

SHORT COMMUNICATION

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A new species of *Cortinarius* sect. *Orellani* from Japan

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Abstract *Cortinarius breviradicatus* sp. nov., found in deciduous forests, is described and illustrated from Niigata, Japan. It is characterized by its medium-sized to large dark brown basidiocarp, acutely conical pileus, and rooting stipe, and by subglobose to broadly ellipsoid basidiospores. In addition, the extracting solution from its basidiocarps exhibits a strong fluorescence around 400–430 nm in ultraviolet radiation (250 nm), which was observed in a species of *Cortinarius* sect. *Orellani*. The new species belongs to the section *Orellani*. The differences between the new taxon and similar species are briefly discussed.

Key words *Cortinarius breviradicatus* · New species · *Orellani* · Taxonomy

This article treats a new species of *Cortinarius* Fr. in section *Orellani* M.M. Moser of the subgenus *Leprocybe* M.M. Moser (Moser, 1983; Singer, 1986) observed in Niigata Prefecture, Japan.

In the following description, microscopic characters were investigated on sections of fresh material in Melzer's reagent. For scanning electron microscope (SEM) preparations, basidiospores were deposited on a specimen holder with double-sided adhesive tape and then sputter-coated with gold. Color designations in parentheses in the species description follow Kornerup and Wanscher (1978). For the size of basidiospores, 50 basidiospores were measured from four materials including the holotype. A fluorescence was measured as follows: 0.2 g basidiocarp was powdered, boiled with 10 ml distilled water for 30 min, repeated three times, and the solution of the extracts was observed with a spectrofluorescence photometer (F-4000; Hitachi). Ultraviolet (UV) absorption was measured as follows: 1 g basidiocarp was Soxhlet-extracted with methanol for 5 h, and the ex-

tracting solution was observed with a scanning spectrophotometer (UV-3100PC; Shimadzu, Kyoto, Japan).

Cortinarius breviradicatus Miyauchi et Fujimoto, sp. nov.
Figs. 1–3

Pileo 50–90 mm lato, primo acute conico, dein explanato, centro acute umbonato, margine leviter undulato et breviter extrorso, sicco, primo paene glabro, dein fibrilloso, primo rubro-brunneo, ad marginem pallidiore, dein brunneo vel aurantino-fulvo margine pallide aurantino-fulvo, tacto vel in vetustate tarde fusciscenti; lamellis confertis, adnexo-adnatis, 12–16 mm latis, griseo-violaceis dein vaccinis, ad marginem pallidis; stipite 60–120 mm longo, 10–18 mm crasso, cylindrato vel ventricoso, ad basim leviter radicato, sicco, pileo subconcolori, dein vacciaurantino-fulvo, striato; carne albida vel griseo-lilacina, dein tarde fusciscenti; sapore miti; odore farinaceo; basidiosporis in massa brunneis, subglobo-sis vel late ellipsoideis, 6.0–9.0 × 5.0–7.0 μm, verrucosis; basidiis 28–35 × 7.0–9.0 μm; cheilocystidiis cylindratis 30–35 × 6.0–8.0 μm.

Holotypus: Suyama, Matsunoyama-machi, Niigata Pref., October 2, 1999, S. Miyauchi leg., in Herbario KPM conservatus (KPM-NC0011489).

Etymology: *breviradicatus* means having a short root, referring to the short radicate stipe.

Pileus 50–90 mm in diameter, acutely conical or campanulate when young, becoming expanded with a prominent umbo, slightly wavy and uplifted at the margin, dry, at first nearly glabrous, later fibrillous, when young reddish-brown (8F8) and somewhat paler (9E5) around the margin, then dark brown (7F6) and reddish-brown (8E5) at the margin, slowly turning darker entirely when touched or old. Lamellae moderately crowded, with several lamellulae, largely adnate to adnexed, 12–16 mm wide, grayish-violet (17E5), later dark brown (9F8), paler at the edges. Stipe 60–120 × 10–18 mm, cylindrical or somewhat ventricose, radicate, dry, when young surface colored paler than pileus, becoming brown (8E5), violet-brown (10E8) in the upper, slowly dark brown (9F8) from the base, fibrous, solid, then fistulose. Context whitish, grayish-violet (17C3) in places,

