



## A new Ascomycete family record for Turkish Macromycota

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### Abstract

In this study, *Hypocrea leucopus* (P. Karst.) H.L. Chamb., a member of *Ascomycota* collected at Uzungöl Nature Park (Trabzon), is reported for the first time at family level in Turkey. A short description and macro and microphotographs are provided and discussed briefly.

**Key words:** *Hypocrea leucopus*, *Ascomycota*, New record, Turkey

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## Türkiye Makromikotası için yeni bir Askomiset familyası kaydı

### Özet

Bu çalışmada Trabzon'un Uzungöl Doğa Parkı'ndan toplanan ve Askomikota'nın bir üyesi olan *Hypocrea leucopus* (P. Karst.) H.L. Chamb. Türkiye'den ilk defa ve familya düzeyinde rapor edilmiştir. Türün kısa deskripsiyonu ve makro ve mikromorfolojilerine ait fotoğrafları verilerek kısaca tartışılmıştır.

**Anahtar kelimeler:** *Hypocrea leucopus*, *Ascomycota*, Yeni kayıt, Türkiye

### 1. Introduction

The family *Hypocreaceae* is classified in the *Ascomycota* division, *Sordariomycetes* class and *Hypocreales* order. Members of *Hypocreaceae* are usually recognized by their brightly colored, perithecial *ascomata* and globose, ellipsoid to cylindrical ascospores. The family includes 22 genera and 454 species. (De Notaris, 1844; Kirk et al., 2008).

*Hypocrea* Fr., the type genus of *Hypocreaceae* is generally characterized by the presence of perithecia embedded in fleshy stromata, which is formed by pseudoparenchymatous tissue or highly compacted hyphae. The genera include 75 species, all of which are recognized in Europe (Jaklitsch, 2011).

Stipitate species of *Hypocrea* are characterized especially by the presence of pale to brightly colored, erect, clavate to cylindrical stroma; they have been segregated as genera *Podostroma* P. Karst. *Podostroma* differs from *Hypocrea* on the basis of presence of gross morphology of the *ascomata*. The type species of *Podostroma* is *P. leucopus* P. Karst. ; its former synonym was *P. alutaceum* (Pers.) G.F. Atk. Extensive studies on the type and existing specimens of these two species lead the researchers to distinguish them from each other in terms of morphological and biological characteristics (Chamberlain et al., 2004; Jaklitsch, 2011).

According to current checklists (Solak et al., 2007; Sesli and Denchev, 2008) and the recent contributions on Turkish macromycota (Akata and Doğan, 2011; Akata et al., 2011; Akata et al., 2012; Akata and Kaya 2012a, b; Akgul et al., 2011; Allı, 2011; Allı et al., 2011; Castellano and Türkoğlu, 2012; Doğan and Aktaş, 2010; Doğan et al., 2011, 2012; Dülger and Dülger, 2010; Gücin et al., 2010; Türkekul and Zülükaroğlu, 2010; Uzun et al., 2010), there isn't any record from Turkey, related to members of *Hypocreaceae*.

The present study aims to make a contribution to Turkish mycobiota.

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## 2. Materials and methods

Specimens were collected from Uzungöl Nature Park (Trabzon) in 2011. Relevant morphological and ecological characteristics of the samples were noted and they were photographed in their natural habitats before taken to the herbarium. Microstructural data was obtained by light microscopy after treating the samples with the reagents such as distillate water, Melzer's reagent, 5% KOH, congo red, cotton blue etc. Microphotographs of asci and ascospores were taken by Leica DM 1000. Identification was performed with the aid of related literature (Chamberlain et al., 2004; Jaklitsch, 2011). The identified specimens were deposited at Ankara University Herbarium (ANK).

## 3. Results

A short description, geographical position, locality, collection date, ecology and distribution, photographs of fruit bodies and microphotographs of asci and ascospores of the species are provided. The systematic of the taxon is according to mycobank (URL1: <http://www.mycobank.org>: accessed: 20 March 2012).

### Fungi

**Ascomycota** R.H. Whittaker

**Pezizomycotina** O.E. Erikss. & Winka

**Sordariomycetes** O.E. Erikss. & Winka

**Hypocreomycetidae** O.E. Erikss. & Winka

**Hypocreales** Lindau

**Hypocreaceae** De Not.

**Hypocrea** Fr.

*Hypocrea leucopus* (P. Karst.) H.L. Chamb. (2004)

Syn. *Podostroma leucopus* P. Karst. (1892)

**Macroscopic and microscopic features:** **Stromata** separated into fertile and sterile parts. Total stroma 30-45 mm tall, clavate, straight or more commonly curved, **Fertile part** 10-15 mm, yellow to golden brown, hollow, surface, smooth, glabrous, slightly tuberculate, somewhat rugose, when fresh ostiolar dots visible slightly darker than background. **Stipe** cylindrical, sterile, white to beige. **Flesh** firm, white and odourless. The upper part covered by white to yellowish, straight to curved, smooth or slightly longitudinally furrowed perithecia (Figure 1a). **Asci** 75-85 x 4-5 µm cylindrical, 16 spored, uniseriate (Figure 1b). No paraphyses were seen. **Ascospores** 3-4 x 2.5-3.5 µm, hyaline, wedge-shaped or subglobose, usually distinctly flattened on one side (Figure 1c).

