TÜBİTAK

Research Note

Turk J Bot
33 (2009) 65-69
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doi:10.3906/bot-0804-5

Some New Records of *Inocybe* (Fr.) Fr. from Turkey

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Received: 11.04.2008
Accepted: 04.11.2008

Abstract: Some new records of *Inocybe* (Fr.) Fr. based on samples collected from Osmaniye, Kilis, and Isparta provinces are presented. *Inocybe flocculosa* var. *crocifolia* (Herink) Kuyper, *I. ochroalba* Bruyl., *I. pallida* Velen., *I. splendens* var. *splendens* R. Heim, *I. substellata* Kühner, and *I. vaccina* Kühner were determined to be new records from Turkey.

Key Words: New records, biodiversity, *Inocybe*, Turkey

Türkiye Makrofungusları için Yeni *Inocybe* (Fr.) Fr. Kayıtları

Özet: Osmaniye, Kilis ve Isparta illerinden toplanan mantar örnekleri üzerinde yapılan çalışmada, *Inocybe flocculosa* var. *crocifolia* (Herink) Kuyper, *I. ochroalba* Bruyl., *I. pallida* Velen., *I. splendens* var. *splendens* R. Heim, *I. substellata* Kühner ve *I. vaccina* Kühner'nın Türkiye'de yeni kayıt olduğu belirlenmiştir.

Anahtar Sözcükler: Yeni kayıtlar, biodiversite, *Inocybe*, Türkiye

Introduction

Although significant contributions have been made towards understanding the Turkish mycota, especially during the last 20 years, new records are still generated from time to time. In the present study, new records of *Inocybe* (Fr.) Fr. have been identified. This genus, presently belonging to the *Inocybaceae* (Agaricales, Basidiomycota) (Cannon & Kirk, 2007), was first recognised as a distinct tribe of *Agaricus* by Fries (1821). The genus *Inocybe* was established by elevating the tribe *Inocybe* to the generic level by Fries (1863).

Inocybe species can be recognised by the following characters: small to medium-sized basidioma with a conical shape; spermatic, earthy, bitter almond, pelargonium, or fruit-like smell; radially fibrous to cracked cap; tobacco-brown, smooth-walled, and lumpy-angular basidiospores. This is one of the few genera of agarics that can be easily recognised in the field, primarily because of its distinctive macroscopic characters. According to Bresadola (1980), the genus *Inocybe* consists of 200 taxa, yet the number continues to increase as a result of new discoveries and additional detailed analyses. Prior to the present study only 58 *Inocybe* taxa were reported from Turkey (Solak et al., 2007).

Materials and Methods

The specimens examined for this study were collected from Osmaniye, Kilis, and Isparta provinces, Turkey,

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during field trips. Each specimen was examined in the field and macroscopic features, such as habitat, pileus, gills, and stipe, and microscopic features, such as pileipellis, gill trama, spore-print, basidiospores, basidia, and cystidia, were recorded. Samples for microscopy were mounted in 10% aqueous ammonia. All identified specimens were deposited at the fungarium of Muğla University.

Results and Discussion

Following macroscopic and microscopic observations, 6 taxa of *Inocybe* were identified. According to our current checklist (Solak et al., 2007), these are new records for Turkey. All new records are described. The descriptions are arranged in alphabetical order.

BASIDIOMYCETES

Inocybaceae

Inocybe flocculosa var. *crocifolia* (Herink) Kuyper

Pileus 10-25 mm across, convex, finally applanate with an obtuse umbo, surface tomentose to squamose, light brown to reddish-brown, margin slightly dentate, acute, incurved. Flesh cream-coloured, thin; odour slightly spermatic. Lamellae narrowly adnate, moderately crowded, 2-3 mm across, notched, pale greyish brown when young, olivaceous brown when old. Stipe 20-30 × 3-5 mm, cylindrical, surface cream-coloured to reddish-brown, pruinose. Cortina present when young. Spore-print pale reddish-brown. Spores 9-11 × 5-6 µ, ellipsoid to amygdaliform, smooth, light yellow and thick-walled (Figure 1). Cheilocystidia 50-80 × 15-20 µ, sublageniform to fusiform, apically encrusted with crystals, thick-walled. Pleurocystidia similar to the cheilocystidia.

Osmaniye, Kaypak village, in pine forest, 21.04.2007, *Solak* 3202.

The Turkish specimens were observed growing in groups in a pine forest in the area. Gregarious to almost clustered on calcareous soils under or near frondose and coniferous trees (Kuyper, 1986; Breitenbach & Kränzlin, 2000; Kobayashi, 2002; Phillips, 2006; Roux, 2006).

Inocybe ochroalba Bruyl.

