

Notes on new Agaricales of Japan 3

Haruki Takahashi

1–21–2, Nishitsuruma, Yamato-shi, Kanagawa 242–0005, Japan

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Three new species of Agaricales are described and illustrated from eastern Honshu, Japan: *Agrocybe pseudoerebia* sp. nov. (section *Velatae* of subgenus *Aporus*), forming fugaceous veil remnants around the pileal margin and relatively shorter basidiospores (less than $10\ \mu\text{m}$ long) without a germ pore, was found on the ground in a broad-leaved forest; *Lactarius glutininitens* sp. nov. (section *Triviales* of subgenus *Russularia*), forming a pale grayish, strongly glutinous pileus and watery, latex without discoloration, was found on the ground in a lowland forest dominated by *Quercus myrsinaefolia* and *Quercus serrata*; *Tricholoma foliicola* sp. nov. (close to section *Albobrunnea*), forming a reddish brown, hygrophorous, dry, glabrous pileus, almost adnate, densely crowded lamellae, small, ellipsoid basidiospores, and clamp-hyphae, was found on leaf litter of a broad-leaved forest.

Key Words—Agaricales; *Agrocybe pseudoerebia*; *Lactarius glutininitens*; new species; *Tricholoma foliicola*.

This paper reports three new species of Agaricales which occur in the lowland forests of eastern Honshu, Japan. These species are described and illustrated with photographs showing macromorphological features. Color notations in parentheses are taken from Kornerup and Wanscher (1978). Specimens cited are preserved in Kanagawa Prefectural Museum of Natural History, Japan (KPM).

Species descriptions

Agrocybe pseudoerebia Har. Takahashi, sp. nov.

Figs. 1, 2

Pileo 15–30 mm lato, primo convexo, dein applanato, saepe umbonato, glabro, haud manifeste viscido, hygrophano, humiditate striato, brunneo; odore saporeque nullo; stipite 30–80 × 2–4 mm, subaequali, centrali, albo, fibrilloso; mycelio basali albo affixo; lamellis adnexis, brunneis; basidiosporis $7.5\text{--}8.5 \times 3.5\text{--}4.5\ \mu\text{m}$, ellipsoideis, levibus, brunneis, poro germinationis omnino destitutis; basidiis tri- vel tetrasporis; cheilocystidiis $20\text{--}50 \times 7\text{--}13\ \mu\text{m}$, abundantibus, lageniformibus vel ventricosis; pleurocystidiis nullis; pileipelle hymeniformi; caulocystidiis $15\text{--}35 \times 5\text{--}10\ \mu\text{m}$, clavatis vel subcylindraceis; hyphis fibulatis.

Holotypus: Ad terram in silva, Izumino-mori, Yamato-shi, Kanagawa-ken, 19 Nov. 1999, H. Takahashi (KPM-NC 0007435).

Etymology: Greek, *pseudo-* (false-) + *erebia*; referring to the resemblance to *Agrocybe erebia* (Fr.) Kühner.

Pileus 15–30 mm in diam, at first convex, expanding to plane, sometimes broadly umbonate, smooth, glabrous, dry, hygrophorous, translucent-striate when moist, brown (7D7–8) when moist, mottled with darker areas (near brown: 7F7–8) at the center, drying to paler

(6D7–8) from the margin, with white, fugaceous, flocculose veil remnants hanging from the margin. Flesh up to 2 mm, concolorous with the pileus; odor and taste not distinctive. Stipe 30–80 × 2–4 mm, almost equal, central, slender, terete, solid, whitish, fibrillose, without an annulus; base covered with white mycelial tomentum. Lamellae adnexed, close (27–31 reach the stipe), up to 5 mm broad, concolorous with the pileus; edges fimbriate, concolorous.

