

## Macrofungi of Huzurlu high plateau (Gaziantep-Turkey)

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**Abstract:** Macrofungi samples were collected from Huzurlu high plateau and its surroundings between 2002 and 2005. As a result of macroscopic and microscopic investigations 105 taxa belonging to 67 genera and 33 families were recorded in *Ascomycetes* and *Basidiomycetes* classes. Six of them, *Phaeohelotium umbilicatum* (Le Gal) Dennis, *Lepiota jacobi* Vellinga & Knudsen, *Leucoagaricus erioderma* (Malençon) Bon, *Leucoagaricus serenus* (Fr.) Bon & Boiffard, *Cortinarius turgidus* Fr., and *Cotylidia diaphana* (Schwein.) Lentz, are new records for the macromycota of Turkey.

**Key words:** Biodiversity, İslahiye, Gaziantep, taxonomy

### Huzurlu yaylası (İslahiye-Gaziantep) makromantarları

**Özet:** Huzurlu yaylası ve çevresinden 2002-2005 yılları arasında makrofungus örnekleri toplandı. Gerekli makroskobik ve mikroskobik incelemeler sonucunda *Ascomycetes* ve *Basidiomycetes* sınıflarına ait 33 familya ve 67 cins içinde yer alan 105 takson belirlendi. Tanımlanan taksonlardan 6 tanesi, *Phaeohelotium umbilicatum* (Le Gal) Dennis, *Lepiota jacobi* Vellinga & Knudsen, *Leucoagaricus erioderma* (Malençon) Bon, *Leucoagaricus serenus* (Fr.) Bon & Boiffard, *Cortinarius turgidus* Fr. ve *Cotylidia diaphana* (Schwein.) Lentz, Türkiye mikotası için yeni kayıttır.

**Anahtar sözcükler:** Biyoçeşitlilik, İslahiye, Gaziantep, taksonomi

### Introduction

Taxonomic studies on Turkish macromycota started in the second quarter of the 20<sup>th</sup> century and accelerated during the last quarter of the same century and are still going on. Although about 416 studies (Sesli & Denchev, 2008) have been carried out to date and some checklists (Solak et al., 2007) have been presented, there are still many regions to be studied especially in south-eastern Anatolia. From this standpoint, this study was carried out to determine the macrofungal diversity of Huzurlu high plateau and to make a contribution to the macromycota of Turkey.

Huzurlu high plateau (Figure 1), which was declared a “high plateau tourism centre” by the Turkish Ministry of Tourism, is situated within the boundaries of Gaziantep province at the intersection of Gaziantep, Hatay, and Osmaniye provinces. The plateau is located among the Amanos mountains that form the southern part of the Anatolian Diagonal and is composed of Yağlıpınar (2086 m), Havşu (2018 m), Hamo (1972 m), Hanife Mezarı (1840 m), and Üçtepe (1550 m) hills, plateau settlement centres, and valleys that drain the region outside.

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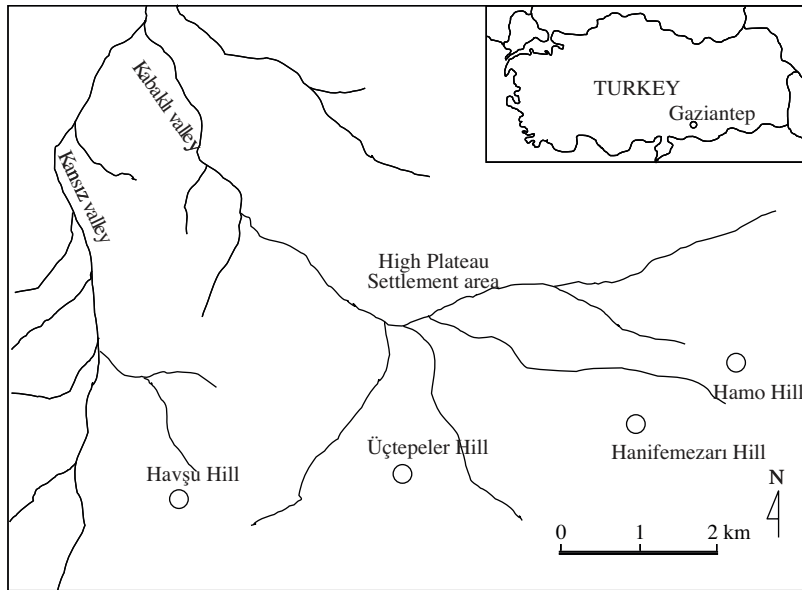


Figure 1. Map of the research area.

