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Research Note

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New records of truffle taxa in *Tuber* and *Terfezia* from Turkey

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Abstract: We report on 3 truffle taxa found in Turkey for the first time: *Tuber mesentericum* Vittad., *Tuber nitidum* Vittad. and *Terfezia leptoderma* Tul.

Key words: Biodiversity, Ascomycota, *Tuber, Terfezia,* Turkey

Türkiye'den Tuber ve *Terfezia* için yeni truffle takson kayıtları

Özet: Türkiye'de ilk defa bulunan 3 adet truffle taksonunu rapor ettik: *Tuber mesentericum* Vittad., *Tuber nitidum* Vittad. ve *Terfezia leptoderma* Tul.

Anahtar sözcükler: Biyoçeşitlilik, Ascomycota, *Tuber, Terfezia,* Türkiye

Introduction

Turkey has one of the richest floras in the northern hemisphere as it is located at the convergence of 3 phytogeographical regions: Euro-Siberian, Mediterranean, and Irano-Turanian. This is reflected in the high number of plant taxa, particularly plant families that have truffles associated with them. The forests of these regions are dominated by ectomycorrhizal families including Pinaceae, Fagaceae, Betulaceae, Cistaceae, Salicaceae, and Malvaceae. There is a long history of mycological exploration in Turkey, with hundreds of papers published since 1915 (Solak et al., 2007; Türkoglu et al., 2008; Sesli & Denchev, 2010; Doğan & Aydın, 2010a, 2010b; Türkoğlu & Kuyumcu, 2010; Allı et al., 2011; Riccioni et al., 2011). Of the more than 2000 taxa of fungi recorded from Turkey, there have only been 23 taxa of truffles reported (Sesli & Denchev 2010; Gücin et al., 2010). In the present study, 3 new records (*Tuber mesentericum* Vittad., *Tuber nitidum* Vittad. and *Terfezia leptoderma* Tul. are identified and added to the knowledge of the macrofungal flora of Turkey.

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Materials and methods

Field work was restricted to Denizli and Uşak provinces in western Turkey. These provinces are in the Aegean geographical region and the Mediterranean phytogeographical region. All of the specimens were found without the help of a truffle dog. Macromorphological characteristics (size, colour of the gleba, bruising reactions, and odour) of the truffle specimens were recorded and the specimens were then photographed in their natural habitat. Micromorphological characters were recorded after rehydrating in 3% KOH or in distilled water. Spores and sterile tissues were photographed with a compound microscope. The specimens were identified by examining their macroscopic and microscopic features, using references by Montecchi and Sarasini (2000). All collections were deposited in the herbaria of Muğla University and Oregon State University.

Results

Lists of taxa

Tuberaceae

Tuber mesentericum Vittad.

Ascocarps: 5-7 cm, subglobose, sometimes excavate at base, surface black to brown-black, with small warts on the surface. Gleba with radiating white veins arising from the base. Ascospores 24-34 × 18-23 µm, broadly elliptical. Odour strongly unpleasant at first, fading over time after being exposed to the air (Figure 1). Findings of *Tuber mesentericum* samples were confirmed by the sequencing of the ITS region for phylogenetic analysis (Riccioni et al., 2011).

Honaz National Park, in picnic area, under *Pinus nigra*. 06.05.2009, *Türkoğlu* (D6509-1); Honaz, Yukarıdağdere village, 07.06.2009, *Türkoğlu* (D7609-3).

Tuber nitidum Vittad.

Ascocarps 1-4 cm in diameter, subglobose to irregular, surface brown-red, smooth. Gleba initially white then brown as it matures. Ascospores 23-33 × 23-30 µm, ovoid to ellipsoid. Odour of garlic (Figure 2).

Denizli, Honaz National Park, in picnic area, in calcareous soils under *Juniperus excelsa*, *J. foetidissima*, and *Quercus pubescens*. It often shares the same habitat as *Tuber aestivum*. 06.05.2009, *Türkoğlu* (D6509-2).

Terfeziaceae

Terfezia leptoderma Tul.

