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Full Length Research Paper

New microfungi records on pistachio (*Pistacia vera L.*) from Gaziantep province of Turkey

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Pistacia L. **belongs to the family of Anacardiaceae. It contains nine species and five subspecies.** ***P. vera*** **L. (cultivated pistachio) is the economically most important species in the genus. It has edible seeds and considerable commercial importance. Iran, the United States, Turkey and Syria are the main pistachio producers in the world. Gaziantep province is the main producer and exporter of pistachio in Turkey. Samples of leaves, branches and fruits of pistachio (*** ***P. vera*** **L.) were collected between 2009 and 2010 from different localities in Gaziantep province.** ***Cytospora sarothamni*** **Sacc.,** ***Phoma pulchella*** **(Berk. and Broome) Sacc. and** ***Steganosporium irregulare*** **Lambotte and Fautrey are new records for Turkish mycobiota. For the first time in literature,** ***Bispora antennata*** **(Pers.) E.W. Mason,** ***Coniothecium complanatum*** **Nees (Sacc.) and** ***Rosellinia pulveracea*** **(Ehrh.) Fuckel were found on** ***P. vera*** **L., and** ***P. vera*** **L. is now defined as a new host plant for these three species.**

Key Words: Microfungi, new record, new host, *Pistacia vera L.*, Turkey.

INTRODUCTION

The research area (Figure 1), Gaziantep, is situated in south-east Anatolia of Turkey and it is bordered by Şanlıurfa to the east, Osmaniye to the west, Kahramanmaras to the north, Kilis to the south, Hatay to the south-west and Adiyaman to the north-east. Latitude: 37°04˝ north Longitude: 37°22˝ east, Altitude: 850 m.

Pistachio (*Pistacia vera L.*) is the only edible crop in the genus *Pistacia*. *P. vera* L. has been cultivated since the Hittites at Anatolian region. Presently, the pistachio industry comprises over 37.408 hectares and produces an annual crop valued at over $ 4 million. However, very little is known about the microfungi associated with *P. vera* L.. The identification of the fungal biota of *P. vera* L. is necesssary to learn their potential benefical or dentrimental effects on this host. The present paper reports three new species for Turkish mycobiota and three fungi species on new host (on *P. vera* L).

MATERIALS AND METHODS

Infected host samples were collected between 2009 and 2010. In total, 780 pistachio samples were collected from Araban, Karkamis, Nizip, Oguzeli, Sehitkamil and Yavuzeli districts (Gaziantep province). The fungal specimens were isolated from the plant material either by scraping, or obtaining with a razor at thin sections. Two types of microscope (Leica light microscope and Olympus stereo microscope) were used in the identification of microfungi. These were identified using the relevant literature (Ellis and Ellis, 1987; Frolov, 1967; Saccardo 1972; Shvartsman et al., 1975; Yachevsky, 1917). After the identification of the fungi, the specimens were deposited in the herbarium of Gaziantep University. The author abbreviations of fungi were checked using Kirk et al. (2008) and http://www.indexfungorum.org/names/Names.asp

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RESULTS

Short descriptions, localities, collection dates and fungarium registration numbers (DY: Demet Yilmazkaya) were given:

Fungi
Ascomycota
Dothideomycetes
Pleosporomycetidae
Pleosporales
Incertae sedis
Phoma pulchella (Berk. & Broome) Sacc.