The climate of the area is Mediterranean according to Emberger's formula (Akman, 1999) and falls mainly into the Mediterranean phytogeographical sector within the holarctic floral kingdom. Three types of vegetation, i.e. maquis (600-900 m), forest (900-1900 m), and steppe (over 1900 m), are visible at the plateau and its surroundings (İskender et al., 2005). The forest area is mainly characterised by *Pinus brutia* Ten., *Cedrus libani* A.Rich., *Abies cilicica* (Anto. & Kotschy) Carr. subsp. *cilicica*, *Pinus nigra* Arnold. subsp. *pallasiana* (Lamb.) Holmb., *Fagus orientalis* Lipsky., *Carpinus orientalis* Miller, *Quercus cerris* L. var. *cerris*, *Taxus baccata* L., *Alnus glutinosa* (L.) Gaertn. subsp. *glutinosa*, and *Corylus avellana* L. var. *avellana*.

### Materials and methods

The material for this study was collected from Huzurlu high plateau and its surroundings between 2002 and 2005. During the field study morphological and ecological properties of the samples were recorded and they were photographed. Geographical positions were obtained by using a Magellan Sportrak Pro and the edibility of the macrofungi was

investigated by asking the villagers. Then the fungal materials were taken to the laboratory and macroscopic and microscopic measurements were performed. Using the overall data, obtained from the field and laboratory, they were identified with the help of Phillips (1981), Moser (1983), Breitenbach and Kränzlin (1984-2005), Candusso and Lanzoni (1990), Buczacki (1992), Jordan (1995), Pegler et al. (1995), Bessette et al. (1997), Cappelli (1997), and Antonin and Noordeloos (1997). Moreover, the determined taxa were also scanned from the published checklists (Solak et al., 2007; Sesli & Denchev, 2008) to specify the new records. The samples are kept at Adiyaman University Education Faculty, Adiyaman, Turkey.

### Results

Determined taxa were listed together with their habitat, geographical position, collection date, and personal accession numbers (K: Kaya). The systematics of the taxa is in accordance with Cannon and Kirk (2007) and Kirk et al. (2008). Short descriptions and images of the newly recorded taxa are given.

**Fungi****Ascomycota****Helotiales****Helotiaceae**

\**Phaeohelotium umbilicatum* (Le Gal) Dennis: On decaying wood, Kansız valley, 36°59'30"N, 36°25'54"E, 1380 m, 25.10.2003, K. 2343.

Fruit body 1-3.5 mm across, turbinate when young, then expanded flat, convex to umbilicate. Hymenium smooth, lemon yellow, darker at the centre, in some samples margin weakly notched (Figure 2a). Stipe 1-2.5 mm long, cylindrical, tapering toward the base. Ascii 90-100 × 9-10 µm, and eight-spored. Spores 13-16.5 × 4-4.5 µm, elliptical-cylindrical, smooth with drops (usually 2 large and a few smaller) (Figure 2b).



Figure 2. *Phaeohelotium umbilicatum*. a. Ascocarps, b. Ascus, c. Ascospores.

**Pezizales****Caloscyphaceae**

*Caloscypha fulgens* (Pers.) Boud.: In needle litter under *Abies* sp., around Hanife Mezarı Hill, 36°58'27"N, 36°29'18"E, 1745 m, 15.05.2005, K. 2747.

**Helvellaceae**

*Helvella leucomelaena* (Pers.) Nannf.: Under *Pinus* sp., around settlement area, 36°58'46"N, 36°28'04"E, 1471 m, 25.05.2003, K. 2272.

**Morchellaceae**

*Morchella deliciosa* Fr.: In needle litter under *Abies* sp., around Hanife Mezarı Hill, 36°58'27"N, 36°29'18"E, 1745 m, 14.05.2005, K. 2750.

*Morchella elata* Fr.: *Abies-Pinus* forest, around settlement area, 36°58'55"N, 36°28'12"E, 1502 m, 24.05.2003, K. 2277.

*Morchella rigida* (Krombh.) Boud.: Among grass, Bileydik valley, 36°58'55"N, 36°27'19"E, 1421 m, 14.05.2005, K. 2754.

**Pyronemataceae**

*Geopora sumneriana* (Cooke) M.Torre: *Abies-Pinus* forest, around settlement area, 36°58'55"N, 36°28'12"E, 1502 m, 25.05.2003, K. 2276.

*Scutellinia umbrorum* (Fr.) Lambotte: On nutrient rich soil, Kabaklık valley, 36°59'19"N, 36°26'33"E, 1387 m, 30.06.2002, K. 1840.