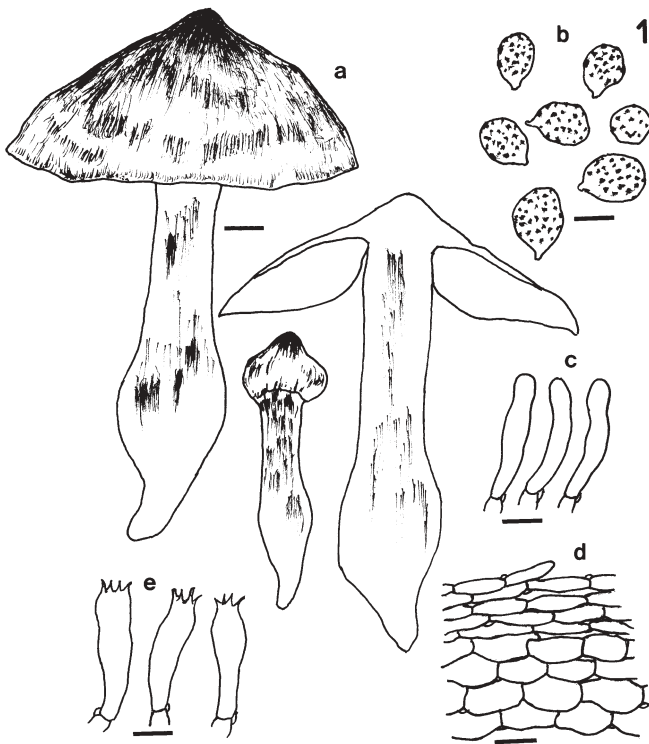


Fig. 1. *Cortinarius breviradicatus* (holotype). **a** Basidiocarp; **b** basidiospores; **c** cheilocystidia; **d** pileipellis; **e** basidia. Bars **a** 1 cm; **b** 5 μ m; **c**, **e** 10 μ m; **d** 20 μ m

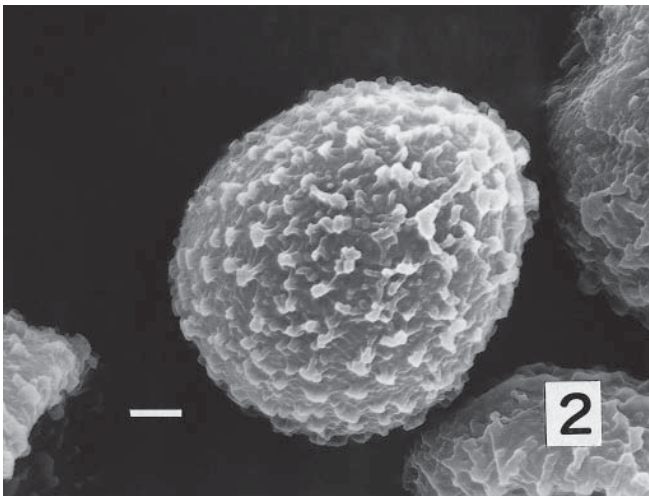


Fig. 2. *Cortinarius breviradicatus* (isotype): basidiospore [scanning electron microscope (SEM) photograph]. Bar 1 μ m

then turning dark brown. Taste mild, smell faint. Pileus surface discoloring to dark brown in 5% KOH. Basidiospore print brown (7F8). Basidiospores subglobose to broadly elliptical, $6.0\text{--}9.0 \times 5.0\text{--}7.0 \mu\text{m}$ ($n = 50: 7.3 \pm 0.7 \times 5.7 \pm 0.5 \mu\text{m}$) (excluding ornamentation), length/breadth quotient 1.2–1.4 ($n = 50: 1.3 \pm 0.1$), verrucose (Fig. 1b). Basidia $28\text{--}35 \times 7.0\text{--}9.0 \mu\text{m}$, with clamps (Fig. 1e), 4-spored, sterigmata up to 4 μ m long. Cheilocystidia cylindrical to



Fig. 3. *Cortinarius breviradicatus* (SM0310021N). Basidiocarps in the habitat. Bar 1 cm

narrowly clavate, $30\text{--}35 \times 6.0\text{--}8.0 \mu\text{m}$ (Fig. 1c), yellowish-brown in water and brownish in 5% KOH. Pleuro- and caulocystidia absent. Hyphae of the epicutis up to 20 μ m thick, 4–8 μ m in diameter, consisting of tubular brown cells, clamped, with terminal elements slightly narrow; hyphae of the cutis well differentiated, consisting of inflated, subglobose to ellipsoid cells 15–25 μ m in diameter with brownish content (Fig. 1d). The extracting solution from its basidiocarps with distilled water exhibited a strong fluorescence around 400–430 nm in ultraviolet radiation (250 nm), and the methanol Soxhlet-extracting solution of the basidiocarps also showed UV absorption at 259 nm, near 254 nm.