Basidiospores $7.5\text{--}8.5 \times 3.5\text{--}4.5\ \mu\text{m}$ [Q=length/breadth: 1.89–2.14], ellipsoid, smooth, brown, thick-walled, without a germ pore. Basidia $40\text{--}50 \times 10\text{--}12\ \mu\text{m}$, clavate, three- to four-spored. Cheilocystidia $20\text{--}50 \times 7\text{--}13\ \mu\text{m}$, abundant, lageniform to ventricose with an elongated rostrum, smooth, colorless, thin-walled. Pleurocystidia absent. Hymenophoral trama regular; element hyphae similar to those of the pileitrama but colorless. Pileipellis hymeniform, consisting of cla-

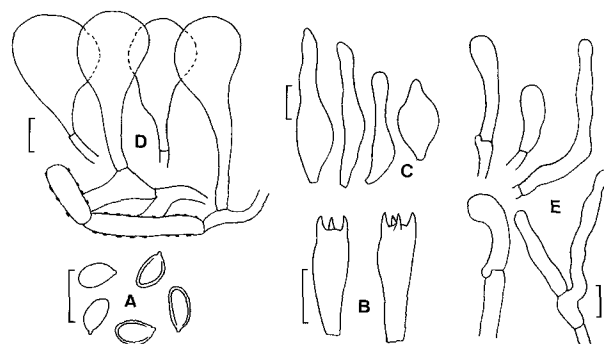


Fig. 1. *Agrocybe pseudoerebia*. A. Basidiospores. B. Basidia. C. Cheilocystidia. D. Elements of the pileipellis. E. Caulocystidia. Scales: $10\ \mu\text{m}$. All figures from the holotype.