**Basidiomycota****Agaricales****Agaricaceae**

*Agaricus arvensis* Schaeff.: Meadow, Bileydik valley, 36°58'53"N, 36°27'17"E, 1421 m, 25.05.2003, K. 2270.

*Agaricus campestris* L.: On nutrient rich soil in *Abies-Pinus* forest clearing, around settlement area, 36°58'50"N, 36°28'12"E, 1480 m, 26.10.2002, K. 1873.

*Agaricus pseudoprattensis* (Bohus) Wasser: Mixed forest, Kabaklık valley, 36°59'49"N, 36°26'10"E, 1327 m, 25.10.2003, K. 2316.

*Bovista plumbea* Pers.: Among grass in *Abies-Pinus* forest clearing, around settlement area, 36°58'41"N, 36°27'32"E, 1445 m, 25.05.2003, K. 2282.

*Coprinus comatus* (O.F.Müll.) Pers.: On floodplain, Kabaklık valley, 36°59'17"N, 36°26'35"E, 1389 m, 25.10.2003, K. 2322.

*Cyathus olla* (Batsch) Pers.: On decaying wood, around the highway from Tandır village to plateau, 36°58'11"N, 36°30'13"E, 1438 m, 21.11.2004, K. 2617.

*Lepiota cristata* (Bolton) P.Kumm.: Among leaf litter in mixed forest, Kansız valley, 36°59'46"N, 36°25'59"E, 1324 m, 25.10.2003, K. 2340.

\**Lepiota jacobii* Vellinga & Knudsen.: Among leaf litter in mixed forest, Kansız valley, 36°59'46"N, 36°25'58"E, 1324 m, 25.10.2003, K. 2342.

Cap 20-45 mm across, hemispherical when young, then plano-convex or applanate with a depressed centre or a low, broad umbo. Covered with small acute

up to 1 mm spiny structures on a beige to light brown background (Figure 3a). Flesh cream, thin. Lamellae cream, free. Stipe 20-50×3-6 mm, cylindrical, sometimes slightly broadened towards base, hollow, brown fibrillose above the annular zone and with woolly brown squamules below. Basidia 13-20 × 4-6 μm, narrowly clavate. Spores 3.4-5.2 × 2-3 μm, ellipsoid to oblong (Figure 3b).



Figure 3. *Lepiota jacobi*. a. Basidiocarps, b. Basidium, c. Basidiospores.

\**Leucoagaricus erioderma* (Malençon) Bon: Among leaf litter in mixed forest, Kansız valley, 36°59'46 N, 36°25'59 E, 1324 m, 27.10.2002, K. 1884.

Cap 20-40 mm across, campanulate when young, later convex with an obtuse umbo, surface finely squamulose-fibrillose, remaining cream to lilac brown at the center, marginal zone fibrillose (Figure 4a). Flesh white, thin. Lamellae white. Stipe 25-55 × 4-8 mm, cylindrical, white, sericeous above the persistent white annulus, squamulose below. Basidia 18-24 × 4-4.5 × 8-9 μm, clavate. Spores, 6-7.5 × 3-4 μm ovoid to subamygdaliform (Figure 4b).



Figure 4. *Leucoagaricus erioderma*. a. Basidiocarps, b. Basidium, c. Basidiospores.

*Leucoagaricus leucothites* Wasser: Among grass in *Abies-Pinus* forest clearing, around settlement area, 36°58'40''N, 36°27'34''E, 1442 m, 24.10.2003, K. 2295.

\**Leucoagaricus serenus* (Fr.) Bon & Boiffard: Among leaf litter in mixed forest, Kansız valley, 36°59'52''N, 36°26'00''E, 1310 m, 27.10.2002, K. 1887.

Cap 30-50 mm across, campanulate when young, later convex to plane, with an umbo, white, surface finely fibrillose especially at the margin (Figure 5a). Flesh white, thin. Lamellae white when young then cream-white, free. Stipe 40-70 × 5-8 mm, cylindrical, enlarged to somewhat bulbous at the base, surface white-fibrillose on a cream background, annulus membranous. Basidia 17-25 × 7-9 μm, clavate. Spores 7-9 × 4-5 μm, elliptical to amygdaliform (Figure 5b).



Figure 5. *Leucoagaricus serenus*. a. Basidiocarps, b. Basidium, c. Basidiospores.

*Leucocoprinus badhamii* (Berk. & Broome) M.M.Moser: Among leaf litter in mixed forest, Kansız valley, 36°59'45''N, 36°25'57''E, 1327 m, 27.10.2002, K. 1888.

