'den yeni bir *Physarum* Miksomiset kaydı

Özet

Physarum javanicum Racib., Türkiye'de ilk defa rapor edilmiştir. *Physarum javanicum* Racib., laboratuvarında nem odası tekniği ile elde edilmiştir. Mikroskobik yapısı ve özellikleri ışık mikroskobu ve SEM yardımıyla verilmiştir.

Anahtar kelimeler: nem odası tekniği, miksomisetler, *Physarum javanicum*, Türkiye

1. Introduction

Mycoflora of Turkey has not been fully explored. While much research has been done on but still incomplete (Baba et al., 2008; Ergül and Akgül, 2011; Demirel and Kaşık, 2012; Kaya, Demirel and Uzun, 2012; Akata and Yaprak, 2013). The total number of correct names of species, recognized as occurring in Turkey and presented in the checklists, is 2320, including 231 myxomycetes, 176 ascomycetes, and 1913 basidiomycetes (Sesli and Denchev, 2013). The climate and ecological features of Turkey and Hatay are suitable for the growth of fungi. Hatay is situated at Mediterranean phytogeographical region, climatic conditions and vegetation are very suitable for growth of *Myxomycetes* (Baba, 2012).

Myxomycetes are characterized by an amorphous, multinucleate, protoplasmic mass called plasmodium and fruiting bodies. They generally found decaying or living on plant material. Majority of the species described are of cosmopolitan distribution, but a few species appear to be confined in the tropics or subtropics while some are only known in the temperate regions of the world. Both humidity and temperature are main factors in diversity and abundance of this group (Martin et al., 1983; Ing, 1999).

Species of the genus *Physarum* is the most widely known genus among the myxomycetes in Turkey and world. Members of the *Physarum* genus are widely distributed throughout the different ecosystems. *Physarum* is the most widely known genus among the myxomycetes, due to the fact that the species *P. polycephalum* serves as a model organism for cell research. The single most important characteristics of the Physarales is the presence of lime (calcium carbonate) deposits which may occur in the peridium, capillitium or stalk of the fruiting body (Stephenson and Stempen, 1994). The presence of lime is usually an obvious features, but under certain environmental conditions fruiting bodies are sometimes produced that have very little lime. Fruiting bodies produced by members of Physarales are most often sporangia, but some species produce plasmodiocarp or aethalia.

Physarum is one of the genera in Physaraceae (Physarales). *Physarum* is the largest genus in the myxomycetes, to the present 138 *Physarum* species are known all over the world (Lado, 2005-2012) and in Turkey 24 species having been described (Baba, 2008; Demirel & Kaşık, 2012; Sesli & Denchev, 2013).

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2. Materials and methods

The specimens on natural substratas, barks and debris materials, the bark of living trees, as well as decaying bark, wood, leaves and litter were collected in Hatay (Turkey) district on various occasions 2011-2012 (Figure 1). Natural mature fructifications were gently and directly collected from the substratum. In addition, the samples were obtained from the moist chamber culture in the laboratory. Microscopic and macroscopic features of the samples were determined in the laboratory. The specimen was identified according to the relevant references (Farr, 1981; Ing, 1999; Lado and Pando, 1997; Lado, 2001; Martin et al., 1983; Neubert, Nowotny and Baumann, 1995; Thind, 1977).

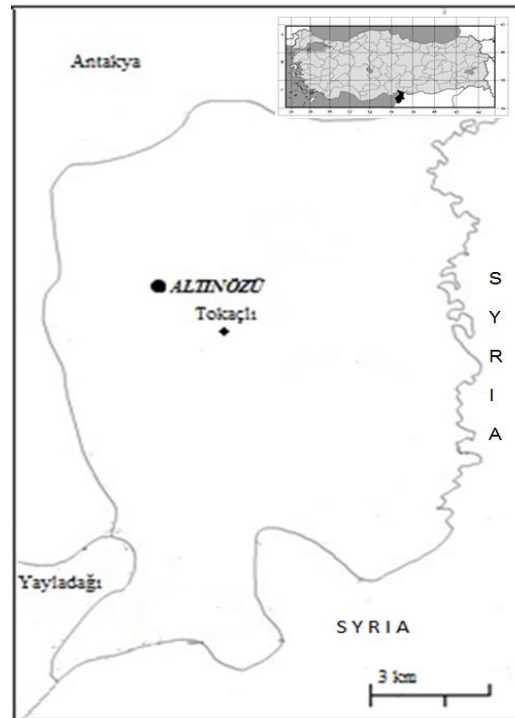


Figure 1. Study area

3. Results

Physarum javanicum Racib., Hedwigia 37: 53 (1898).

Syn: *Physarella javanica* (Racib.) Torrend, *Brotéria*, sér. bot. 7: 114 (1908).

Physarum discoidale T.Macbr., N.Amer. Slime-moulds, ed. 2: 74 (1922).

