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Rediscovery of *Gautieria graveolens* in Turkey

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Abstract: *Gautieria graveolens* is described and illustrated based on the specimens collected from Rize and Trabzon provinces. This is the first known report for the species in Turkey since its discovery in 1937. The brief description for the species was provided together with the collection localities and photographs related to its macro and micromorphologies.

Key words: Biodiversity, false truffles, *Gomphaceae,* hypogeous fungi

Gautieria graveolens'in Türkiye'de Yeniden Keşfi

Öz: *Gautieria graveolens* Rize ve Trabzon'dan toplanan örnekler değerlendirilerek betimlenmiş ve resmedilmiştir. Bu, tür için 1937'de Türkiye'de keşfinden sonraki bilinen ilk rapor edilişidir. Türün betimleyici özellikleri, toplanma lokaliteleri ve türün makro ve mikromorfolojisine ilişkin fotoğrafları ile birlikte verilmiştir.

Anahtar kelimeler: Biyoçeşitlilik, yalancı trüfler, *Gomhaceae,* toprakaltı mantarlar

Introduction

Gautieria Vittad. is a hypogeous fungi genus in the family Gomphaceae (Kirk et al., 2008). The genus was first proposed by Carlo Vittadini (1831) based on the collection of *Gautieria morchelliformis* Vittad. and *G. graveolens* Vittad. in Italy. The members of the genus are characterised by a globose to subglobose or irregular basidiomata usually with a persisting single or branched rhizomorph; thin and soon evanescing peridium; labyrinthine chambered gleba usually with cartilaginous columella; longitudinally symmetric, ellipsoid to ovoid, obovoid, or globose spores with ornamentation of meridional costae (Pegler et al., 1993; Montecchi and Sarasini, 2000; Trappe et al., 2009).

Index Fungorum presents 28 confirmed *Gautieria* species (Index Fungorum, 2019), six of which currently exist in Turkey. Five of them, *G. monticola* Harkn., *G. morchelliformis* Vittad., *G. otthii* Trog, *G. retirugosa* Th. Fr. and *G. trabutii* (Chatin) Pat., have been presented in last decade and well documented (Kaya, 2009; Doğan and Akata, 2015; Türkoğlu et al., 2015; Uzun et al., 2015). *Gautieria graveolens* Vittad. was reported by Pilát (1937) and only known from a list published in Bulletin Trimestriel Society Mycologie France.

Here we present *G. graveolens* for the second time based on the specimens collected from Rize and Trabzon provinces. The study aims to make a contribution to Turkish mycobiota.

Materials and methods

Gautieria samples were collected from Rize and Trabzon provinces in 2017. Colour photographs of the samples were taken and necessary descriptive characteristics were recorded in the field. Microscopic investigations are based on dry specimens and performed under a Nikon Eclipse Ci trinocular light microscope. A Nikon DS-Fi2 camera were used to take photographs related to micromorphology. A Hitachi SU5000 scanning electron microscope were used for SEM images. Identification of the samples were carried out with the help of Vittadini (1831), Zeller and Dodge (1918), Soehner (1951), Smith and Solheim (1953),

Montecchi and Sarasini (2000) and Nedelin et al. (2016). The specimens are kept at Karamanoğlu Mehmetbey University, Kamil Özdağ Science Faculty, Department of Biology.

Results

Basidiomycota R.T. Moore

Gomphales Jülich

Gomphaceae Donk

Gautieria Vittad

Gautieria graveolens Vittad.

Syn: [*Gautieria graveolens* f. *inodora* A.H. Sm. & Solheim]

Macroscopic and microscopic features: Basidiomata 13-35 mm in diam, hypogeous or semi-hypogeous, subglobose, irregularly lobed with small depressions and a white mycelial tuft of strands at the base (Figure 1a). Peridium thin, can be seen only in immature stage and disappears before maturity. Gleba pinkish brown, becoming ochraceous to yellowish brown or grey in age, composed of labyrinthine-like elongate or near roundish cavities among branches or walls that form whitish columella by enlarging toward the base (Figure 1b,c). Odour become distinct at maturity and unpleasant. Basidiospores 14-19 × 8.5-10 µm, broadly ellipsoid with a conical or rounded apiculus, yellowish or pale ocher to light rusty brown (Figure 2a,b), longitudinally ribbed, some ribs are forked, some interrupted and not complete, and some with rare warts (Figure 2c,d).

Ecology: *Gautieria graveolens* was reported to grow in soil, in coniferous and decidious forests, from late summer to late autumn (Vittad., 1831; Montecchi and Sarasini, 2000; Nedelin et al., 2016).