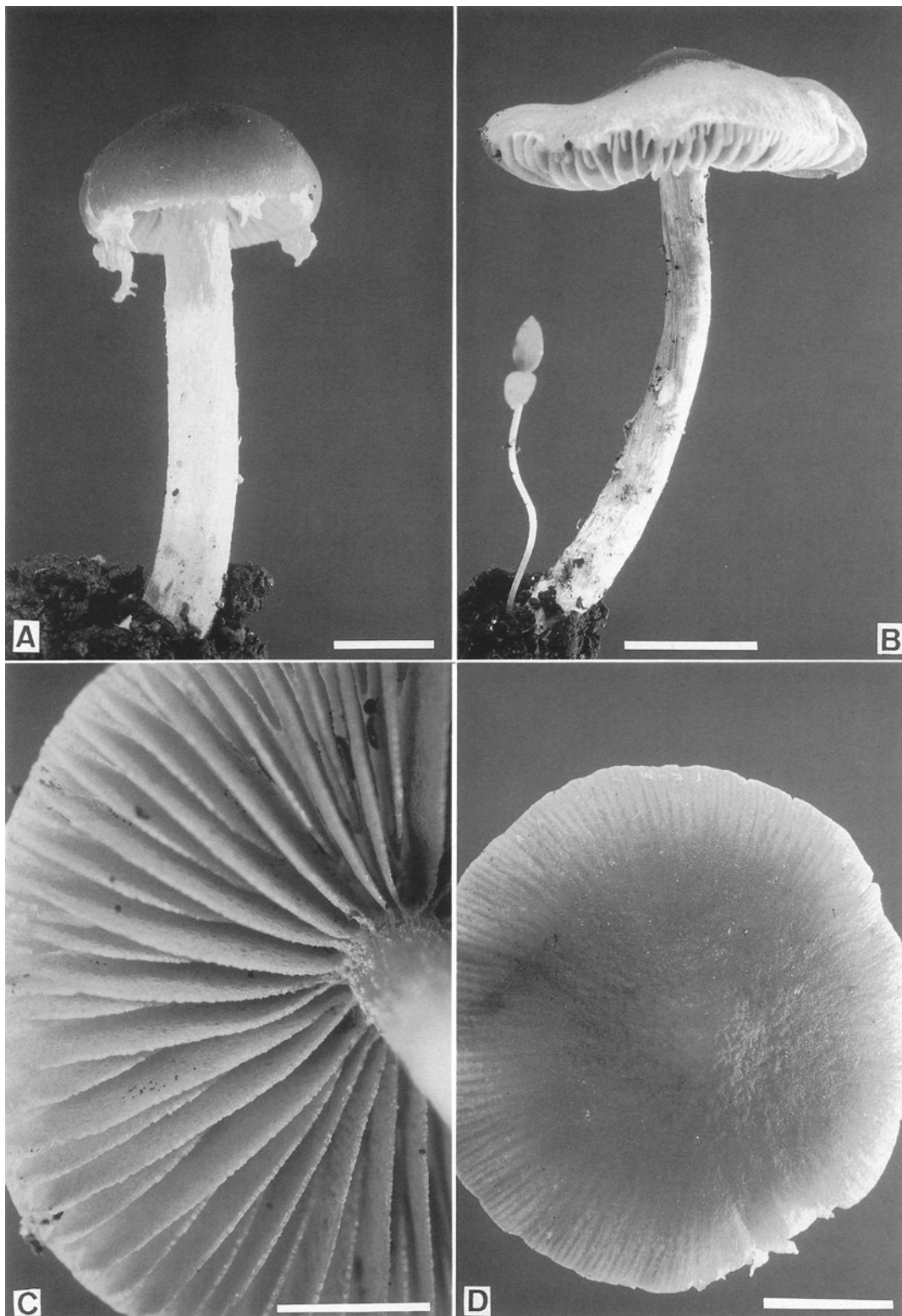


Fig. 2. Basidiomata of *Agrocybe pseudoerebia*. A. Immature basidioma. B. Mature basidioma. C. Close up of the mature lamellae. D. Close-up of surface of the mature pileus. Scales: A=5 mm; B=10 mm; C=3 mm; D=5 mm. All figures from the holotype.

vate to pyriform cells $20\text{--}70 \times 10\text{--}28 \mu\text{m}$, with brownish, thickened walls (up to $0.5 \mu\text{m}$). Hyphae of pileitrama $5\text{--}30 \mu\text{m}$ wide, parallel, cylindric, often inflated, branched,

with incrusting, brown pigment, with brownish, thickened walls (up to $0.5 \mu\text{m}$). Elements of veil remnants $10\text{--}50 \times 4\text{--}10 \mu\text{m}$, irregularly entangled, cylindric, not

inflated, often irregularly branched, colorless, smooth, thin-walled, occasionally with clamped septa. Stipitipellis a cutis of parallel, repent hyphae up to $10\ \mu\text{m}$ wide, cylindrical, colorless, thin-walled, occasionally with clamped septa; caulocystidia $15\text{--}35 \times 5\text{--}10\ \mu\text{m}$, scattered on the stipe apex, clavate to subcylindric. Stipe trama composed of longitudinally running, cylindrical hyphae up to $17\ \mu\text{m}$ wide, unbranched, colorless, thin-walled, occasionally with clamped septa.

Known distribution: Japan (Kanagawa).

Habitat: Solitary to scattered on ground in broad-leaved forest dominated by *Pasania edulis* and *Quercus serrata*, October to November, not common.

Specimens examined: KPM-NC 0007435 (holotype), Izumino-mori, Yamato-shi, Kanagawa-ken, 19 Nov. 1999, H. Takahashi; KPM-NC 0007436, the same place, 30 Oct. 2000, H. Takahashi.

Japanese name: Tsubanashi-tsuchinameko.

Notes: This species is characterized by the absence of a membranous annulus, the fugaceous veil remnants around the pileal margin, the relatively shorter basidiospores (less than $10\ \mu\text{m}$ long) without a germ pore, and the terrestrial habitat. The absence of a germ pore and the terrestrial habitat suggest that this species is a member of the section *Velatae* Singer in the subgenus *Aporus* Singer (Singer, 1986). *Agrocybe pseudoerebia*, however, differs from other species of the section *Velatae* by its much shorter basidiospores and the absence of a membranous annulus.

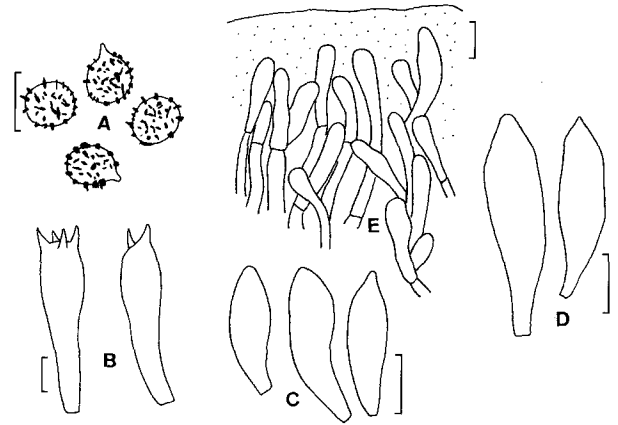


Fig. 3. *Lactarius glutininicens*. A. Basidiospores. B. Basidia. C. Cheilomacrocystidia. D. Pleuromacrocystidia. E. Elements of the pileipellis. Scales: $10\ \mu\text{m}$. All figures from the holotype.

