

SHORT COMMUNICATION

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Psathyrella turcosomarginata, a new species with cheilocystidia possessing mucoid deposits staining bluish green in ammonia solution

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Abstract *Psathyrella turcosomarginata* is described and illustrated as a new species from Japan (Fukuoka Prefecture, Kyushu). This species is assigned to section *Spintrigerae* because of its lack of pleurocystidia and basidiome habit. It is characterized by having fairly large basidiomes, a distinct sulcate-striate pileal margin, and cheilocystidia with mucoid deposits that stain bluish green in ammonia solution.

Key words Agaricales · New species · *Psathyrella* · Taxonomy

Psathyrella (Fr.) Quél. is one of the more difficult agaric genera to study because of the fragile nature of the basidiomes, the hygrophanous pileus that often fades in color quickly after collecting, and the fact that many described species are probably, in fact, species complexes. Although several important contributions, including the monographs of European species (Kits van Waveren 1985) and of North American species (Smith 1972), have been made, few studies have addressed *Psathyrella* outside Europe and North America, and knowledge of this genus remains limited. Only 21 species and one form of *Psathyrella* were recorded by Imazeki and Hongo (1987) in their compilation of the mushrooms of Japan. Since then, only one new species from the Kanto District, *P. cineraria* Har. Takah., has been described (Takahashi 2000), and three species [i.e., *P. laevissima* (Romagn.) Singer, *P. delineata* (Peck) A.H. Sm., and *P. tephrophylla* (Romagn.) Bon] have been added to the Japanese flora (Hoashi 2003, 2005, 2007). In this article, one new species is described based on recent collections made in Fukuoka Prefecture, Kyushu.

All specimens cited here are deposited in the Natural History Museum and Institute, Chiba (CBM), with a portion of each held in the private herbarium of the author. Microscopic observations were recorded primarily from dried specimens. Spore size was measured in 10% NH₄OH. Spore

colors under the microscope were assessed in water, 10% NH₄OH, and 5% KOH. The colors of other microstructures were examined in 10% NH₄OH, and the measurements were made in 5% KOH. In this article, color notations are taken from Oyama and Takehara (2000). Infrageneric classification of the genus in this work follows Kits van Waveren (1985).

Psathyrella turcosomarginata Hoashi, sp. nov. Figs. 1, 2

Pileo 53–95 mm lato, primo parabolico, dein conico-convexo, glabro, hygrophano, obscure cinereo-flavo vel flavido-brunneo, centro laete brunneo vel laete flavido-brunneo, sicco sordide flavido-aurantio vel pallide flavo sed laete flavido-brunneo ad centrum, margine sulcato-striato, in juventate cum velifibrillis albis caducis haerenti; lamellis primo albis, dein flavido-cinereis, anguste adnatis, aliquanto confertis; stipite 95–145 × 4–10 mm, parum sursum attenuato, haud radicato, albo, fibrilloso, fistuloso; carne in pileo tenui et aliquanto fragili; odore nullo; sapore paulo acerbo; basidiosporis 10–13.5 × 5–6.5 μm, oblongis, laevibus, in ammonio obscure rubro-brunneis; basidiis tetrasporis; pleurocystidiis nullis; cheilocystidiis utrififormibus vel lageniformibus cum apice obtuso vel subcapitato (27–57 × 9–17 μm) et sphaeropedunculatis vel clavatis (16–30 × 10–15 μm), hyalinis, cum mucilagino-granulis in ammonio subcaeruleo-virescentibus obtectis; pileipelle ex cellulis late clavatis vel sphaeropedunculatis composita; hyphis fibulatis.

Holotypus: FB36788 in CBM.

Etymology: *turcosomarginata* (*turcosus* = bluish green, *marginatus* = marginate), referring to the cheilocystidia possessing mucoid deposits that stain bluish green in ammonia solution.

Pileus 53–95 mm in diameter, at first paraboloid, then conico-convex, often with a slight umbo, glabrous, hygrophanous, when moist dark grayish yellow to yellowish brown (2.5Y5/2–4/2, 5/3), at the center bright brown to bright yellowish brown (7.5YR5/6, 10YR6/6–6/8), drying to dull yellow orange to light yellow (10YR7/4, 2.5Y7/3), at the center bright yellowish brown (10YR7/6), when young striate, at maturity sulcate-striate almost to the center, when

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Fig. 1. Basidiomes of *Psathyrella turcosomarginata*. **A** CBM-FB36788 (holotype). **B** CBM-FB36785. Bars 20 mm

dry marginal grooves tinged with grayish (2.5Y7/1, 7/2), rarely margin irregularly waved, surface with white velar fibrils when young, soon becoming smooth with age. Lamellae up to 7 mm broad, at first white, then yellowish gray

