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MUSTAFA IŞILOĞLU

HAYRÜNİSA BAŞ SERMENLİ

ALTUĞ ŞENOL

MEHMET İŞLER

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Entoloma mushroom poisonings in Mediterranean Turkey

Mustafa İŞİLOĞLU¹, Hayrünisa BAŞ SERMENLİ^{1*}, Altuğ ŞENOL², Mehmet İŞLER²

¹Muğla University, Faculty of Science and Arts, Department of Biology, Muğla - TURKEY

²Süleyman Demirel University, Faculty of Medicine, Department of Gastroenterology, Isparta - TURKEY

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Abstract: In this study, 4 cases of poisoning by wild mushrooms collected from Burdur province are reported. The specimens have been identified as *Entoloma clypeatum* (L.) P.Kumm. by examination of their morphology and spores. A description of the taxon and poisoning cases are presented.

Key words: Mushroom poisoning, *Entoloma*, Turkey

Akdeniz Bölgesinden (Türkiye) *Entoloma* mantarı zehirlenmesi

Özet: Bu çalışmada Burdur yöresinden toplanan doğal mantarın neden olduğu dört zehirlenme vakası rapor edilmektedir. Örneklerin morfolojilerinin ve sporlarının incelenmesi sonucu *Entoloma clypeatum* (L.) P.Kumm. olarak teşhis edilmiştir. Çalışmada türün deskripsiyonu ve zehirlenme vakaları sunulmaktadır.

Introduction

Various species of macrofungi grow in the wild over most of the year due to the mild climate of Mediterranean Turkey (Gezer, 2000; Öztürk et al., 2003; Gezer, 2008). Turkish people do not have sufficient information on the edibility of macrofungi. They use unreliable identification methods passed down from grandparents. Poisoning and deaths have been recorded from time to time when people cannot distinguish edible from poisonous species using basic morphology alone (İşiloğlu & Watling, 1991; İşiloğlu et al., 1995; İşiloğlu et al., 2009).

Entoloma clypeatum (L.) P.Kumm. (Figure)

Description: Pileus 3-12 cm across, conic-campanulate when young, later convex to plane and often undulating, usually with an obtuse umbo, surface slightly hygrophorous, smooth, silky, medium to dark brown when moist, beige-brown to grey-brown when dry, not or only weakly striate, margin incurved for a long time, sometimes undulating, acute. Flesh whitish, thin, odour farinaceous-rancid, taste mild, farinaceous. Lamellae whitish when young, later pink to pink-brown, broad, notched, edges crenate. Stipe 4-10 × 1-2 cm, cylindrical,