Ascocarps 2-9 cm in diameter, subglobose potato-shaped, red-tinted. Surface roughened. Gleba off-white initially then becoming green-grey or violet with off-white veins. Spores 18-25 × 16-23 µm, subglobose. Odour is slight and similar to coconut (Figure 3).

Uşak, Eşme, Yaylak, in picnic area, in sandy soils in association with *Geranium*, *Helianthemum*, and *Cerastium* sp. 24.04.2009, *Türkoğlu* 5018; Uşak, Eşme, Güllübağ village, 24.04.2009, *Türkoğlu* 5020.

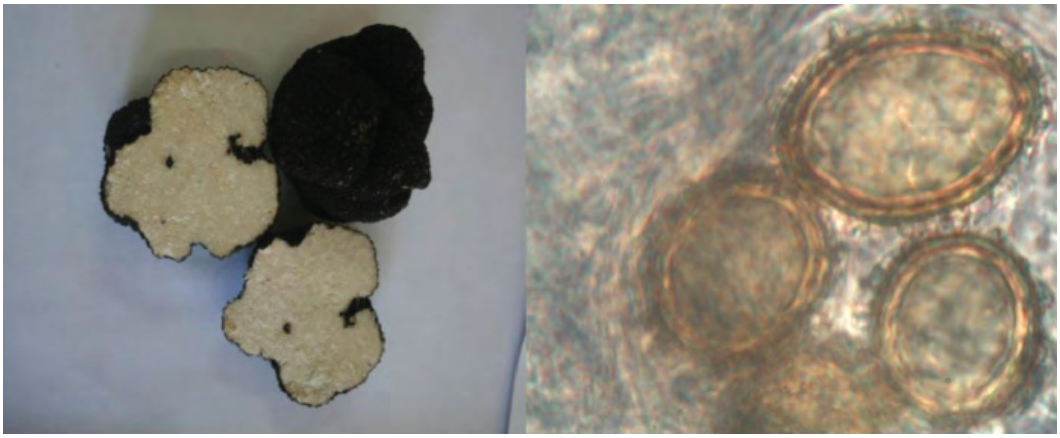

Figure 1. Ascocarps and ascospores of *Tuber mesentericum*.

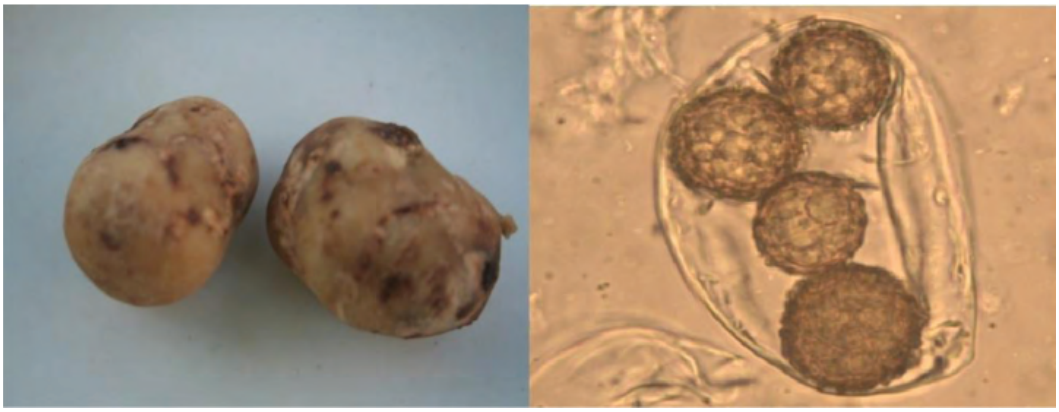

Figure 2. Ascocarps and ascospores of *Tuber nitidum*.

