**Geliş(Received)** :22.12.2021
**Kabul(Accepted)** :03.03.2022

***Research Article***
**Doi: 10.30708.mantar.1039832**

# *Chlorophyllum hortense*, A New Record for Turkish Mycobiota

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**Abstract:** *Chlorophyllum hortense* (Murrill) Vellinga is reported as a new record from Turkey, based on the identification of the samples collected from Rize province. A brief description of the species is provided together with the photographs, related to the macroscopy and microscopy.

**Keywords:** Biodiversity, *Agaricaceae,* New record, Turkey

## *Chlorophyllum hortense,* Türkiye Mikobiyotası İçin Yeni Bir Kayıt

**Öz:** *Chlorophyllum hortense* (Murrill) Vellinga., Rize'den toplanan örneklerin teşhis edilmesiyle, Türkiye'den yeni kayıt olarak rapor edilmiştir. Türün kısa bir betimlemesi makroskobi ve mikroskobisine ilişkin fotoğrafları ile birlikte verilmiştir.

**Anahtar kelimeler:** Biyoçeşitlilik, *Agaricaceae,* Yeni kayıt, Türkiye

### Introduction

*Chlorophyllum* Massee is a genus of the family *Agaricaceae*. It was first erected as an agaricoid genus by the typification of *Chlorophyllum molybdites* (G. Mey.) Massee. Based on molecular data and some morphological similarities, some other species belonging to the genera *Endoptychum* Czern., *Lepiota* (Pers.) Gray and *Macrolepiota* Sing. were transferred to the genus (Carlavilla et al., 2018; Ge et al., 2018; Alves et al., 2019). Currently the members of the genus are characterized by agaricoid to secotioid, or gasteroid habit; white, green, brownish or brown spore deposit; basidiospores without germ pore or with a germ pore caused by a depression in the episporium without a hyaline covering (Ge and Yang, 2006; Crous et al., 2015, Carlavilla et al., 2018; Ge et al., 2018; Alves et al., 2019).

Though the existing number of *Chlorophyllum* was presented as 16 by Kirk et al. (2008), Index Fungorum (Accessed 15 November 2021) currently lists 26 conformed species of the genus.

Currently 5 species of the genus are known to exist in Turkey. Uzun and Kaya (2022) prepared a synoptic key for Turkish *Chlorophyllum* species while presenting *Chlorophyllum lusitanicum* G. Moreno, Muñ.-Moh., Manjón as new record for Turkey.

According to the current checklist (Sesli et al., 2020) and the latest contributions to Turkish higher fungi (Akçay, 2020; Çağli and Öztürk, 2020; Işık, 2020; Sesli, 2020; Uzun et al., 2020; Acar et al., 2021; Çetinkaya and Uzun, 2021; Doğan et al., 2021; Kaygusuz et al., 2021; Şelem et al., 2021; Uzun, 2021; Uzun and Kaya, 2022) *C. hortense* (Murrill) Vellinga, hasn't been reported before from Turkey.

The study aims to make a contribution to the macrofungal biodiversity of the Rize province and Turkey.

### Material and Method

The fruit bodies of *Chlorophyllum hortense* were collected from İyidere district of Rize province, in 2015, during a routine field study. Fruit bodies were photographed at their natural habitats, and ecological characteristics and geographic position were noted. Then the samples were transferred to the fungarium in a paper box. After letting them dry in an air conditioned room, they

were prepared as fungarium material. Microscopic characteristics were based on dry samples. Microscopic investigations were carried out under a trinocular light microscope. Photographs related to micromorphology were obtained with the aid of a digital camera. The sample was identified with the help of Akers and Sundberg (1997), Ge and Yang (2006), Nascimento and Alves (2014), Vizzini et al. (2014) and Ge et al. (2018).

The specimen is kept at Van Yüzüncü Yıl University, Science Faculty, Department of Biology.

## Results

***Fungi*** R.T. Moore

***Basidiomycota*** R.T. Moore

***Agaricales*** Underw.

***Agaricaceae*** Chevall

***Chlorophyllum hortense*** (Murrill) Vellinga, Mycotaxon 83: 416 (2002)

**Syn:** [*Lepiota hortensis* Murrill, *Leucoagaricus hortensis* (Murrill) Pegler]

**Macroscopic and microscopic features:** Pileus 35-80 (90) mm in diam., ovoid when young, then conic-campanulate, finally expanding to plano-convex with an umbo, whitish to creamy with a yellowish umbo, surface breaking up into flat, appressed, irregularly shaped scales on a whitish background, scales radially oriented and more densely packed toward the center while scattered toward the margin, margin thin, sub-striate to striate (Figure 1). Flesh thin, whitish. Lamellae free, crowded, whitish, becoming dirty white to pale ocher. Stipe 40-80 × 4-8 mm, central, cylindrical, with an equal to sub-bulbous base, surface whitish, glabrous, staining reddish upon bruising, annulus persistent, membranous, whitish, spore print white. Basidia 25-35 x 8-10 µm, clavate to narrowly clavate, hyaline, 2-spored. Cheilocystidia 30-50 × 8-10 (12) µm, cylindrical to narrowly clavate, sometimes constricted, hyaline. Basidiospores (7.8)8.5-11 (12) × 6.5-8.5 µm, ellipsoid to broadly ellipsoid, rarely ovoid, hyaline, thick-walled, with an apiculus and a single large oil drop, without a germ pore (Figure 2).