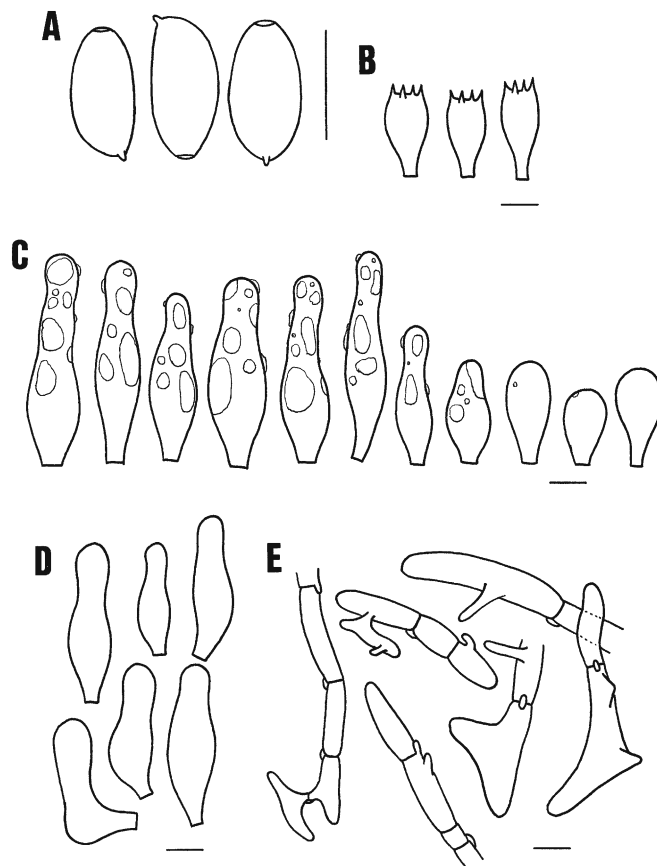


Fig. 2. *Psathyrella turcosomarginata* (holotype, CBM-FB36788). **A** Basidiospores. **B** Basidia. **C** Cheilocystidia possessing mucoid deposits. **D** Caulocystidia. **E** Hyphae of velar fibrils on pileal surface. Bars 10 µm

(2.5Y5/1-6/1), narrowly adnate, close, edges entire. Stipe 95–145 × 4–10 mm, without annulus, slightly tapering upward, slightly bulbous at the base, not rooting, white, fibrillose, fistulose. Context of pileus concolorous with the pileal surface, drying to almost whitish, thin and rather fragile, up to 2 mm thick at the center. Context of stipe white. Odor indistinctive. Taste slightly bitter. Spore deposit not obtained.

Basidiospores 10–13.5 × 5–6.5 µm (mean value 11.7 × 5.8 µm: 30 spores measured), Q (length/width ratio) = 1.8–2.2, oblong, not phaseoliform, smooth but very often with small mucoid deposits on the surface (deposits almost colorless to slightly greenish in water, 10% NH₄OH, and 5% KOH), moderately thick- to thick-walled (up to 0.8 µm), with a distinct germ pore (up to 2 µm wide), in water dark reddish brown (2.5YR3/6), in 10% NH₄OH dark reddish brown (5YR2/4-3/4), in 5% KOH dark brown (7.5YR2/3-3/3), discolored by concentrated H₂SO₄. Basidia 18–25 × 10–12 µm, 4-spored, spheropedunculate, monomorphic, surrounded by 3–5 hymenial physalides. Pleurocystidia absent. Cheilocystidia 27–57 × 9–17 µm, very abundant and densely packed, utriform to lageniform with an obtuse to subcapitate apex, intermixed with spheropedunculate to clavate cells (16–30 × 10–15 µm), walls thin and colorless, with distinct mucoid deposits and droplets that stain bluish green in 10% NH₄OH on the surface in fresh or freshly dried

specimens. Hymenophoral trama colorless, without incrustations. Pileipellis composed of broadly clavate to spheropedunculate cells, 13–32 μm wide, colorless, thin-walled. Pileocystidia absent. Stipitipellis and trama of stipe composed of cylindrical, parallel hyphae, 3–23 μm wide, colorless, thin-walled, without incrustations. Caulocystidia seen only at the apex of the stipe, 27–45(–53) \times 9–13 μm , utriform to somewhat irregularly shaped, colorless, thin-walled, mucoid deposits reaction of 10% NH_4OH in fresh or freshly dried specimens not examined. Velar fibrils on the pileal surface composed of hyphae 3–15 μm wide, frequently septate, irregularly branched and flexuous, cells cylindrical to versiform, sometimes abruptly swollen (up to 30 μm), colorless, without incrustations, thin- to thick-walled (up to 1.5 μm). Clamp connections present in all tissues.