Habitat and distribution: solitary to gregarious on the ground in deciduous forests, in particular with *Fagus crenata* Blume and *Quercus mongolica* Fisch. var. *grosseserrata* (Blume) Rhed. et Wilson.

Holotype: Suyama, Matsunoyama-machi, Niigata Pref., October 2, 1999, collected by S. Miyauchi (S.M.) [KPM-NC0011489, preserved in Kanagawa Prefecture Museum of Natural History, Odawara]; isotype in Miyauchi private herbarium as SM9910021N. Other specimens examined: SM9009301N, Suyama, Matsunoyama-machi, Niigata Pref., in deciduous forest (*F. crenata* and *Q. mongolica* var. *grosseserrata*), September 30, 1990, coll. S. Miyauchi (S.M.); SM9109211N, Atema, Tokamachi-shi, Niigata Pref., in deciduous forest (*F. crenata* and *Q. mongolica* var. *grosseserrata*), September 21, 1991, coll. S.M.; SM0310021N, Suyama, Matsunoyama-machi, Niigata Pref., in deciduous forest (*F. crenata* and *Q. mongolica* var. *grosseserrata*), October 2, 2003, coll. S.M. and H. Takizawa.

Japanese name: Ootogari-kogecha-fuusentak (n.n.).

Comments: *Cortinarius breviradicatus* is characterized by its following characters: (1) the medium-sized to large dark brown basidiocarp with a distinct umbo; (2) the dried fibrillose pileus; (3) the grayish-violet lamellae when young; (4) the ventricose stipe; (5) the mild taste; (6) the subglobose to broadly elliptical basidiospores; (7) a strong blue fluorescence around 400–430 nm in ultraviolet radiation

(250nm), which was observed in a species of *Cortinarius* sect. *Orellani*; (8) UV absorption at 259nm, which was observed in the methanol extracting solution of the mushroom including orellanine (Cantin et al. 1989). It belongs to the section *Orellani* in the subgenus *Leprocybe* (Moser 1983; Singer 1986) in considering an included substance close to orellanine, hyphae of the cutis in consisting of inflated, subglobose to ellipsoid cells, and subglobose to elliptical basidiospores, although the carpophore is dark brown. *Cortinarius rubellus* Cooke (= *Cortinarius speciosissimus* Kühner & Romagn.) (Kühner and Romagnesi 1953; Brandrud et al. 1990; Breitenbach and Kränzlin 2000; Shibata 2004) is similar to this new species in having a pileus with a distinct umbo, a blue fluorescence under ultraviolet radiation, and subglobose to broadly elliptical basidiospores, but differs from *C. breviradicatus* having a short radicating stipe, dark brown basidiocarp, and grayish-violet lamellae when young. The present new species is easily distinguished from *Cortinarius orellanus* Fr. in the section *Orellani* (Brandrud et al. 1990; Breitenbach and Kranzlin 2000) in short radicate shape and dark brown color of basidiocarp, and the smaller size and the form of basidiospores. *Cortinarius valgus* Fr. (Fries 1838; Moser and Keller-Dilitz 1983; Brandrud et al. 1992) is also similar to *C. breviradicatus* in the appearance of the basidiocarp and somewhat violaceous lamellae when young. However, the former primarily differs from the latter in its ellipsoid basidiospores and the slender stipe without a radicating base.

Apart from the section, *C. breviradicatus* may be comparable with *Cortinarius caligatus* Malençon (Marchand 1983) because of the shape of the basidiocarps and the color

of lamellae when young. The latter, however, has a slimy pileus and amygdaline spores, and belongs to subgenus *Phlegmacium* sect. *Phlegmacium* (Moser 1983).

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