Agrocybe pseudoerebia is similar to European *Agrocybe gibberosa* (Fr.) Fayod (Breitenbach and Kränzlin, 1995; Watling, 1982), which differs in having a browning stipe, basidiospores with a prominent germ pore, clavate-vesicular cheilocystidia, and clavate to lageniform pleurocystidia.

Lactarius glutininicens Har. Takahashi, sp. nov. Figs. 3, 4
Pileo 30–80 mm lato, primo convexo, dein aplana-

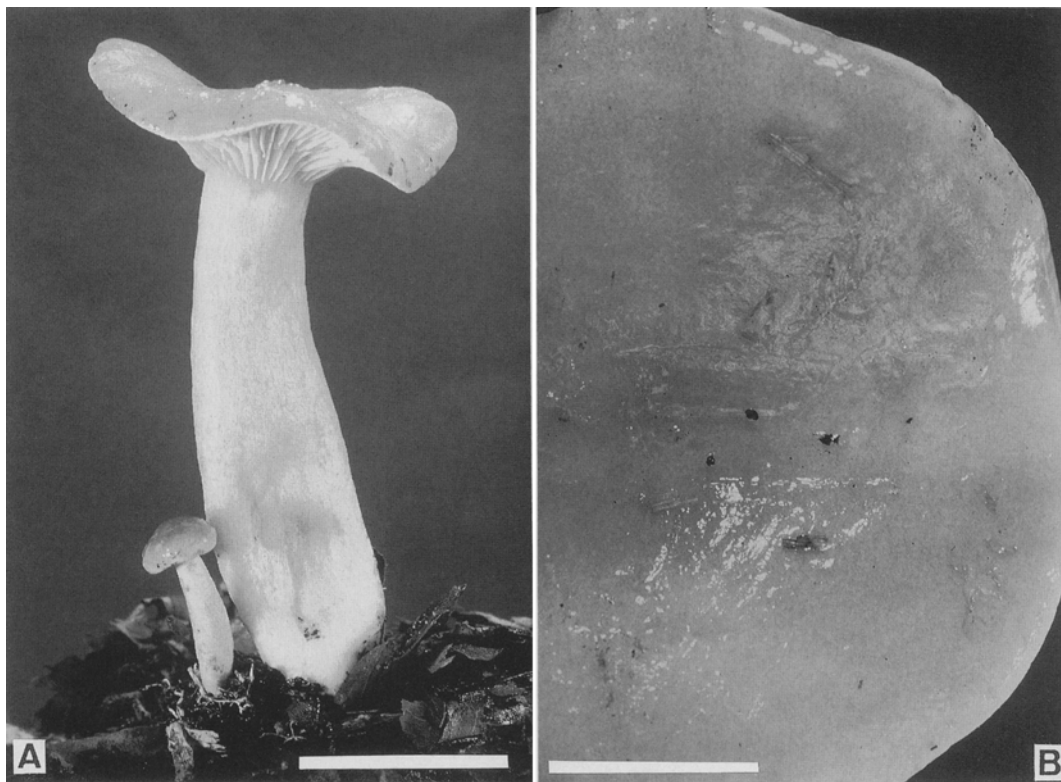


Fig. 4. Basidiomata of *Lactarius glutininicens*. A. Basidiomata on leaf litter. B. Close-up of surface of the mature pileus. Scales: A = 20 mm; B = 10 mm. All figures from the holotype.

to, levi, glabro, glutinoso, primo pallide cineraceo-brunneo, dein pallide cineraceo; carne immutabili; odore nullo; sapore leviter acri; latice aquoso, immutabili; stipite 30–70 × 5–16 mm, subaequali, centrali, cavo, glabro, haud viscido, albo vel dilute cineraceo; lamellis adnatis vel subdecurrentibus, dilute cremeis; sporis in cumulo cremeis; basidiosporis 8.5–11 × 7–8.5 μm, subglobosis vel late ellipticis, ornamentatione passim instructa; basidiis bi-vel tetrasporis; cheilomacrocystidiis 22–30 × 5–7.5 μm, abundantibus, subclavatis vel subfusoides; pleuromacrocystidiis 35–90 × 7–10 μm, lanceolatis; pileipelle ixotrichodermiis; hyphis defibulatis.

