23. Three New Corticiaceous Fungi (Basidiomycotina, Aphyllophorales) from Japan^{*)}

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(Communicated by Naohide HIRATSUKA, M. J. A., May 12, 1993)

Abstract: Two new species, *Athelia repetobasidifera* and *Sistotrema microsporum* and one new variety, *Grandinia arguta* var. *sphaerospora* are described from Japan. The first fungus is characterized by lacking clamps at septa, having small basidiospores and often producing new basidia by the intrabasidial repetition. The second fungus is distinguishable from the previously described species in having smaller basidia and basidiospores. The third one, a new variety, differs from the type variety primarily in having globose and thick-walled (up to 0.5 μm thick) basidiospores.

Key words: *Athelia repetobasidifera*; *Grandinia arguta* var. *sphaerospora*; *Sistotrema microsporum*; Corticiaceae; new taxa.

Two species and one variety of Corticiaceae (Basidiomycotina, Aphyllophorales), collected in Japan, are proposed as new. All the specimens examined in this study are deposited in the Herbarium of the Tottori Mycological Institute (TMI). In the descriptions, color names in double quotation marks are based on Rayner (1970).

Athelia repetobasidifera Maekawa, sp. nov. (Fig. 1)

Holotypus. TMI-14598 in ligno putrescenti *Castanopsis cuspidatae*, Kokufu-cho, Iwami-gun, pagi Tottori, 11 Sept., 1989.

Basidiomata resupinata, laxe adnata, effusa, athelioidea, tenuia; superficies hymenialis griseo-alba vel "Ochreous", laevis, reticulata vel sub lente ($\times 20$) continua; margo griseo-albus, indeterminatus, sub lente ($\times 20$) arachnoideus. In sectione subhyalina, byssoidea vel pellicularis. Systema hypharum monomiticum; hyphae diametro 2.5–5 μm , hyalinae, laeves, tenui- vel crassotunicatae, pariete incrassata usque 1 μm , simpliciseptata, interdum incrustata; basidia clavata, fibula basali carentia, 12–16 $\times$ 5–6.5 μm , sterigmata (2–)4 efferentia, intrabasidiali iteratione prolificantia; basidiosporae ellipsoideae vel pyriformes, 3.5–5 $\times$ 2.5–3.5 μm , laeves, tenuitunicatae, non amyloideae.

Basidiomes resupinate, loosely adnate, effused, athelioid, thin; hymenial surface greyish white to "Ochreous", smooth, reticulate or continuous under the lens ($\times 20$); margin greyish white, indeterminate, arachnoid under the lens ($\times 20$). In section subhyaline, byssoid to pellicular. Hyphal system monomitic; hyphae 2.5–5 μm in diam., hyaline, smooth, thin- to thick-walled, the wall thickened to 1 μm , simple septate, sometimes encrusted; cystidia absent; basidia clavate, lacking basal clamps, 12–16 $\times$ 5–6.5 μm , producing (2–)4 sterigmata, often produced by intrabasidial repetition; basidiospores ellipsoid to pyriform, 3.5–5 $\times$ 2.5–3.5 μm , smooth, thin-walled, non-amyloid.

Remarks. The athelioid basidiomes, clampless hyphae (Fig. 1C), clavate basidia (Fig. 1B), and non-amyloid basidiospores (Fig. 1A) place this fungus in the genus *Athelia* Pers. Jülich (1972) recognized 21 species in this genus. Later Hjortstam (1987) recognized 25 species as members of the *Athelia*. Subsequently, to my knowledge, no species have been

^{*)} Contribution from the Tottori Mycological Institute, no. 278.