*Lycoperdon molle* Pers.: Mixed forest, intersection of Kansız and Kabaklık valleys, 36°59'54 N, 36°25'59 E, 1305 m, 25.10.2003, K. 2345.

*Lycoperdon nigrescens* Wahlenb.: Mixed forest, intersection of Kansız and Kabaklık valleys, 36°59'50''N, 36°26'03''E, 1310 m, 25.10.2003, K. 2336.

*Lycoperdon perlatum* Pers.: Among grass in mixed forest, Kansız valley, 36°59'42''N, 36°26'02''E, 1324 m, 27.10.2002, K. 1899.

*Macrolepiota excoriata* (Schaeff.) M.M.Moser: Among grass in mixed forest clearing, around Üçtepe



hills, 36°58'06''N, 36°27'57''E, 1479 m, 24.10.2003, K. 2289.

*Macrolepiota mastoidea* (Fr.) Singer: In *Abies-Pinus* forest, around settlement area, 36°58'55''N, 36°28'14''E, 1507 m, 26.10.2002, K. 1876.

*Macrolepiota procera* var. *procera* (Scop.) Singer: Under *Abies* sp., around Hanife Mezarı Hill, 36°58'25''N, 36°29'18''E, 1723 m, 21.11.2004, K. 2611.

### Amanitaceae

*Amanita pantherina* (DC.) Krombh.: In *Abies-Pinus* forest, around settlement area, 36°58'42''N, 36°28'12''E, 1588 m, 25.10.2003, K. 2296.

*Amanita vaginata* var. *alba* Gillet: In mixed forest, around Hanife Mezarı Hill, 36°58'32''N, 36°29'13''E, 1757 m, 21.11.2004, K. 2612.

### Cortinariaceae

\**Cortinarius turgidus* Fr.: In mixed forest, Kansız valley, 36°59'46''N, 36°26'00''E, 1325 m, 25.10.2003, K. 2346.

Cap 35-75 mm, hemispherical when young, then convex to almost plane. Cream to light ochre when young, ochre brownish to leather colour when mature (Figure 6a). Flesh brownish, thick in the centre, thin toward the margin. Lamellae whitish to creamy when young, later ochre and brown. Stipe 45-70 × 14-23 mm, cylindrical to fusiform, somewhat with a lilac tint above the annular zone and white below. Covered with a white-fibrillose veil. Basidia 30-35 × 9-10 µm, clavate. Spores 8.5-10.5 × 5.5-6.5 µm, elliptical to amygdaliform (Figure 6b).

### Hydnangiaceae

*Laccaria laccata* (Scop.) Cooke: On needle litter in *Abies-Pinus* forest, around settlement area, 36°58'42''N, 36°28'12''E, 1588 m, 26.10.2002, K. 1870.



Figure 6. *Cortinarius turgidus*. a. Basidiocarps, b. Basidium, c. Basidiospores.

### Hygrophoraceae

*Hygrocybe cantharellus* (Schwein.) Murrill: Among leaf litter in mixed forest, Kabaklık valley, 36°59'49''N, 36°26'10''E, 1327 m, 25.10.2003, K. 2348.

*Hygrophorus agathosmus* (Fr.) Fr.: On needle litter in *Abies-Pinus* forest, around settlement area, 36°58'42''N, 36°28'12''E, 1588 m, 26.10.2002, K. 1868.

*Hygrophorus camarophyllus* (Alb. & Schwein.) Dumée, Grandjean & Maire: Among needle litter, Kabaklık valley, 36°59'32''N, 36°26'26''E, 1369 m, 26.10.2002, K. 1857.

*Hygrophorus chrysodon* (Batsch) Fr.: In needle litter in *Abies-Pinus* forest, around settlement area, 36°58'42''N, 36°28'12''E, 1588 m, 26.10.2002, K. 1869.

*Hygrophorus discoxanthus* Rea: Among leaf litter, intersection of Kansız and Kabaklık valleys, 36°59'52''N, 36°26'00''E, 1310 m, 25.10.2003, K. 2349.

*Hygrophorus purpurascens* (Alb. & Schwein.) Fr.: On needle litter in *Abies-Pinus* forest, around Hanife Mezarı Hill, 36°58'25''N, 36°29'19''E, 1724 m, 25.10.2003, K. 2299.

### Inocybaceae

*Inocybe geophylla* var. *lilacina* Gillet: In mixed forest, intersection of Kansız and Kabaklık valleys, 36°59'50''N, 36°26'05''E, 1318 m, 25.10.2003, K. 2232.