Holotypus: Ad folia dejecta in quercetis, Izumino-mori, Yamato-shi, Kanagawa-ken, 13 Oct. 2000, H. Takahashi (KPM-NC 0007430).

Etymology: Latin, *glutino* (glutinous) + *-nitens* (-shining); referring to the strongly glutinous pileus.

Pileus 30–80 mm in diam, at first convex with involute margin, expanding to plane with depressed center, smooth, glabrous, azonate, glutinous, pale grayish brown when young, then pale grayish. Flesh up to 7 mm, beige to pale cream; odor none, taste after a while slightly acrid. Latex watery, unchanging. Stipe 30–70 × 5–16 mm, subequal, central, terete or compressed, hollow, glabrous, dry, whitish to beige or pale grayish; base with a few mycelial cords. Lamellae adnate to subdecurrent, 36–42 reach the stipe, up to 6 mm broad, pale cream; edges even, concolorous.

Spore print cream. Basidiospores 8.5–11 × 7–8.5 μm [Q=length/breadth: 1.21–1.30], subglobose to broadly elliptic, with an ornamentation of isolated warts and ridges up to 2 μm high. Basidia 20–30 × 6–8 μm, clavate, two- to four-spored. Basidioles clavate. Cheilomacrocystidia 22–30 × 5–7.5 μm, abundant, subclavate to subfusiform, with acute apex, sometimes mucronate, smooth, colorless, thin-walled. Pleuromacrocystidia 35–90 × 7–10 μm, projecting, lanceolate or subclavate to subfusiform, with acute apex, sometimes mucronate, smooth, colorless, thin-walled. Hymenophoral trama regular; element hyphae 5–15 μm wide, cylindric. Pileipellis an ixotrichoderm consisting of ascending, cylindric, hyaline hyphae 5–10 μm wide. Trama of pileus and stipe heteromerous, colorless, composed of massed sphaerocysts (15–40 μm wide) intermixed with relatively few cylindric elements (4–12 μm wide). Stipitipellis a cutis of interwoven, repent hyphae 2–15 μm wide, cylindric, often branched, colorless; caulocystidia none. All tissues without clamp connections.

Known distribution: Japan (Kanagawa).

Habitat: Solitary to scattered, basidiomata usually produced on leaf litter in broad-leaved forest dominated by *Quercus myrsinaefolia* and *Quercus serrata*, September to October, common.

Specimens examined: KPM-NC 0007430 (holotype), Izumino-mori, Yamato-shi, Kanagawa-ken, 13 Oct. 2000, H. Takahashi; KPM-NC 0007431, the same place, 14 Oct. 2000, H. Takahashi.

Japanese name: Numeri-hatsu (first collected and named by Mr. Minoru Aoki).

Notes: This species is characterized by its pale grayish, strongly glutinous pileus, the watery latex without discoloration, the relatively large basidiospores with ornamentation of isolated warts and ridges, the ixotrichodermial elements of pileipellis, and its habitat in *Quercus* forests. These characteristics suggest that this species belongs in the section *Triviales* Hesler & A. H. Sm. of the subgenus *Russularia* (Fr.) Kauffman (Hesler and Smith, 1979).

Lactarius glutininittens appears to be closely related to the following two taxa with an azonate, slimy and pale colored pileus: *Lactarius trivialis* (Fr.: Fr.) Fr. from Europe (Basso, 1999; Heilmann-Clausen et al., 1998) and North America (Hesler and Smith, 1979) and European *Lactarius utilis* (Weinm.) Fr. (Basso, 1999; Heilmann-Clausen et al., 1998). These species differ in having larger basidiomata (pileus 40–150 mm in diam: Heilmann-Clausen et al., 1998), a viscid stipe, acrid latex with different coloration, and association with *Picea* and *Betula*. *Lactarius glutininittens* is also similar to European *Lactarius albocarneus* Britzelm. (Basso, 1999; Heilmann-Clausen et al., 1998), which differs in forming a cream to buff pileus, a viscid stipe, a white, acrid to bitter latex, and association with *Abies*.