Fig. 1. *Athelia repetobasidifera* (TMI-14598, holotype). A. Basidiospores. B. Basidia, most of the basidia showing remnants of old basidia outside new ones, and basidioles. C. Hyphae. Scale bar=10 μ m.

added to the genus. Among the known species, *A. decipiens* (v. Höhn. & Litsch.) J. Erikss. (Eriksson, 1958), *A. phycophila* Jül. (Jülich, 1972) and *A. pyriformis* (Christ.) Jül. (Jülich, 1972) also lack clamp connections at all the septa and have no cystidia. These three species, however, differ from *A. repetobasidifera* in having significantly larger spores: $5-6.5 \times 3-3.8 \mu$ m in *A. decipiens* (Jülich, 1972); $5-6.5 \times 3.5-4.2 \mu$ m in *A. phycophila* (Jülich, 1972); and $7-9.5 \times 3.6-5.5 \mu$ m in *A. pyriformis* (Jülich, 1972). Further, *A. repetobasidifera* often produces new basidia inside old ones (intrabasidial repetition) (Fig. 1B). This manner of basidial development occurs in some other corticiaceous fungi: *Conferticium insidiosum* (Bourd. & Galz.) Hallenb. (Hallenberg, 1980), *Galzinia incrustans* (v. Höhn. & Litsch.) Parm. (Eriksson, 1958), *G. pedicellata* Bourd. (Eriksson, 1958) and *Repetobasidium vile* (Bourd. & Galz.) J. Erikss. (Eriksson, 1958), but has not been reported in members of *Athelia*. *Athelia repetobasidifera* is thus distinguishable from all other species of the genus.

Grandinia arguta (Fr.) Jül., Int. J. Mycol. Lichenol. 1: 35, 1982.

var. ***sphaerospora*** Maekawa, var. nov. (Figs. 2, 3)

Holotypus. TMI-9419 in ramo putrescenti *Querci* sp., Oda-cho, Kamiukena-gun, pagi Ehime, 4 Oct., 1989.

Basidiomata resupinata, laxe adnata, effusa; superficies hymenialis subcremeo-alba, "Buff", "Pale Luteous" vel subochracea, odontoidea, aculeis densis (10–15 aculis per mm^2) praedita, conica vel cylindracea, usque longitudine 1.5 mm, interdum complanata vel fusione laterali aculeorum raduloidea; margo et superficies hymenialis concolor, margo tenuescens indeterminata, interdum sub lente ($\times 20$) tomentosa vel pruinosa. In sectione subhyalina, submembranacea, hyphis subicularibus laxe intertexta. Systema hypharum monomiticum; hyphae diametro 2–3.5 μ m, laeves, tenui- vel crassotunicatae, pariete incrassato usque 1 μ m, nodososeptato efferentes; leptocystidia capitata, $21-70 \times 3.5-5 \mu$ m, fibula basali praedita; lagenocystidia $10-25 \times 2.5-4.5 \mu$ m, plerumque in apice incrustata; basidia suburniformia vel subcylindrica, constricta, fibula basali praedita, $12-16 \times 4-5 \mu$ m, sterigmata 4 efferentia; basidiosporae globosae, $3.5-4(-4.5) \times 3.5-4 \mu$ m, laeves, crassotunicatae, parietibus usque 0.5 μ m incrassatis, non amyloideae.

Basidiomes resupinate, loosely adnate, effused; hymenial surface creamy white, "Buff", "Pale Luteous" to pale ochereous, odontoid, the aculei dense (10–15 aculei per mm^2), conical to cylindrical, up to 1.5 mm long, sometimes flattened or raduloid by lateral fusion of aculei; margin concolorous with the hymenial surface, thinning out, indeterminate, sometimes tomentose or pruinose under the lens ($\times 20$). In section subhyaline, submembranous, the subicular hyphae loosely intertwined. Hyphal system monomitic; hyphae 2–3.5

Fig. 2. *Grandinia arguta* var. *sphaerospora* (TMI-9419, holotype). A. Basidiospores. B. Basidia. C. Leptocystidia. D. Lagenocystidia. E. Hyphae. Scale bar=10 μ m.

Fig. 3. *Grandinia arguta* var. *arguta* (TMI-10712). A. Basidiospores. B. Basidia and a basidiole. C. Leptocystidia. D. Lagenocystidia. E. Hyphae. Scale bar=10 μ m.