*Inocybe perbrevis* (Weinm.) Gillet: On floodplain, Kabaklık valley, 36°59'24''N, 36°26'30''E, 1378 m, 25.03.2003, K. 2351.

*Inocybe pusio* P.Karst.: In *Abies-Pinus* forest, around Hanife Mezarı Hill, 36°58'25''N, 36°29'18''E, 1723 m, 25.10.2003, K. 2305.

*Inocybe rimosa* (Bull.) P. Kumm.: In mixed forest, Kabaklık valley, 36°59'17''N, 36°26'35''E, 1389 m, 26.10.2002, K. 1863; Kansız valley, 36°59'46''N, 36°25'59''E, 1324 m, 25.05.2003, K. 2274.

*Tubaria conspersa* (Pers.) Fayod: On damp soil, intersection of Kansız and Kabaklık valleys, 36°59'52''N, 36°26'00''E, 1310 m, 25.10.2003, K. 2327.

### Marasmiaceae

*Gymnopus dryophilus* (Bull.) Murrill: On leaf litter in mixed forest, around Üçtepeler hill, 36°58'13''N, 36°28'09''E, 1520 m, 24.10.2003, K. 2284.

*Gymnopus ocior* (Pers.) Antonín & Noordel.: On soil in *Abies-Pinus* forest, around settlement area, 36°58'55"N, 36°28'12"E, 1502 m, 09.05.2004, K. 2531.

*Macrocyttidia cucumis* (Pers.) Joss.: Among herbs, Kansız valley, 36°59'46"N, 36°25'59"E, 1324 m, 25.10.2003, K. 2335.

*Marasmius chordalis* Fr.: Among fern remains in mixed forest, Kabaklık valley, 36°59'17"N, 36°26'35"E, 1389 m, 26.10.2002, K. 1877.

*Marasmius oreades* (Bolton) Fr.: In pasture, Bileydik valley, 36°58'58"N, 36°27'11"E, 1418 m, 14.05.2005, K. 2755.

### **Mycenaceae**

*Mycena crocata* (Schrad.) P.Karst.: On dead twigs, Kansız valley, 36°59'46"N, 36°26'00"E, 1325 m, 27.10.2002, K. 1891.

*Mycena inclinata* (Fr.) Quéf.: On decaying hardwood remains, Kansız valley, 36°59'46"N, 36°26'00"E, 1325 m, 27.10.2002, K. 1885.

*Mycena pura* (Pers.) P.Kumm.: Among needle litter in *Abies-Pinus* forest, around Hanife Mezarı Hill, 36°58'25"N, 36°29'18"E, 1723 m, 14.05.2005, K. 2751.

*Xeromphalina campanella* (Batsch) Maire: On *Pinus* sp. stump, around settlement area, 36°58'55"N, 36°28'12"E, 1502 m, 24.05.2003, K. 2278; Kansız valley, 36°59'38"N, 36°25'57"E, 1362 m, 25.10.2003, K. 2324; around Hanife Mezarı Hill, 36°58'27"N, 36°29'18"E, 1745 m, 09.05.2004, K. 2526.

### **Physalacriaceae**

*Armillaria ostoyae* (Romagn.) Herink: On decaying coniferous stump, intersection of Kansız and Kabaklık valleys, 36°59'50"N, 36°26'03"E, 1310 m, 25.10.2003, K. 2317.

*Oudemansiella melanotricha* (Dörfelt) M.M.Moser: Among needle litter in *Abies-Pinus* forest, around Hanife Mezarı Hill, 36°58'27"N, 36°29'18"E, 1745 m, 25.10.2003, K. 2314.

*Xerula radicata* (Relhan) Dörfelt: On buried wood, Kabaklık valley, 36°59'49"N, 36°26'10"E, 1327 m, 25.10.2003, K. 2344.

### **Pleurotaceae**

*Pleurotus eryngii* (DC.) Gillet: On remains of *Ferula* sp., south slopes of Yağlıpınar hill, 36°59'34"N, 36°36'29"E, 1978 m, 09.05.2004, K. 2527.

*Pleurotus ostreatus* (Jacq.) P.Kumm.: On *Salix* sp. stump, Kansız valley, 36°59'38"N, 36°25'57"E, 1362 m, 27.10.2002, K. 1903; around settlement area, 36°58'45"N, 36°27'41"E, 1460 m, 25.05.2003, K. 2283.