Tricholoma follicola Har. Takahashi, sp. nov. Figs. 5, 6

Pileo 25–55 mm lato, primo hemisphaerico, dein convexo vel applanato, glabro, haud viscido, hygrophano, rubro-brunneo; odore nullo vel farinaceo; sapore nullo; stipite 40–90 × 7–10 mm, subaequali, ad basim leviter incrassato, centrali, cavo, albo, sericeo; mycelio basali albo affixo; lamellis adnatis, albis; basidiosporis 4.5–5.5 × 2–2.5 μm, ellipsoideis, levibus, hyalinis; basidiis tetrasporis; cheilocystidiis et pleurocystidiis nullis; pileipelle ex hyphis repentibus cylindricis composita; hyphis defibulatis.

Holotypus: Ad folia dejecta in quercetis, Izumino-mori, Yamato-shi, Kanagawa-ken, 13 Oct. 2000, H. Takahashi (KPM-NC 0007428).

Etymology: Latin, *follicola* = dweller on leaves, referring to the habitat on leaf litter.

Pileus 25–55 mm in diam, at first hemispherical with involute margin, expanding to convex or applanate, sometimes with low, broad umbo, smooth, glabrous, dry, hygrophanous, brownish red (8C7-8) to reddish brown

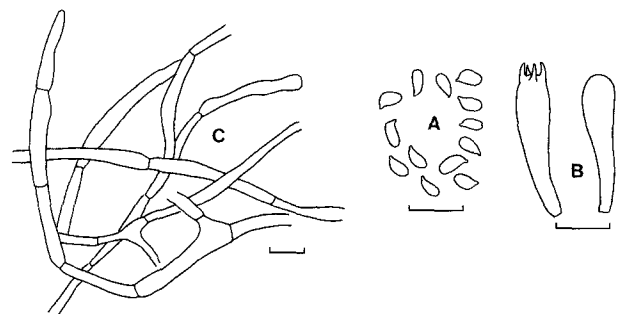


Fig. 5. *Tricholoma follicola*. A. Basidiospores. B. Basidium and basidiole. C. Elements of the pileipellis. Scales: 10 μm. All figures from the holotype.