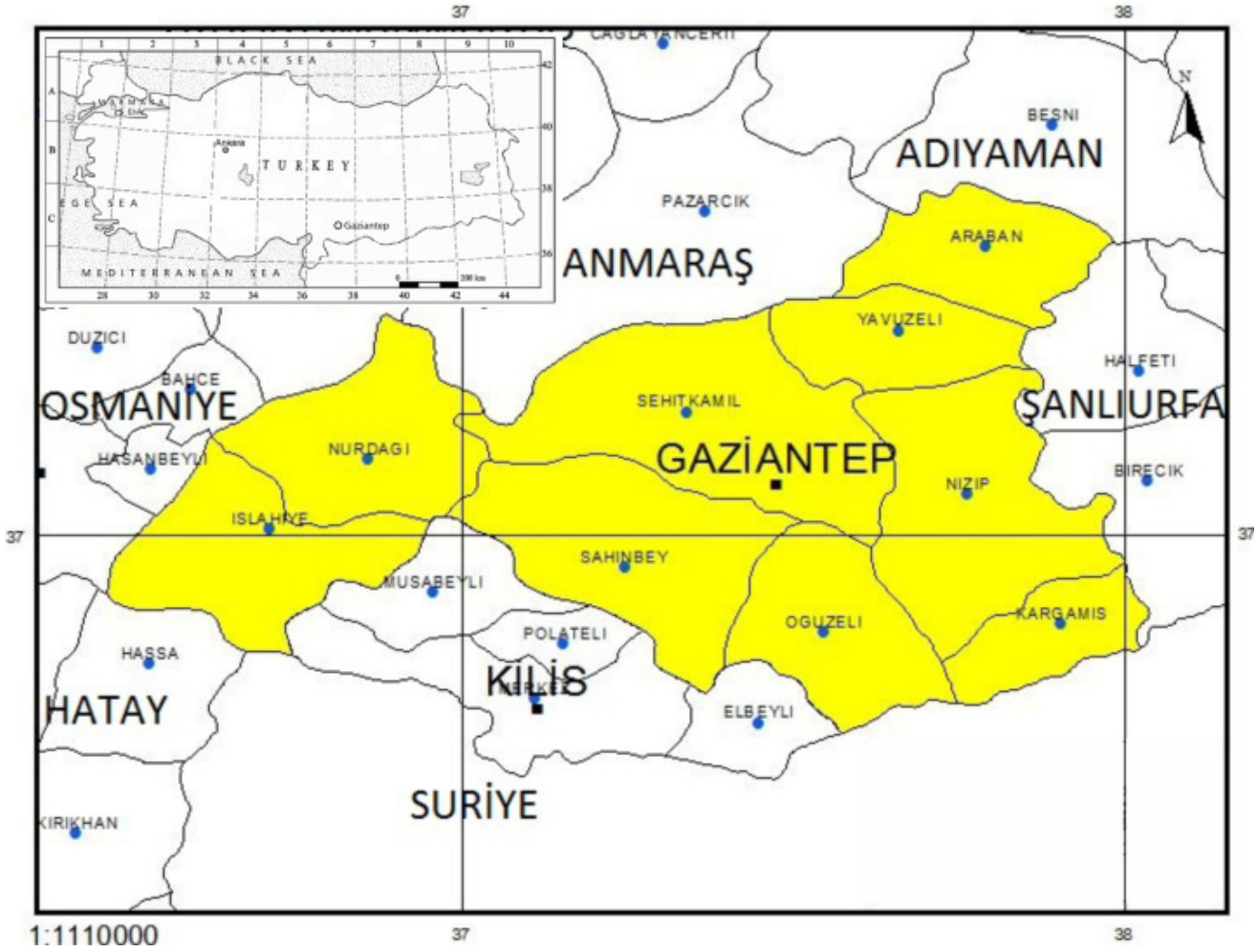

Figure 1. A map of Turkey, with a grid system, and the study area.

Pycnidia are semi-immersed, black, globose, thick-walled, with simple stoma.
Conidia hyaline, 1-celled, ellipsoid, rarely ovoid, 4-6 × 2.5-3.5 µm.
C6 Gaziantep: Yavuzeli, Halilbasli village junction, 37°15'49''N, 37°32'54''E, 724 m, 08.07.2010, DY 70.
C6 Gaziantep: Oguzeli, Sazgin village, 36°52'75''N, 37°29'61''E, 669 m, 30.06.2010, DY 800.
C6 Gaziantep: Sehitkamil, Gaziantep University campus, 37°02'08''N 37°18'21''E, 890m, 30.06.2010, DY 10.

Pleomassariaceae

Steganosporium irregulare **Lambotte & Fautrey**

Acervuli dark black, randomly effuse, obovoid.
Conidia brown, pear-shaped, with 3-4 transverse, and 1-3 longitudinal septa, 30-47.5 × 13-18 µm.
C6 Gaziantep: Araban, at the top of Karadag Mountain, 37°21'23''N, 37°32'75''E, 945 m, 08.07.2010, DY 50.
C6 Gaziantep: Karkamis, Yurtbag village, 36°51'16''N, 38°00'52''E, 362 m, 30.06.2010, DY 3000.
C6 Gaziantep: Sehitkamil, Gaziantep University campus, 37°02'08''N 37°18'21''E, 890m, 30.06.2010, DY 10.

Incertae sedis
Incertae sedis
Incertae sedis
Incertae sedis

Bispora antennata (Pers.) E.W. Mason

Colonies effuse, black. Conidiophores inconspicuous, pale brown, 5-30 × 2-5 µm.
Conidia in long chains, doliiform, 1-septate, mid to dark brown with almost black band at septum, 13-20 × 7-8 µm.
C6 Gaziantep: Sehitkamil, Gaziantep University campus, 37°02'08''N 37°18'21''E, 890m, 30.06.2010, DY 10.
C6 Gaziantep: Oguzeli, Ekinveren village, 36°57'71''N, 37°35'90''E, 587 m, 30.06.2010, DY 800.
C6 Gaziantep: Yavuzeli, Halilbasli village junction, 37°15'49''N, 37°32'54''E, 724 m, 08.07.2010, DY 70.

Coniothecium complanatum (Nees) Sacc.

Acervuli burst through of the periderm, black, dusty, globose or ellipsoid, flat, around 200-300 µm. Conidiophores are too short.
Conidia olivaceous brown, separate 3-8 irregularly cell when they mature, globose, elongated, angled, packet

format, 10-12.5 × 7-9 µm.
C6 Gaziantep: Sehitkamil, Gaziantep University campus, 37°02’08’’N 37°18’21’’E, 890m, 30.06.2010, DY 10.
C6 Gaziantep: Nizip, Belkis (Zeugma) area, 37°02’22’’N, 37°50’60’’E, 479 m, 29.06.2010 DY 700.
C6 Gaziantep: Oguzeli, Ekinveren village, 36°57’71’’N, 37°35’90’’E, 587 m, 30.06.2010, DY 800.