**Ecology:** Autumn, on ground among litters, typically in mixed forest (Chamberlain et al., 2004).

**Distribution:** Europe and North America (Chamberlain et al., 2004; Jaklitsch, 2011).

**Specimen examined:** TURKEY—Trabzon: Çaykara, Uzungöl Nature Park: In *Picea orientalis* L. and *Fagus orientalis* Lipsky mixed forest, on soil, among needle litters, 40° 37' N - 40° 19' E, 1510 m, 09.10.2010, Akata 3298.

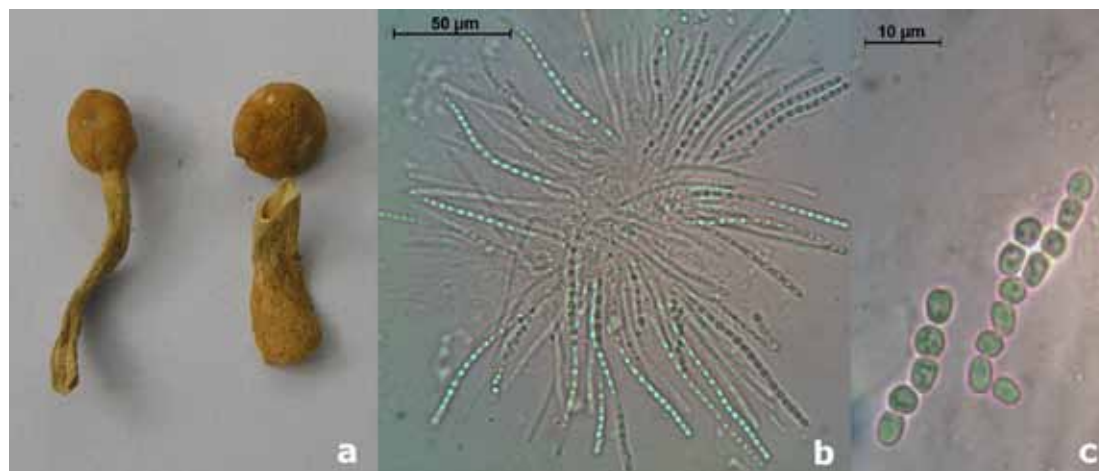


Figure 1. *Hypocrea leucopus*: a- stromata, b- asci, c- ascospores

## 4. Discussion

*Hypocrea leucopus* is macroscopically very close to several stipitate *Hypocrea* species (*H. alutacea* (Pers.) Ces. & De Not., *H. nybergiana* T. Ulvinen & H.L. Chamb. and *H. seppoi* Jaklitsch) because of their similar macromorphology. *H. alutacea* forms clavate to irregular, often laterally fused stromata on wood or bark of deciduous trees, but *Hypocrea leucopus* occurs on the ground in forests, typically in mixed forests. *H. nybergiana* differs from *H. leucopus* by the presence of larger, reddish brown stromata (46-93 mm) and slightly larger ascospores (3-5.5 x 3-4.2 µm). Stroma of *H. seppoi* shares the same colour with *Hypocrea leucopus* but it is smaller (up to 25 mm) (Chamberlain et al., 2004; Jaklitsch et al., 2008; Jaklitsch, 2011).

According to the literature (Akata and Doğan, 2011; Akata et al., 2011; Akata et al., 2012; Akata and Kaya 2012a, b; Akgul et al., 2011; Allı, 2011; Allı et al., 2011; Castellano and Türkoğlu, 2012; Doğan and Aktaş, 2010; Doğan et al., 2011, 2012; Dülger and Dülger, 2010; Gücin et al., 2010; Solak et al., 2007; Sesli and Denchev, 2008; Türkekul and Zülfişkaroğlu, 2010; Uzun et al., 2010), 181 taxa within 25 family (*Caloscyphaceae* Harmaja, *Cudoniaceae* P.F. Cannon, *Coniochaetaceae* Malloch & Cain, *Dermateaceae* Fr., *Diatrypaceae* Nitschke, *Discinaceae* Benedix, *Helotiaceae* Rehm, *Helvellaceae* Fr., *Hemiphacidiaceae* Korf, *Hyaloscyphaceae* Nannf., *Hysteriaceae* Chevall., *Leotiaceae* Corda, *Melogrammataceae* G. Winter, *Morchellaceae* Rchb., *Nectriaceae* Tul. & C. Tul., *Pezizaceae* Dumort, *Pyronemataceae* Corda, *Rhiziniaceae* Bonord., *Rhytismataceae* Chevall., *Rutstroemiaceae* Holst-Jensen, L.M. Kohn & T. Schumach., *Sarcoscyphaceae* Le Gal ex Eckblad, *Sarcosomataceae* Kobayasi, *Sclerotiniaceae* Whetzel, *Tuberaceae* Dumort. and *Xylariaceae* Tul. & C. Tul.) of larger *Ascomycota* have so far been recorded from Turkey.

In the present study, *Hypocrea leucopus* is reported as a new record for Turkish mycobiota at family level and this species will be the first member of Turkish twenty sixth larger Ascomycete family..

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