Sporangia stalked, 2-4 mm broad, obconic to turbinate with a depressed or umbilicate apex, 0.4-1 mm diameter, white. Hypothallus small, discoid, white. Stalk long, slender, narrowing above, greyish-white, darker below. Peridium thin, unevenly covered with calcareous globules, the lower part remaining as an irregular cup. Capillitium dense, of fusiform hyaline tubules connecting small, white, elongated or triangular nodes. Spore-mass dark brown in light spores purple-brown, 9-10 μm nearly smooth. Plasmodium unknown (Figure 2).

Hatay: Altınözü, Tokaçlı, on filter paper in petri dishes in laboratory, 364 m, 36° 05' 56" N; 36° 15' 33" E, 21.02.2012, *Gelen* 499.

The samples were collected from different types of substrates like decaying bark, wood, leaves and litter, but in this study we collected the samples which grow on filter paper in petri dishes in laboratory.

Physarum javanicum does not common species in the tropics. It is really quite unlike either *P. pezizoideum* (Jungh.) Pavill. & Lagarde, or *P. viride* (Bull.) Pers with which it has been compared (Martin & Alexopoulos, 1969). The shape of the sporangium and the unusual tubules of the capillitium characterise this species (Ing, 1999). This species differs from the similar species, *Physarum pezizoideum* and *Physarum nutans*, nearly always in sporangial shape, from the former, it is further distinguished by the opaque, white to blackish stipes and from the latter, by the characters of the capillitium (Farr, 1976). The features of this species bring it close to *P. megalosporum* T. Macbr. which, however possesses sessile or shortly stalked sporangia. The stipes in this are mostly long. In the size of the stipe, in the habit of the fruiting bodies and in the characteristics of spores and capillitium (Martin et al., 1983). Ecology dead wood, twigs and grass (Martin & Alexopoulos, 1969; Farr, 1976; Ing, 1999) and decaying gymnospermous wood (Martin et al., 1983).

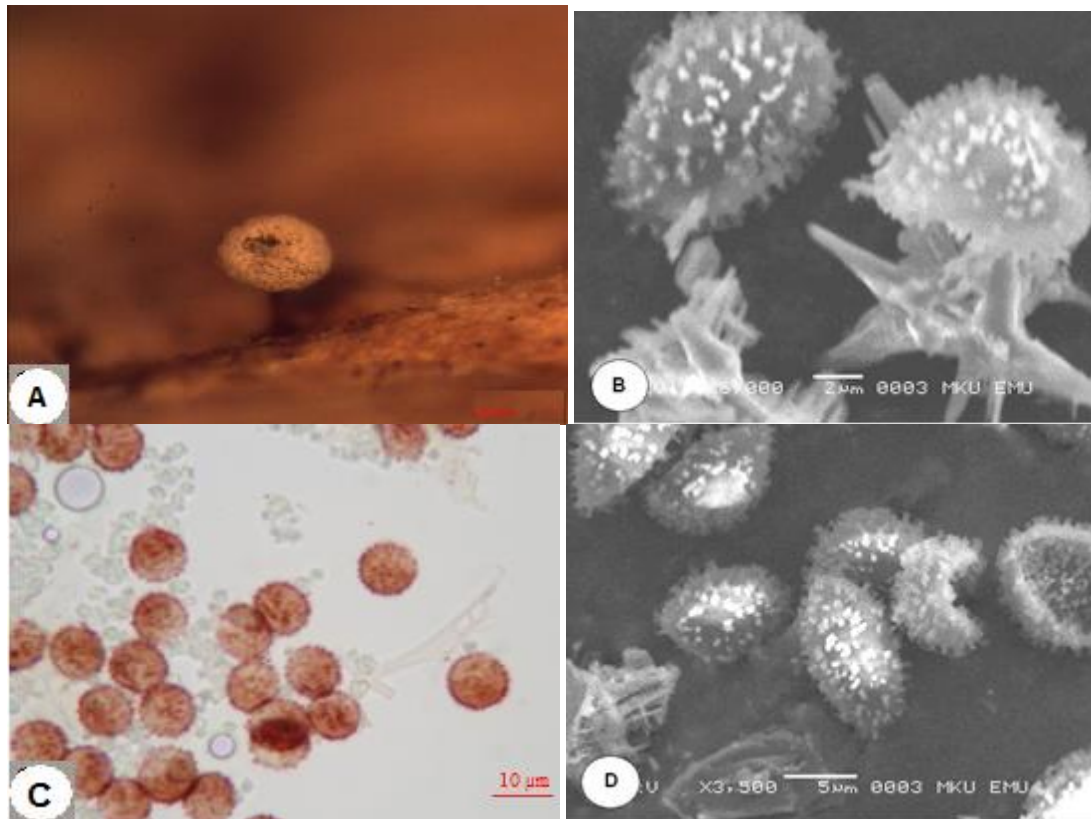


Figure 2. *Physarum javanicum*; A: sporangium, B,C,D: capillitium and spores (A,C in light microscope, B,D in SEM)

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