### **Pluteaceae**

*Pluteus nanus* (Pers.) P.Kumm.: On buried wood, Kansız valley, 36°59'36"N, 36°25'58"E, 1369 m, 27.10.2002, K. 1901.

*Pluteus romellii* (Britzelm.) Lapl.: On loamy damp soil, Kabaklık valley, 36°59'49"N, 36°26'10"E, 1327 m, 25.10.2003, K. 2320.

### **Psathyrellaceae**

*Coprinellus disseminatus* (Pers.) J.E.Lange: On buried wood, Kabaklık valley, 36°59'49"N, 36°26'10"E, 1327 m, 26.10.2002, K. 1882.

*Coprinellus impatiens* (Fr.) J.E.Lange: On leaf litter in mixed forest, Kansız valley, 36°59'36"N, 36°25'56"E, 1370 m, 26.10.2002, K. 1890.

*Coprinellus micaceus* (Bull.) Vilgalys, Hopple & Jacq. Johnson: On buried wood, Bileydik valley, 36°59'02"N, 36°27'07"E, 1420 m, 26.10.2002, K. 1874; Kabaklık valley, 36°59'17"N, 36°26'35"E, 1389 m, 25.10.2003, K. 2318.

*Coprinopsis nivea* (Pers.) Redhead, Vilgalys & Moncalvo: On horse manure, around settlement area, 36°58'51"N, 36°27'38"E, 1435 m, 26.10.2002, K. 1852.

*Lacrymaria lacrymabunda* (Bull.) Pat.: On rotten wood, Kansız valley, 36°59'38"N, 36°25'57"E, 1362 m, 27.10.2002, K. 1895.

*Parasola plicatilis* (Curtis) Redhead, Vilgalys & Hopple: On soil among grass, around Üçtepeler hill, 36°58'15"N, 36°27'55"E, 1461 m, 24.10.2003, K. 2288.

*Psathyrella candolleana* (Fr.) Maire: On buried remains of hardwood, Kansız valley, 36°59'46"N, 36°26'00"E, 1325 m, 26.10.2002, K. 1892.

### **Schizophyllaceae**

*Schizophyllum commune* Fr.: On remains of buried hardwood, Bileydik valley, 36°58'57"N, 36°27'07"E, 1445 m, 24.10.2003, K. 2293.

### **Strophariaceae**

*Agrocybe aegerita* (V. Brig.) Singer: On *Quercus* sp. stump, around settlement area, 36°59'01"N, 36°28'47"E, 1529 m, 26.10.2002, K. 1871.

*Hebeloma crustuliniforme* (Bull.) Quél.: Among leaf litter in mixed forest, Kansız valley, 36°59'38''N, 36°25'57''E, 1362 m, 27.10.2002, K. 1904.

*Hebeloma sinapizans* (Fr.) Sacc.: Among leaf litter in mixed forest, Kabaklık valley, 36°59'41''N, 36°26'20''E, 1343 m, 26.10.2002, K. 1881.

*Hypholoma fasciculare* (Fr.) P.Kumm.: Around buried *Pinus* sp. stump, Kansız valley, 36°59'13''N, 36°25'47''E, 1422 m, 30.06.2002, K. 1844.

*Stropharia coronilla* (Bull.) Quél.: In grass, around Üçtepeliler hill, 36°58'06''N, 36°27'57''E, 1479 m, 24.10.2003, K. 2290.

*Stropharia semiglobata* (Batsch) Quél.: On manured soil, intersection of Kansız and Kabaklık valleys, 36°59'54''N, 36°25'59''E, 1305 m, 26.10.2002, K. 1862.

### Tricholomataceae

*Clitocybe phyllophila* (Pers.) P.Kumm.: Among leaf litter, Kansız valley, 36°59'46''N, 36°25'59''E, 1324 m, 27.10.2002, K. 1889.

\**Cotylidia diaphana* (Schwein.) Lentz: On nutrient rich soil, intersection of Kansız and Kabaklık valleys, 36°59'52''N, 36°26'00''E, 1310 m, 25.10.2003, K. 2334.

Cap 15-25 mm tall and 10-30 mm across, thin, funnel-shaped, sometimes spathulate, striate and usually split at the margins. White when young, becoming creamy when dry, sometimes with fine radial fibrils (Figure 7a). Hymenial surface smooth, sometimes radiately wrinkled, concolorous with the upper surface. Stipe 5-15 × 1-2 mm, solid, smooth, white, in some samples tomentose at the base. Basidia 18-27 × 5-6 µm, slenderly clavate. Spores 4-6.5 × 2.5-3.5 µm, hyaline, elliptic, smooth (Figure 7b).