Specimen examined: Rize, Ardeşen, Seslikaya village, in soil in mixed *Castanea* Mill., *Fagus* L., *Picea* A.Dietr., *Quercus* L. and *Rhododendron* L. forest, 41°08′N-41°01′E, 440 m, 30.11.2017, Yuzun 5989; Trabzon, Tonya, Çayıriçi village, in soil, in mixed *Fagus*, *Picea* and *Rhododendron* forest, 40°49′N-39°17′E, 1300 m, 11.04.2017, Yuzun 5517.

Figure 1. Basidiocarps of *Gautieria graveolens*

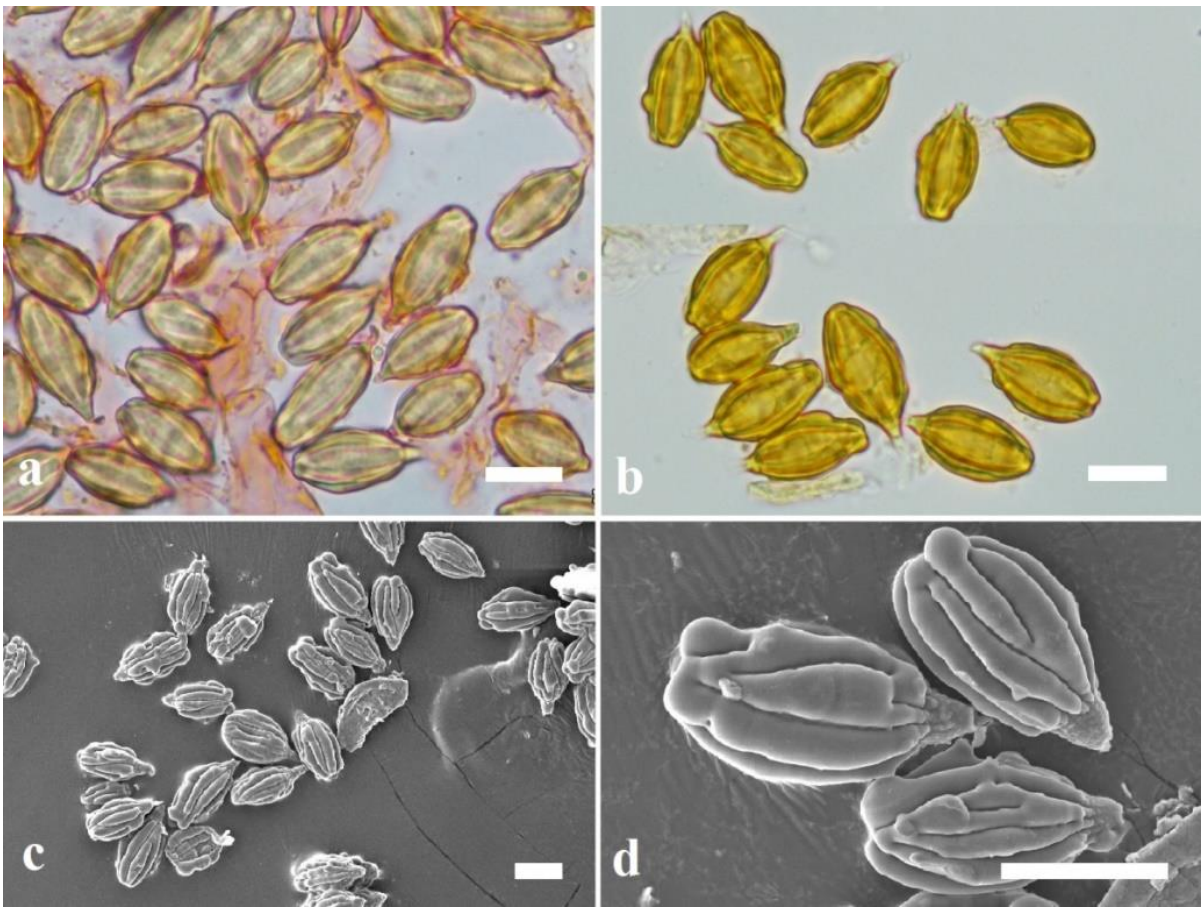

Figure 2. Light microscope (a,b) and SEM (c,d) images of basidiospores of *Gautieria graveolens.* (bars 10 µm) (a: in Congo red, b: in Melzer)

Discussions

Gautieria graveolens was reported from Turkey for the second time. Our Turkish collections are generally in agreement with those given in literature (Vittadini, 1831; Zeller and Dodge, 1918; Montecchi and Sarasini, 2000; Nedelin et al., 2016), in terms of morphology and ecology.

Gautieria morchelliformis is very similar species to *G. graveolens* in terms of morphology. But the larger spore size of the latter species easily differentiate it from *G. morchelliformis* (Doğan and Akata, 2015; Nedelin et al., 2016). Members of *Chamonixia* genus also have spores with longitudinal costae, but the membranous ribs of the spores, persistent peridium and very reduced or absent columella differs them from *Gautieria* species (Montecchi and Sarasini, 2000).

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