Habitat: Scattered on somewhat sandy soil with litter, at roadside in a thin stand of planted trees such as *Prunus mume* Siebold & Zucc., *Prunus* \times *yedoensis* Matsum., *Ficus erecta* Thunb., *Cinnamomum camphora* (L.) J. Presl, *Quercus glauca* Thunb., and *Acer palmatum* Thunb. June to August. Known only from the type locality.

Specimens examined: The Site of Dazaifu Government Office (Tofuroato), Dazaifu, Fukuoka Pref., Kyushu, Japan, July 15, 2005, coll. Y. Hoashi, CBM-FB36785; the same place, July 17, 2005, coll. Y. Hoashi, CBM-FB36786; the same place, Aug. 4, 2005, coll. Y. Hoashi, CBM-FB36787; the same place, June 27, 2006, coll. Y. Hoashi, CBM-FB36788 (holotype); the same place, July 7, 2006, coll. Y. Hoashi, CBM-FB36789.

Japanese name: Kawasemi-itachitake (newly named by the author here).

Remarks: The characteristic macroscopic and microscopic features of this species are the fairly large basidiomes, unusual in *Psathyrella*, the distinctly sulcate-striate pileal margin, the presence of hymenial physalides (= brachybasidioles, pseudoparaphyses), the absence of pleurocystidia, and the cheilocystidia possessing mucoid deposits that stain bluish green in ammonia solution. In the field, this species may be reminiscent of some species of the genus *Coprinus* Pers. sensu lato [e.g., *C. plicatilis* (Curt.: Fr.) Fr. and *C. leiocephalus* P.D. Orton]. However, it is distinguished from species of *Coprinus* by the aequihymeniiferous, nondeliquescent lamellae which are wedge-shaped in cross section, and monomorphic basidia.

Because of its lack of pleurocystidia, this species belongs to subgenus *Psathyra* (Fr.) Singer ex Kits van Wav. section *Spintrigerae* (Fr.) Konr. & Maubl. emend. Kits van Wav. (Kits van Waveren 1985). Although it has basidiospores that are longer than 10 μm , the habit of the basidiomes indicates placement in subgenus *Psathyra* rather than subgenus *Psathyrella*.

There is no European species with similar morphological features in the monograph of Kits van Waveren (1985). The North American species *Psathyrella uliginicola* McKnight & A.H. Sm. (Smith 1972) is close to *P. turcosomarginata*, lacking pleurocystidia and having a large basidiome (pileus 5–10 cm broad) which is occasionally slightly sulcate in the pileal margin when old and basidiospores [10–12(–15) \times 5–6 μm] that are roughly the same size as those of *P. turcoso-*

marginata. However, *P. uliginicola* differs in more fleshy and robust basidiomes with an avellaneous (pinkish gray) or wood brown pileus when moist, dark vinaceous brown lamellae, and a thicker (12–15 mm thick) stipe which is discolored at the lower portion when handled. In addition, it occurs under aspen (Smith 1972). In *Psathyrella*, there are the following species with cystidia possessing noticeable mucoid substances staining bluish green to green in ammonia solution: *P. narcotica* Kits van Wav., *P. populina* (Britz.) Kits van Wav., *P. lutensis* (Romagn.) Bon, *P. multipedata* (Peck) A.H. Sm., *P. jacobssonii* Örstadius, *P. conferta* Eyssart. & Chiaffi, *P. moseri* Singer, *P. dactylocystis* Singer, *P. phaeocystidiata* Singer, *P. fascicularis* Singer, and *P. hesleriaffinis* Singer (Singer 1969, 1973, 1978; Kits van Waveren 1985; Örstadius 2001; Eyssartier 2004). However, all these species differ from *P. turcosomarginata* in some other characters (size and color of basidiome, surface condition of pileus, characters of spores, etc.), particularly in possessing pleurocystidia.

Kits van Waveren (1985) stated that the mucoid deposits of *P. lutensis* disappeared very gradually, the reaction of the mucoid deposits to ammonia solution being observable only in the fresh or freshly dried specimens of the species. This phenomenon has also been observed in *P. turcosomarginata*, where the unique reaction occurs only in fresh material or in newly dried specimens. Only a weak (very pale bluish green) or no reaction was observed in the dried specimens more than a year old.

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