Figure 7. *Cotylidia diaphana*. a. Basidiocarps, b. Basidium, c. Basidiospores.

*Infundibulicybe geotropa* (Bull.) Harmaja: Among needle litter, Kabaklık valley, 36°59'41''N, 36°26'20''E, 1343 m, 26.10.2002, K. 1854.

*Lepista nuda* (Bull.) Cooke: On soil in *Abies-Pinus* forest, around Hanife Mezarı Hill, 36°58'25''N, 36°29'18''E, 1723 m, 14.05.2005, K. 2748.

*Leucopaxillus gentianeus* (Quél.) Kotl.: On needle litter, Kabaklık valley, 36°59'15''N, 36°26'37''E, 1394 m, 26.10.2002, K. 1856.

*Melanoleuca cognata* (Fr.) Konrad & Maubl.: On soil in *Abies-Pinus* forest, around Hanife Mezarı Hill, 36°58'24''N, 36°29'18''E, 1726 m, 14.05.2005, K. 2769.

*Melanoleuca excissa* (Fr.) Singer: In pasture, Bileydik valley, 36°58'49''N, 36°27'27''E, 1422 m, 14.05.2005, K. 2757.

*Tricholoma batschii* Gulden: Among needle litter in *Abies-Pinus* forest, around Üçtepeliler hill, 36°58'13''N, 36°28'09''E, 1520 m, 24.10.2003, K. 2286.

*Tricholoma myomyces* (Pers.) J.E. Lange: Among needle litter, Kansız valley, 36°59'46''N, 36°25'59''E, 1324 m, 26.10.2002, K. 1893.

*Tricholoma virgatum* (Fr.) P.Kumm.: Among needle litter in *Abies-Pinus* forest, around Hanife Mezarı Hill, 36°58'26''N, 36°29'16''E, 1721 m, 25.10.2003, K. 2308.

### Boletales

#### Boletaceae

*Boletus chrysenteron* Bull.: In *Abies-Pinus* forest, around Hanife Mezarı Hill, 36°58'27''N, 36°29'18''E, 1745 m, 25.10.2003, K. 2307.

*Boletus porosporus* Imler ex Bon & G.Moreno: In *Abies-Pinus* forest, around Hanife Mezarı Hill, 36°58'29''N, 36°29'17''E, 1742 m, 29.06.2002, K. 1835.

*Boletus reticulatus* Schaeff.: In *Abies-Pinus* forest, around Hanife Mezarı Hill, 36°58'31''N, 36°29'07''E, 1347 m, 29.06.2002, K. 1836.

#### Gomphidiaceae

*Chroogomphus rutilus* (Schaeff.) O.K.Mill.: In *Abies-Pinus* forest, around Hanife Mezarı Hill, 36°58'24''N, 36°29'18''E, 1726 m, 14.05.2005, K. 2745.

#### Rhizopogonaceae

*Rhizopogon luteolus* Fr.: On soil in *Abies-Pinus* forest, around settlement area, 36°58'46''N, 36°28'04''E, 1471 m, 24.05.2003, K. 2273.

### **Sclerodermataceae**

*Pisolithus arhizus* (Pers.) Rauschert: On soil in *Abies-Pinus* forest, around Hanife Mezarı Hill, 36°58'27"N, 36°29'18"E, 1745 m, 25.10.2003, K. 2309.

*Scloderma verrucosum* (Bull.) Pers.: On nutrient rich soil in mixed forest, Kabaklık valley, 36°59'17"N, 36°26'35"E, 1389 m, 26.10.2002, K. 1875.

### **Suillaceae**

*Suillus granulatus* (L.) Roussel: Among needle litter, Kabaklık valley, 36°59'45"N, 36°26'15"E, 1332 m, 26.10.2002, K. 1853.

*Suillus luteus* (L.) Roussel: Among needle litter, around settlement area, 36°58'42"N, 36°28'12"E, 1588 m, 26.10.2002, K. 1865.

### **Cantharellales**

#### **Clavulinaceae**

*Clavulina coralloides* (L.) J. Schröt.: On leaf litter, around settlement area, 36°58'44"N, 36°28'12"E, 1587 m, 26.10.2002, K. 1872.

### **Geastrales**

#### **Geastraceae**

*Geastrum rufescens* Pers.: Among needle litter, Kabaklık valley, 36°59'50"N, 36°26'08"E, 1322 m, 26.10.2002, K. 1855.