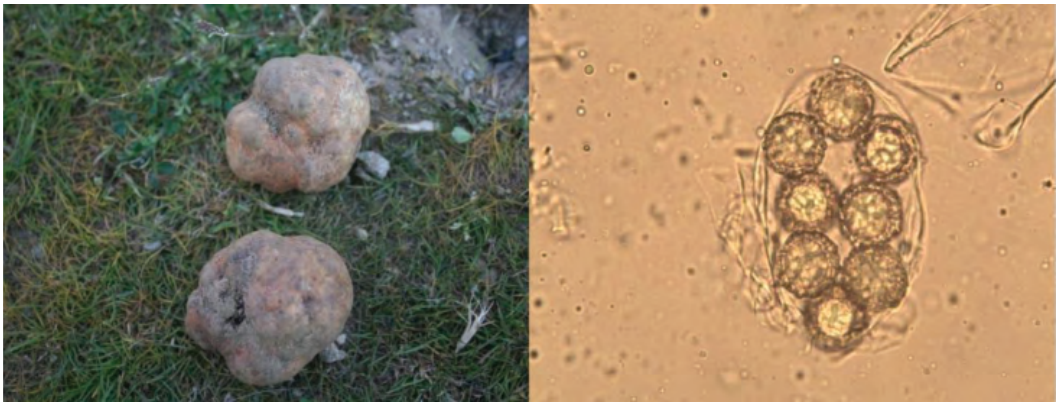

Figure 3. Ascocarps and ascospores of *Terfezia leptoderma*.

Discussion

In this study, 3 new records of truffle taxa are reported for Turkey: *Tuber mesentericum*, *Tuber nitidum*, *Terfezia leptoderma*. All samples are reported from the provinces of Denizli and Uşak.

Tuber mesentericum is very similar to *Tuber aestivum* but its odour is strongly unpleasant at first, fading over time after being exposed to the air. The former species is also sometimes found with a cavity at the base.

While *Tuber nitidum* is found under pine and oak trees, *Terfezia leptoderma* is collected near *Geranium*, *Helianthemum*, and *Cerastium* sp.

All truffle samples are known as "domalan" in Turkey, and *Tuber mesentericum* and *Terfezia leptoderma* are eaten by a few local people.

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References

Allı H, Işıloğlu M & Solak MH (2011). New Ascomycete records for the macrofungi of Turkey. *Turkish Journal of Botany* 35: 315-318.

Doğan HH & Aydın S (2010a). *Terfezia boudieri* and *Lactarius vellereus*'un antimikrobiyal özelliklerinin belirlenmesi. *20. Ulusal Biyoloji Kongresi*, pp. 956-957.

Doğan HH & Aydın S (2010b). *Terfezia boudieri* and *Lactarius vellereus*'un yağ asidi kompozisyonlarının belirlenmesi. *20. Ulusal Biyoloji Kongresi*, pp. 955-956.

Gücin F, Kaya A, Soylu MK & Uzun Y (2010). *Picoa* Vittad., a new truffle genus record for Turkey. *Biological Diversity and Conservation* 3: 23-25.

Montecchi A & Sarasini M (2000). *Funghi Ipogei D'Europa*, pp. 109-131. Vicenza: Fondazione Centro Studi Micologici dell'AMB.

Riccioni C, Kuyumcu S, Belfiori B, Rubini A, Turkoglu A & Paolocci F (2011). Assessing genetic variability in *T. aestivum* populations from Turkey. *Third Congress of the* Tuber aestivum/uncinatum *European Scientific Group*, p. 26.

Sesli E & Denchev CM (2010). Checklist of the myxomycetes, larger ascomycetes, and larger basidiomycetes in Turkey. *Mycotaxon* 106: 65-68.

Solak MH, Işıloğlu M, Kalmış E & Allı H (2007). *Macrofungi of Turkey Checklist*. İzmir: Üniversiteliler Ofset.

Türkoglu A, Alli H, Isiloglu M, Yagiz D & Gezer K (2008). Macrofungal diversity of Uşak Province in Turkey. *Mycotaxon* 104: 365-368.

Türkoğlu A & Kuyumcu S (2010). Initial studies of *Tuber aestivum* in Turkey. *Second Congress of the* Tuber aestivum/uncinatum *European Scientific Group*, p. 21.