Pileus 10-20 mm across, conical at first, convex to campanulate later, expanded when old, with obtuse umbo, surface ochraceous to hazel-brown, and granulose, somewhat white-fibrillose. Flesh cream-coloured, thin, odour spermatic. Lamellae narrowly attached, light ochraceous to ochraceous-brown. Stipe 20-30 × 5-6 mm, cylindrical, slightly bulbous, solid, surface light brown. Spore-print olive-brown. Spores 6.5-11 × 5-6 µ, amygdaliform, smooth, yellow-brown and thick-walled (Figure 2). Cheilocystidia 30-70 × 15-25 µ, slenderly clavate to fusiform, apically encrusted with crystals, thick-walled. Pleurocystidia similar to the cheilocystidia.

Kilis, Deliosman village, in mixed conifer forest, 09.04.2006, *Solak* 2037.

I. ochroalba was observed growing in an oak forest, usually in small groups on the sides of paths on calcareous soils in the area. Elsewhere it grows in spruce and oak woods (Stangl, 1989).

Inocybe pallida Velen.

Pileus 10-30 mm across, conical at first, convex later, eventually expanded and with a small obtuse umbo, surface fibrillose, hazel-brown, ochraceous-brown towards the margin, centre grey, especially when young. Flesh whitish,

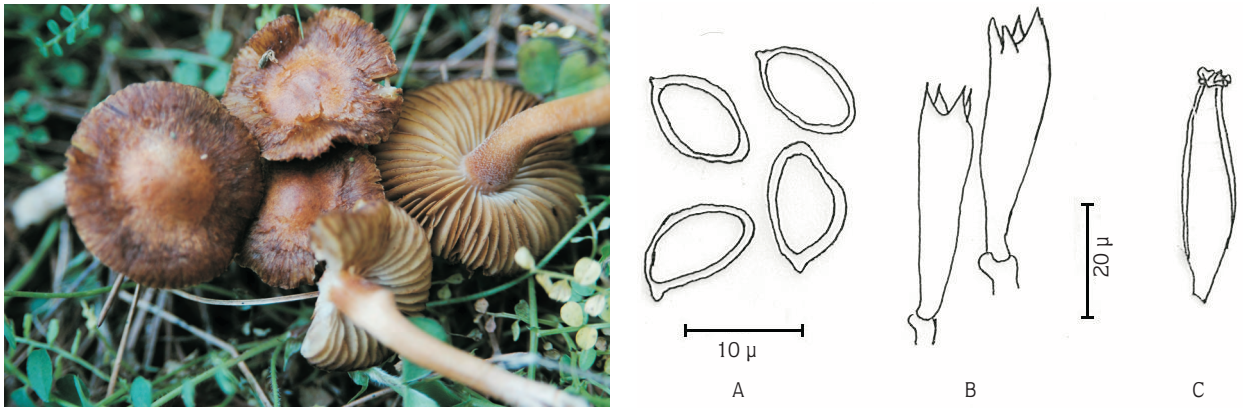

Figure 1. *Inocybe flocculosa* var. *crocifolia*: A) spores; B) basidium; C) cheilocystidium.

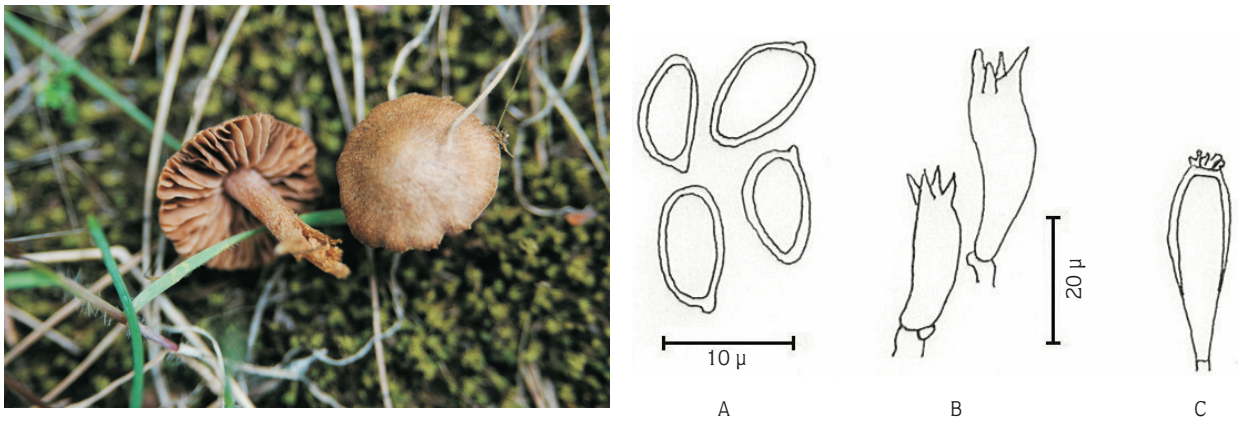

Figure 2. *Inocybe ochroalba*: A) spores; B) basidium; C) cheilocystidium.