Figure 1. Basidiocarps of *Chlorophyllum hortense*

*Chlorophyllum hortense* was reported to grow as solitary or scattered on organic rich soil, fertilized especially with cattle feces and grasses (Akers and Sundberg, 1997; Ge and Yang, 2006; Nascimento and Alves, 2014; Vizzini et al., 2014; Ge et al., 2018).

**Specimen examined:** Rize, İyidere, Denizgören village, on soil composted with processed *Camellia sinensis* (L.) Kuntze remains, 40°58′N, 40°22′E, 20 m, 23.10.2015., AK 3077.

**Discussions**

*Chlorophyllum hortense* was added as new record for the mycobiota of Turkey. This is the sixth member of the genus to be reported in Turkey. Macro and micromorphological characteristics of the studied collection are in agreement with Ge and Yang (2006), Nascimento and Alves (2014) and Vizzini et al. (2014).

*Chlorophyllum hortense* is characterized by medium to large-size, whitish basidiomes with whitish to creamy or ocher-yellow squamules on the pileus and a yellowish umbo, stipe's reddening reaction when injured, a double annulus, spores without a germ pore, 2-spored basidia and cylindrical cheilocystidia (Akers and Sundberg, 1997; Vellinga, 2003; Nascimento and Alves, 2014; Ge et al., 2018). It shares some morphological features with *Leucoagaricus carminescens* Heinem., but tetrasporic basidia of the latter species differs the two species from each other. *Chlorophyllum africanum* Z.W. Ge & A. Jacobs is also a similar species to *C. hortense* in terms of basidiocarp morphology, ellipsoid basidiospores and subcylindrical cheilocystidia, but the whitish context of the stipe becoming reddish where bruised and 2-spored basidia differs *C. hortense* from *C. africanum*.

By the addition of *C. hortense,* current taxa number of the genus *Chlorophyllum* in Turkey increased to six.

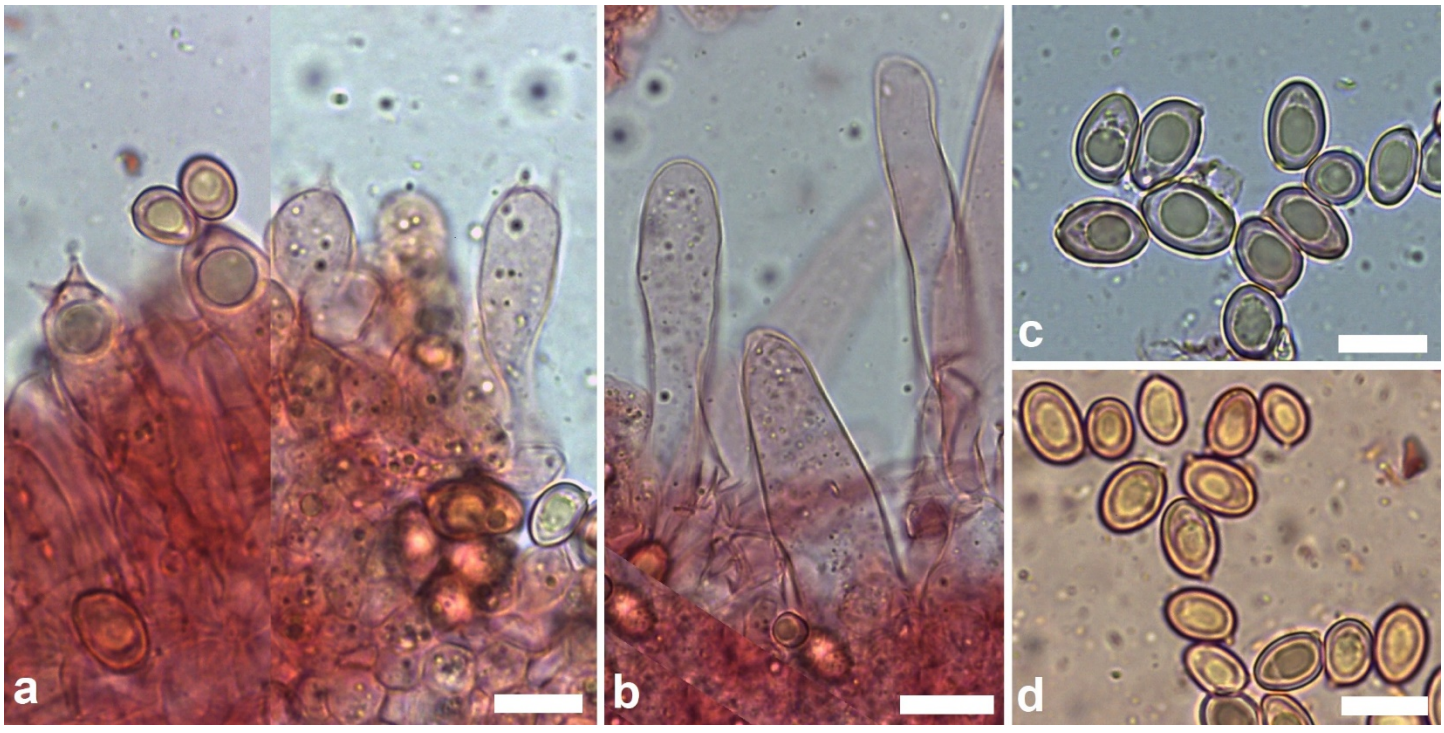


Figure 2. Basidia (a), cheilocystydia (b) and basidiospores (c,d) of *Chlorophyllum hortense* (bars- a-d: 10 µm) (a,b,d in Congo-Red, c in water)

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