

## A New Record and New Localities for the Genus *Sclerogaster* R.Hesse in Turkey

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New record,  
*Sclerogaster candidus*,  
*Sclerogaster compactus*

**Abstract:** This paper aims to make a contribution to the mycobiota of Turkey and based on two hypogeous species belonging to the order Boletales, *Sclerogaster candidus* (Tul. & C.Tul.) Zeller & C.W.Dodge and *Sclerogaster compactus* (Tul. & C. Tul.) Sacc. The first taxon is reported as new record for the macromycota of Turkey from Tonya district of Trabzon province. New localities from İstanbul (Beykoz, Çekmeköy and Şile) province were given for the second one. A brief description of *Sclerogaster candidus*, including its ecologic, macroscopic and microscopic characters, and the original photographs of both taxa related to their macro and micromorphologies and the collection localities were provided.

## Türkiye'deki *Sclerogaster* R.Hesse Cinsi için Yeni Bir Kayıt ve Yeni Lokaliteler

### Anahtar Kelimeler

Toprak altı mantarlar,  
Makromantarlar,  
Yeni kayıt,  
*Sclerogaster candidus*,  
*Sclerogaster compactus*

**Özet:** Bu makale Türkiye mikobiyotasına katkı sağlamayı amaçlamaktadır ve Boletales takımına ait iki toprak altı tür, *Sclerogaster candidus* (Tul. & C.Tul.) Zeller & C.W.Dodge ve *Sclerogaster compactus* (Tul. & C. Tul.) Sacc., üzerinde gerçekleştirilmiştir. Birinci takson Trabzon'un Tonya ilçesinden Türkiye makromikotası için yeni kayıt olarak rapor edilmiştir. İkinci takson için ise İstanbul (Beykoz, Çekmeköy ve Şile)'dan yeni lokaliteler verilmiştir. *Sclerogaster candidus*'un ekolojik, makroskobik ve mikroskobik özelliklerini içeren kısa betimlemesi, ve her iki taksonun da makro ve mikromorfolojilerine ilişkin orijinal fotoğrafları ve toplanma lokaliteleri verilmiştir.

### 1. Introduction

*Sclerogaster* R.Hesse is the only genus of the family Sclerogasteraceae. The genus contain 10 confirmed species [1] which are mainly characterized by globose to irregular fruit bodies, white to pale yellowish brown peridia, pale yellow to deep yellow, yellow-brown or brown gleba, globose spores [2].

On field surveys in Trabzon and İstanbul provinces in the years 2017 and 2018, some hypogeous macrofungi samples were collected. As a result of field and laboratory studies, they were identified as *Sclerogaster candidus* (Tul. & C.Tul.) Zeller & C.W.Dodge and *Sclerogaster compactus* (Tul. & C.Tul.) Sacc.

According to the available literature, two members of the genus, *S. compactus* and *S. hysterangioides* (Tul. & C.Tul.) Zeller & C.W.Dodge, have been reported from Turkey [3]. A careful trace of the current checklists [4, 5] and the studies published after the preparation of these checklists [6, 7, 8, 9, 10, 11, 12, 13, 14, 15]

show that, *S. candidus* has not been reported from Turkey before.

The study aims to contribute to the mycobiota of Turkey.

### 2. Material and Method

*Sclerogaster* samples were collected from Tonya district of Trabzon province and Beykoz, Çekmeköy and Şile districts of İstanbul province in 2017 and 2018. Ecological and morphological characteristics of the samples were recorded and they were photographed in their natural habitats. Then the samples were brought to the fungarium, dried in and air conditioned room and then kept in polyethylene bags as fungarium materials. Micromorphological investigations were carried out under a Nikon eclipse Ci trinocular light microscope and a DS-Fi2 digital camera and a Nikon DS-L3 displaying apparatus were used for microstructural photographing. Identification were performed with the help of Zeller and Dodge [16, 17], Lebel and Trappe [18], Lebel and Castellano [19], Vidal [20], Calonge and Pasaban [21],

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Lebel and Tonkin [22]. The samples are kept at Karamanoğlu Mehmetbey University, Kâmil Özdağ Science Faculty, Department of Biology.

### 3. Results

Sytematic of the taxa is in accordance with speciesfungorum.org (accessed on 15 May 2018).