### **Gomphales**

#### **Gomphaceae**

*Ramaria flava* (Schaeff.) Quél.: Among needle litter, around settlement area, 36°58'46"N, 36°28'05"E, 1476 m, 24.05.2003, K. 2279.

*Ramaria stricta* (Pers.) Quél.: On buried hardwood, Kansız valley, 36°59'36"N, 36°25'58"E, 1369 m, 27.10.2002, K. 1894.

### **Hymenochaetales**

#### **Polyporaceae**

*Fomes fomentarius* (L.) J.J.Kickx: On *Populus* sp. stump, Kansız valley, 36°58'54"N, 36°25'47"E, 1494 m, 30.06.2002, K. 1842.

*Lentinus tigrinus* (Bull.) Fr.: On *Salix* sp. stump, Bileydik valley, 36°59'10"N, 36°26'51"E, 1393 m, 24.10.2003, K. 2292.

*Polyporus brumalis* (Pers.) Fr.: On dead twigs, Kansız valley, 36°59'46"N, 36°26'00"E, 1325 m, 25.10.2003, K. 2333.

*Polyporus varius* (Pers.) Fr.: On dead twigs, Kansız valley, 36°59'13"N, 36°25'47"E, 1422 m, 30.06.2002, K. 1845.

### **Russulales**

#### **Auriscalpiaceae**

*Lentinellus cochleatus* (Pers.) P.Karst.: On *Pinus* sp. cones, around Üçtepeler hill, 36°58'13"N, 36°28'09"E, 1520 m, 24.10.2003, K. 2285.

#### **Hericiaceae**

*Hericium abietis* (Weir ex Hubert) K.A.Harrison: On buried conifer wood, Kansız valley, 36°59'46"N, 36°25'59"E, 1324 m, 30.06.2002, K. 1839.

#### **Russulaceae**

*Lactarius deliciosus* (L.) Gray: In needle litter, Kabaklık valley, 36°59'49"N, 36°26'10"E, 1327 m, 25.10.2003, K. 2350.

*Lactarius piperatus* (L.) Pers.: On nutrient rich soil, intersection of Kansız and Kabaklık valleys, 36°59'50"N, 36°26'03"E, 1310 m, 25.10.2003, K. 2325.

*Russula albonigra* (Krombh.) Fr.: Among needle litter in *Abies-Pinus* forest, around Hanife Mezarı Hill, 36°58'27"N, 36°29'05"E, 1732 m, 25.10.2003, K. 2310.

*Russula delica* Fr.: Among leaf litter, around settlement area, 36°58'42"N, 36°28'12"E, 1588 m, 26.10.2002, K. 1866.

#### **Bankeraceae**

*Sarcodon imbricatus* (L.) P.Karst.: Among needle litter, Kabaklık valley, 36°58'46"N, 36°28'04"E, 1471 m, 25.10.2003, K. 2323.

### **Discussion**

With this study 105 taxa within 67 genera and 33 families were determined from Huzurlu high plateau. Eight of them belonged to *Ascomycetes* and 97 to *Basidiomycetes*. Moreover, 53 of them are edible, 39 are inedible, and 13 are more or less poisonous. Although the edible ones make up such a large percentage (50%), the local consumption rate is quite low. Only 5 species, namely *Agaricus campestris*, *Pleurotus eryngii*, *P. ostreatus*, *Tricholoma batschii*, and *Tricholoma myomyces*, are collected and consumed by the local population.



Table. Similarity percentages of neighbouring studies with Huzurlu high plateau.

	Number of identical taxa	Total taxa	Similarity percentage (%)
Işiloğlu & Öder (1995a)	47	146	32.19
Işiloğlu & Öder (1995b)	23	54	42.59
Kaşık et al. (2003)	37	93	39.78
Kaya (2005)	31	76	40.79
Kaya (2006)	59	131	45.04
Kaya et al. (2009)	48	110	43.64
Kaya (2009)	34	101	33.66

When compared, the results of this work bare similarities with the findings of studies carried out in neighbouring regions. *Agaricaceae*, *Tricholomataceae*, *Polyporaceae*, *Psathyrellaceae*, and *Strophariaceae* are usually the most crowded families in all these regions. Numbers of identical taxa and similarity percentages of neighbouring studies are given in the Table. These similarities could be because of the similarities between the habitats and flora.

In addition to the determination of the macrofungal composition of the region, 6 taxa were added to Turkish macromycota as new records. These taxa are *Phaeohelotium umbilicatum*, *Lepiota jacobii*, *Leucoagaricus erioderma*, *Leucoagaricus serenus*, *Cortinarius turgidus*, and *Cotylidia diaphana*.

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