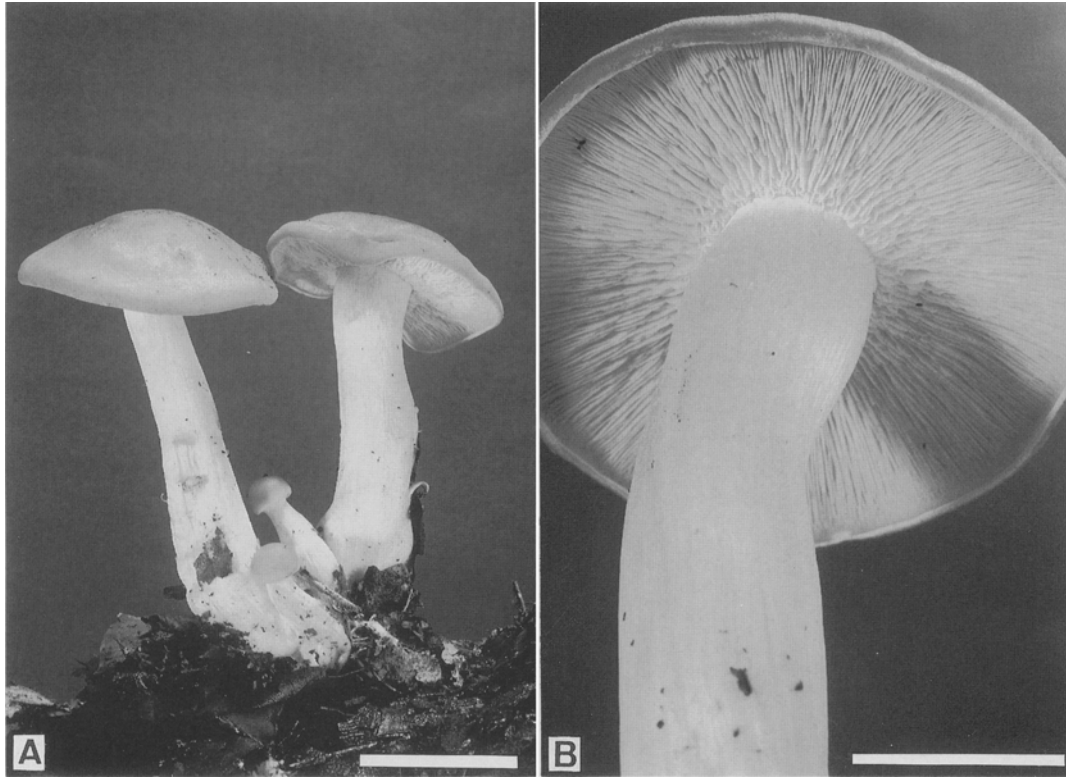


Fig. 6. Basidiomata of *Tricholoma foliicola*. A. Basidiomata on leaf litter. B. Close-up of the mature lamellae. Scales: A=20 mm; B=10 mm. All figures from the holotype.

(8D7-8), somewhat paler toward the margin. Flesh up to 10 mm thick, white, somewhat brittle; odor and taste not distinctive or somewhat farinaceous. Stipe 40–90 × 7–10 mm, almost equal, central, terete, hollow, white, smooth, silky, without a sharply delimited pallid apical zone; base covered with white, mycelial tomentum attached to an extensive mycelial mat in the substratum. Lamellae adnate-emarginate, densely crowded (110–120 reach the stipe), up to 4 mm broad, thin, white; edges fimbriate, concolorous.

Basidiospores 4.5–5.5 × 2–2.5 μm [Q=length/breadth: 1.93–2.20], ellipsoid or oblong, smooth, colorless, thin-walled, inamyloid. Basidia 17–29 × 5–6 μm, clavate, four-spored. Basidioles clavate. Cheilocystidia and pleurocystidia absent. Hymenophoral trama regular; element hyphae similar to those of the pileitrama but non-inflated (up to 10 μm wide). Pileipellis a cutis of irregularly entangled, cylindrical hyphae 2–7 μm wide, with intercellular brown pigment, not incrusting, smooth, thin-walled, inamyloid. Hyphae of pileitrama 6–18 μm wide, irregularly entangled, cylindrical or somewhat inflated, often branched, colorless, smooth, thin-walled, inamyloid. Stipitipellis a cutis of parallel, repent hyphae up to 5 μm wide, cylindrical, smooth, colorless, thin-walled, inamyloid; caulocystidia none. Stipe trama composed of longitudinally running, cylindrical hyphae up to 8 μm wide, unbranched, smooth, colorless, thin-walled, inamyloid. Clamp connections absent.

Known distribution: Japan (Kanagawa).

Habitat: Solitary to caespitose on leaf litter in broad-

leaved forest dominated by *Quercus myrsinaefolia* and *Quercus serrata*, October, common.

Specimens examined: KPM-NC 0007428 (holotype), Izumino-mori, Yamato-shi, Kanagawa-ken, 13 Oct. 2000, H. Takahashi; KPM-NC 0007429, the same place, 14 Oct. 2000, H. Takahashi.

Japanese name: Konoha-shimeji (first collected and named by Mr. Minoru Aoki).

Notes: This species is characterized by its reddish brown, hygrophanous, dry, glabrous pileus, the almost adnate, densely crowded lamellae, the small, ellipsoid basidiospores, the clampless hyphae, and the habitat on leaf litter of broad-leaved forests. With the exception of the non-viscid pileus, the combination of these characteristics suggests that *Tricholoma foliicola* is allied with the section *Albobrunnea* (Konrad & Maubl.) Bon (Bon, 1984; Riva, 1988).

Tricholoma foliicola can be distinguished from a group of closely related taxa, *Tricholoma pessundatum* (Fr.) Quéél., *Tricholoma populinum* J. E. Lange, and *Tricholoma ustale* (Fr.: Fr.) P. Kumm. by its somewhat hygrophanous, non-viscid pileus and white, glabrous stipe. *Tricholoma foliicola* is also comparable with *Tricholoma ceriniceps* Pegler from the Lesser Antilles (Pegler, 1983) in its dry, glabrous pileus, densely crowded lamellae, and absence of clamp connections. The latter species, however, differs in having an ochraceous orange or honey-yellow pileus, a squamulose stipe, and extremely bitter taste.

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