**Basidiomycota** R.T. Moore

**Agaricomycetes** Doweld

**Boletales** E.-J. Gilbert

**Sclerogastraceae** Locq.

**Sclerogaster** R. Hesse

***Sclerogaster candidus*** (Tul. & C.Tul.) Zeller & C.W.Dodge (Figure 1)

**Syn:** [*Hydnangium candidum* Tul. & C.Tul., *Macowanites candidus* (Tul. & C.Tul.) J.M. Vidal, *Octaviania candida* (Tul. & C.Tul.) Lloyd]

**Macroscopic and microscopic features:** Fruit body about 30 mm in diameter, angiocarpic, globose to subglobose when young, becomes somewhat hemiangiocarpic when mature by slightly opening at lower side. Surface smooth, pure white to yellowish

white, peridium thin and seperable from the gleba, disintegrate at perimarginal zone, leaving the gleba uncovered around the stipe. Gleba loculate, labyrinthiform or sublamelliform, white to, light yellowish. Odour and taste mild. Stipe rudimentary and distinct in age, about 10 × 4 mm, generally central, concolorous with the peridium. Basidia 30-40 × 14-18 µm, clavate, hyaline, with 2-4 slender to robust sterigmata of 4-6 µm long. Basidioles claviform, slightly smaller than basidia. Macrocyttidia cylindrical, lanceolate to fusiform, acute or mucronate. Basidiospores 8.5-14 × 6.5-11 µm, subglobose to broadly elliptical, covered with 1.5-2 µm long, cylindrical and amyloid warts.

**Ecology:** Solitary or gregarious, epigeous or semihypogeous, on rich humus of deciduous woods, preferably of *Carpinus* L., but also of *Betula* L., *Corylus* L., *Fagus* L., *Populus* L., *Quercus* L., *Tilia* L., mixed with *Acer* L., *Fraxinus* L., *Sambucus* L., *Ulmus* L., on calcareous soil, from summer to autumn [20, 21].

**Specimen examined:** Trabzon, Tonya, Karasu village, *Fagus orientalis* Lipsky-*Castanea sativa* Mill.-*Quercus* sp. mixed forest, under soil, 40°57'N-39°18'E, 740 m, 22.06.2017, Yuzun 5625.



**Figure 1.** Basidiocarps (a), basidia (b) and basidiospores (c) of *Sclerogaster candidus*

***Sclerogaster compactus*** (Tul. & C. Tul.) Sacc. (Figure 2)

**Syn:** [*Octaviana compacta* Tul. & C.Tul., *Octaviana compacta* Masee, *Octavianina compacta* (Tul. & C.Tul.) Kuntze, *Sclerogaster broomeanus* Zeller & C.W.Dodge]

**Specimen examined:** İstanbul, Beykoz, Polonezköy Nature Park, pine forest, under dead pine needles, 41°06'N-29°11'E, 200 m, 05.03.2018, Yuzun 6281; Çekmeköy, Reşadiye village, pine-beech mixed forest, 41°05'N-29°15'E, 145 m, 05.03.2018, Yuzun 6283; Şile, Ahmetli village, pine forest, 41°08'N-29°34'E, 125 m, 07.03.2018, Yuzun 6295.

#### 4. Discussion and Conclusion

*Sclerogaster candidus* produces a basidioma similar in size and color to *Russula mattirolana* (Cavara) T.Label and *Macowanites galileensis* M.M.Moser, Binyam. & Aviz.-Hersh. *R. mattirolana* differs from *S. candidus* with its ecology, under *Abies* Mill. and *Picea*

D.Don ex Loudon, and larger and more globose spores, while *M. galileensis* differs with its globose, sub-contracted spores [21].

Currently 14 hypogeous members of the order Boletales within the families Boletaceae, Paxillaceae, Rhizopogonaceae and Sclerogastraceae, and the genera *Octaviana* Vittad., *Alpova* C.W.Dodge, *Melanogaster* Corda, *Rhizopogon* Fr. and *Sclerogaster* R.Hesse, exist in Turkey [3, 10, 22, 23, 24, 25, 26, 27]. With this study *S. candidus* was added to the mycobiota of Turkey as the third and the fifteenth member of the genus *Sclerogaster* and the hypogeous Boletales, respectively. New localities were also presented for an existing member, *S. compactus*, of the genus.

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**Figure 2.** Basidiocarps (a, b) and basidiospores (c) of *Sclerogaster compactus*

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