odour faintly spermatic. Lamellae narrowly attached, light grey when young then light ochraceous to reddish-brown. Stipe 20-50 × 3-7 mm, cylindrical, solid at first, hollow later, fragile, usually with distinctly enlarged base; surface ochraceous-white when young, later light ochre, sometimes with a faint brownish tinge. Spore-print snuff-brown. Spores 9-11 × 6-7 µ, elongate to tuberculate, with 5-8 indistinct tubercules (Figure 3). Cheilocystidia 35-60 × 15-20 µ, fusiform, crystalliferous at apex, thick-walled. Pleurocystidia similar to the cheilocystidia.

Kilis, Deliosman village, in pine forest, 09.04.2006, *Solak* 2018.

I. pallida was observed growing gregariously in a coniferous forest in the area. Usually gregarious in parks and cemeteries near *Picea omorica* in Switzerland (Breitenbach & Kränzlin, 2000).

Inocybe splendens var. *splendens* R. Heim

Pileus 20-50 mm across, conical when young then convex, eventually plane with an obtuse umbo, surface radially fibrillose, viscid when moist, grey-brown, margin acute. Flesh white, odour slightly spermatic**.** Lamellae grey-white, later olive-brown, almost free. Stipe 20-50 × 5-6 mm, cylindrical, with abrupt bulb, surface whitish at first then yellowish brown. Spore-print olive-brown. Spores 11-12 × 5-6 µ, amygdaliform, smooth, yellowish-brown and thick-walled (Figure 4). Cheilocystidia 55-80 × 15-25 µ, fusiform, clavate crystalliferous at apex, thick-walled. Pleurocystidia similar to the cheilocystidia.

Kilis, Deliosman village, in coniferous forest, 09.04.2006, *Solak* 2023.

This species is easy to recognise in the field by its attractive grey-brown cap. It grows under mixed conifer

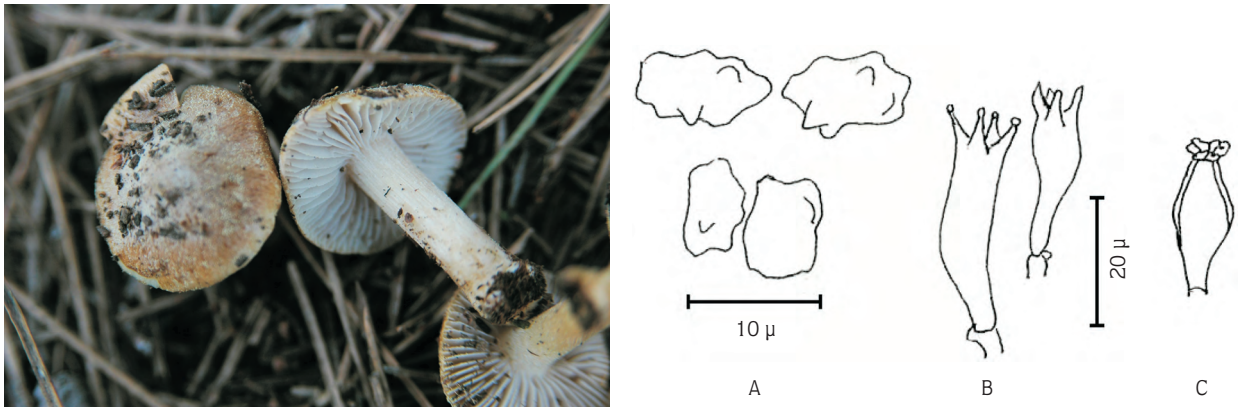

Figure 3. *Inocybe pallida*: A) spores; B) basidium; C) cheilocystidium.

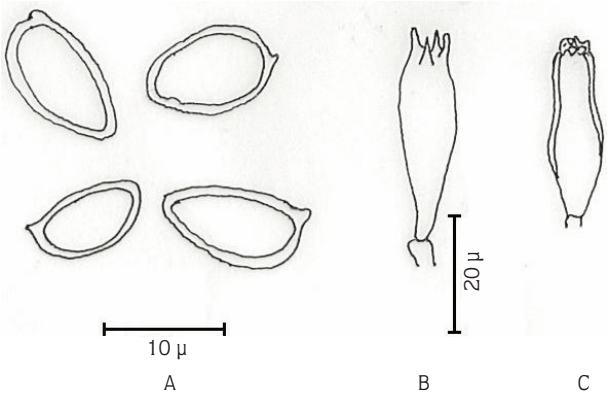

Figure 4. *Inocybe splendens* var. *splendens*: A) spores; B) basidium; C) cheilocystidium.

and hardwood forests in the area. According to some references (Bresadola, 1980; Kuyper, 1986; Breitenbach & Kränzlin, 2000) it grows under frondose trees.