* E-mail: hbas@mu.edu.tr

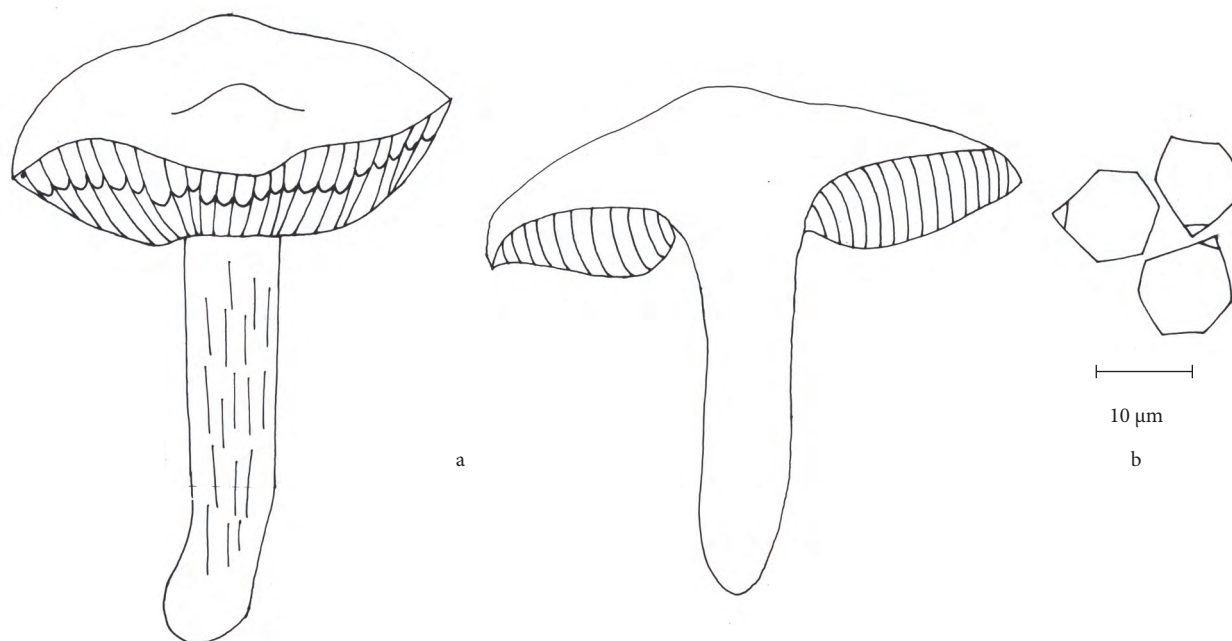


Figure. Basidiocarps and basidiospores of *Entoloma clypeatum*. a- basidiocarps, b- basidiospores.

sometimes bent, base enlarged or tapered, stipe solid, corticate, stiff, surface white and longitudinally whitish-fibrillose when young, somewhat spotting in age and when rubbed. Stipe flesh almost negative with guaiac. Spores: 5-7-angled, $8-10.5 \times 7-10 \mu$, spore print: brown-pink, basidia clavate, $35-50 \times 12-15 \mu$, with 4 sterigmata.

Habitat: Usually grouped or gregarious, more rarely solitary, in meadows under fruit trees, along forest edges, and under or near bushes, mainly near taxa of *Crataegus*, *Malus*, *Pyrus*, and *Prunus*. Spring-early summer (Breitenbach & Kränzlin, 1995).

Turkey. Burdur: almond orchard, among grass, 02.05.2004.

Specimens of *Entoloma clypeatum* are deposited in Muğla University Fungarium.

Cases

Four male agricultural labourers between the ages 18 and 55 were admitted to Süleyman Demirel University, Medicine Faculty Hospital with complaints of vomiting, nausea, sweating, and chills beginning approximately 2 h after

eating wild mushrooms collected from an almond orchard in May 2004. No specimens had been retained. A field trip was organised by mycologists to the area where the poisonous mushrooms had been collected by the patients, and specimens were recovered and shown to the patients, who confirmed them as the same species they had consumed. These specimens were examined in the laboratory of the Department of Biology at Muğla University and identified as *Entoloma clypeatum*. Two of the patients, 34 and 50 years old, also had blurred vision in both eyes. Physical examinations were normal except mild abdominal tenderness. In all patients, hemograms and routine biochemical tests including creatinine, liver function tests, and lipase were normal, except they had slightly elevated amylase levels. Electrocardiographs and abdominal ultrasonographs were normal. The patients received conservative treatment including intravenous fluid infusions and activated charcoal ingestion. Clinical symptoms disappeared in 1 day in all patients, and recurrence of symptoms was not observed during the 5-day follow-up period. The patients' amylase levels returned to normal several days after their ingestion of the mushroom.

Discussion

The literature on macrofungi is inconsistent regarding the edibility of this taxon. *Entoloma clypeatum* is edible according to Courtecuisse and Duhem (1994) and Svrček (1988), edible and good in Marchand (1973), inedible in Breitenbach and Kränzlin (1995), suspect in Philips (2006), and toxic when raw in Bresinsky and Besl (1990). Until now, this mushroom has not been known as poisonous in most of the literature. This is the first recorded instance of poisoning by this species in the world.

This toxic species is very similar to *Entoloma aprile* and *Amanita vaginata* morphologically. Therefore it may be confused with these taxa. On the other hand, *Entoloma aprile* is closely related to *E. clypeatum* on account of the relatively dark coloured, hygrophanous pileus. It differs in that it has more slender and brittle basidiocarps, relatively sparse clamp-connections in the tissues, and it prefers to grow near *Ulmus* whereas *E. clypeatum* is associated with *Rosaceae*.

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Entoloma clypeatum is similar to *A. vaginata* in pileus dimension, shape, and umbo, but it differs from *A. vaginata* by not being hygrophanous, smooth and having a dull surface. *E. clypeatum* has a beige-brown to grey-brown pileus while that of *A. vaginata* is mouse-grey to lead-grey. *E. clypeatum* has an enlarged to tapered stipe base while *A. vaginata* has slightly enlarged stipe base and is enclosed by a membranous, white to whitish volva. *E. clypeatum* is usually a group or gregarious, is more rarely solitary, and grows in meadows under fruit trees, along forest edges, and under or near bushes while *A. vaginata* is solitary to gregarious in hardwood forests, more rarely found in coniferous forests, and is not associated with particular trees.

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