Sordariomycetes
Sordariomycetidae
Diaporthales
Valsaceae

Cytospora sarothamni Sacc.

Stroma black, in groups or effuse, immersed, plurilocular, elongate-ellipsoid, 500-600 µm, loculus curved, recessed-protruding, uniseriate.
Conidia 1-celled, hyaline, allantoid, straight or curved, 2.5-3 × 0.5 µm.
C6 Gaziantep: Oguzeli, around Kayacik Dam, 36°49’58’’N, 37°34’65’’E, 620 m, 30.06.2010, DY 1000.
C6 Gaziantep: Sehitkamil, Gaziantep University campus, 37°02’08’’N 37°18’21’’E, 890m, 30.06.2010, DY 10.
C6 Gaziantep: Yavuzeli, Halilbasli village junction, 37°15’49’’N, 37°32’54’’E, 724 m, 08.07.2010, DY 70.

Xylariomycetidae
Xylariales
Xylariaceae

Rosellinia pulveracea (Ehrh.) Fuckel

Pycnidia globose, black, superficial on the bare wood, stoma with pacifier, around 280-350 µm.
Ascus cylindrical, short-stalked, with 8 spores, 85-110 × 7.5-8 µm. Ascospores uniseriate, brown, ellipsoid, 9-10 (-12.5) × 5-6 (-7.5) µm.
C6 Gaziantep: Nizip, 3 km from Zeugma to Nizip, 37°02’22’’N, 37°50’60’’E, 479 m, 29.06.2010, DY 700.
C6 Gaziantep: Karkamis, after 1 km of EUAS Karkamis Hydroelectric Power Station, 36°51’92’’N, 38°00’65’’E, 356 m, 30.06.2010, DY 1000.
C6 Gaziantep: Karkamis, Kivircik village, 36°50’05’’N, 37°56’53’’E, 398 m, 30.06.2010, DY 4000.

DISCUSSION

In this study, two classes *(*Dothideomycetes, Sordariomycetes), three orders (Diaporthales, Pleosporales, Xylariales), three families *(*Pleomassariaceae, Valsaceae, Xylariaceae), six genera *(Bispora, Coniothecium, Cytospora, Phoma, Rosellinia,* and *Steganosporium*), six microfungi species (*B. antennata, Coniothecium complanatum, C. sarothamni, Phoma pulchella*, *Rosellinia pulveracea* and *Steganosporium irregulare*), were determined.

Denizel et al. (1976) reported that the predominant soil fungus was *Aspergillus niger*; isolates of *Fusarium, Trichoderma,* Mucor and Rhizopus species were common soil fungi in three major pistachio production areas of Turkey. Eskalen et al. (2001) identified several pathogenic fungi: *Septoria pistaciarum* Caracc., *Verticillium dahliae* Kleb., *Phyllactinia angulata* (E. S. Salmon) S. Blumer, *Phytophthora* spp., *Fusarium equiseti* (Corda) Sacc., *Nematospora coryli* Peglion, *Aureobasidium pullulans* (de Bary) G. Arnaud and *A. niger* Tiegh. in pistachio production areas in east-Mediterranean and southeast Anatolian regions of Turkey. Michailides et al. (1994) gave a list of fungal diseases of pistachio (*P. vera* L.) reported in California: Verticillium wilt caused by *Verticillium dahliae* Kleb.; Botrytis blossom and shoot blight caused by *Botrytis cinerea* Pers.; Alternata late blight caused by *Alternaria alternata* Keissl.; Botryosphaeria panicle and shoot blight caused by *Botryosphaeria dothidea* (Moug.) Ces. and De Not.; Armillaria root rot caused by *Armillaria mellea* (Vahl) P. Kumm.; Schizophyllum wood decay caused by *Schizophyllum commune* Fr.; Sclerotinia shoot blight caused by *Sclerotinia sclerotiorum* (Lib.) de Bary; Phomopsis shoot blight caused by *Phomopsis* sp.; Powdery mildew caused by an unidentified species of powdery mildew fungus and Septoria leaf and fruit spot caused by *Septoria pistaciae* Desm. in California or *Septoria pistaciarum* Caracc. in Arizona.

Yildizbas (2006) recorded C. complanatum on *Quercus robur* L. subspecies *robur* and Erdogdu (2008) reported *B. antennata* on *Ficus carica* L. subspecies *carica* from Turkey. Selcuk and Huseyin, (2010) found *R. pulveracea* on *Sorbus aucuparia* L. from Turkey. As a result of this study, *C. sarothamni*, *P. pulchella* and *S. irregulare* are new records for Turkish mycobiota. For the first time in literature, *B. antennata, C. complanatum* and *R. pulveracea* are found on *P. vera* L.; and *P. vera* L. is now defined as a new host plant for these three species.

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