Inocybe substellata Kühner

Pileus 20-25 mm across, conical when young, campanulate to plane with a distinct umbo when old, surface dull when dry, radially fibrillose, yellowish-brown to reddish-brown. Flesh pallid, thin. Lamellae narrowly attached, yellowish-white when young, grey to yellowish-brown at maturity. Stipe 20-30 × 4-5 mm, cylindrical, base with abrupt bulb, which is sometimes almost marginate, fragile. Spore-print pale reddish-brown. Spores 10-12.5 × 7.5-11 µ, elongate to oblong, distinctly tuberculate, with 6-8 tubercules, yellow-brown (Figure 5). Cheilocystidia 50-100 × 15-20 µ, fusiform or lageniform, apically encrusted with crystals, thick-walled. Pleurocystidia similar to the cheilocystidia.

Isparta, Eğirdir, Çayköy village, 28.10.2006, *Solak* 2383.

It was found under *Salix* trees in the area.

Inocybe vaccina Kühner

Pileus 20-45 mm across, conical at first, convex umbonate later, eventually plano-convex, often with an obtuse umbo, split when old; surface smooth and dull, rust- to brick-coloured. Flesh white and thin, weak spermatic odour. Lamellae narrowly attached, pale smoke-grey when young, pale olive-brown when old. Stipe 40-50 × 3-5 mm, cylindrical, base slightly thickened, solid when young, becoming hollow, fragile; surface with bright orange tinges, light brown to yellow-brown. Spore-print sepia-brown. Spores 8.5-11 × 4.5-6.5 µ, slightly reniform to amygdaliform, smooth, yellow-brown and thick-walled (Figure 6). Cheilocystidia 45-75 × 15-20 µ, cylindrical, sub-fusiform to fusiform, apically encrusted with crystals, thick-walled. Pleurocystidia similar to the cheilocystidia.

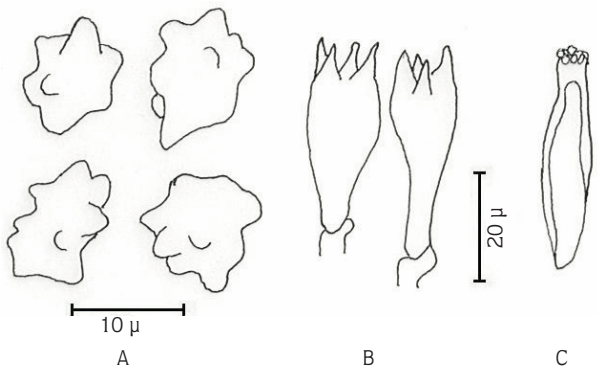

Figure 5. *Inocybe substellata*: A) spores; B) basidium; C) cheilocystidium.

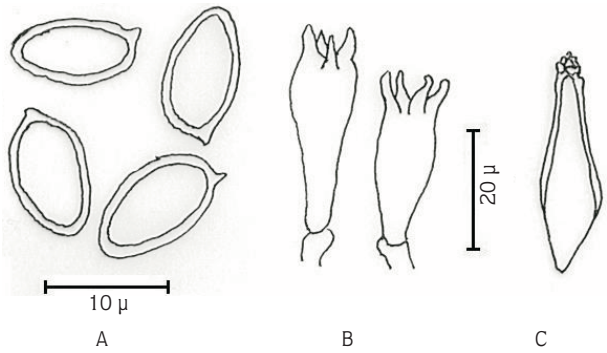

Figure 6. *Inocybe vaccina*: A) spores; B) basidium; C) cheilocystidium.

Kilis, Deliosman village, in pine forest, 09.04.2006, *Solak* 2053.

I. vaccina was observed growing in small groups in a pine forest in the area. It grows gregariously or grouped in coniferous forests (Moser, 1983; Stangl, 1989; Breitenbach & Kränzlin, 2000). Because of the conspicuous bright orange tinge of the pileus, this is one of the few taxa of *Inocybe* that can be recognised in the field.

Acknowledgements

We would like to thank TÜBİTAK (The Scientific and Technological Research Council of Turkey) for financially supporting this project (TBAG-104T236). The authors are much indebted to Prof. Roy Watling, Caledonian Mycological Enterprises, Edinburgh, for his critical reading of the manuscript and suggestions.

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