μ m in diam., smooth, thin- to thick-walled, the wall thickened to 1 μ m, nodose septate; leptocystidia capitate, 21–70 $\times$ 3.5–5 μ m, with a basal clamp; lagenocystidia 10–25 $\times$ 2.5–4.5 μ m, usually encrusted at the apex; basidia suburniform or subcylindrical, constricted, with a basal clamp, 12–16 $\times$ 4–5 μ m, producing 4 sterigmata; basidiospores globose, 3.5–4(–4.5) $\times$ 3.5–4 μ m, smooth, walls thickened to 0.5 μ m, non-amyloid.

Remarks. *Grandinia arguta* var. *sphaerospora* is characterized by the odontoid basidiomes, nodose-septate hyphae (Fig. 2E), suburniform basidia (Fig. 2B), capitate leptocystidia (Fig. 2C) and lagenocystidia (Fig. 2D). These features are very similar to those of *G. arguta* var. *arguta* (Fr.) Jül. (Jülich, 1982) (Fig. 3B–E). However, they differ in the basidiospore morphology: var. *arguta* produces broadly ellipsoid, thin-walled basidiospores (Fig. 3A) measuring 4.5–5 $\times$ (3–)3.5–4 μ m, whereas those of var. *sphaerospora* (Fig. 2A) are globose, 3.5–4(–4.5) $\times$ 3.5–4 μ m, and with walls up to 0.5 μ m thick.

Furukawa (1974) reported that var. *arguta* [as *Odontia arguta* (Fr.) Quél.] has a wide distribution from Hokkaido to Kagoshima Prefecture in Japan, while var. *sphaerospora* has so far been collected only from Ehime Prefecture.

Fig. 4. *Sistotrema microsporum* (TMI-11772, holotype). A: Basidiospores. B: Basidia. C: Hyphae. Scale bar=10 μ m.

***Sistotrema microsporum* Maekawa, sp. nov. (Fig. 4)**

Holotypus. TMI-11772 in ligno putrescenti *Castanopsis cuspidatae*, Ochidani, urbe Tottori, pagi Tottori, 10 Jul., 1986.

Basidiomata resupinata, adnata, effusa, pertenuia; superficies griseo-alba, reticulata vel sub lente ($\times 20$) continua; margo et superficies hymenialis concolor, indeterminatus. In sectione subhyalinum, crustosum. Systema hypharum monomiticum; hyphae diametro 1.5–4 μ m, laeves, tenuitunicatae, nodoseptatae; cystidiis carens; basidia urniformia, fibulam basalem evolventia, 6.5–9.5 $\times$ 2.5–3 μ m (in base 3.5–4 μ m latitudine), sterigmata 6–8 evolventia; basidiosporae (sub)allantoideae, 3–4 $\times$ 1.5 μ m, laeves, tenuitunicatae, non-amyloideae.

Basidiomes resupinate, adnate, effused, very thin; hymenial surface greyish white, reticulate or smooth under the lens ($\times 20$); margin concolorous with the hymenial surface, indeterminate. In section subhyaline, crustose. Hyphal system monomitic; hyphae 1.5–4 μ m in diam., smooth, thin-walled, nodose septate; cystidia lacking; basidia urniform, 6.5–9.5 $\times$ 2.5–3 μ m (3.5–4 μ m in width at the base), producing 6–8 sterigmata, basidiospores (sub)allantoid, 3–4 $\times$ 1.5 μ m, smooth, thin-walled, non-amyloid.

Remarks. *Sistotrema microsporum* produces the urniform basidia with 6–8 sterigmata (Fig. 4B) and nodose-septate hyphae (Fig. 4C). These features characterize the genus *Sistotrema* Fr. About 40 species have hitherto been reported in this genus, but *S. microsporum* is distinctive among them in its smaller basidia (6.5–9.5 $\times$ 3.5–4 μ m) and basidiospores (3–4 $\times$ 1.5 μ m). *Sistotrema microsporum* is similar to a *Sistotrema* sp. (B. and K. Eriksson 4452) described by Eriksson *et al.* (1984) in that the latter also produces small basidia, 8–10(–15) $\times$ 3–4 μ m. However, the *Sistotrema* sp. is different in having short-cylindrical to narrowly ellipsoid basidiospores measuring 3–4 $\times$ 1–1.5 μ m (Eriksson *et al.*, 1984).

Acknowledgements. I deeply thank Ms. P. M. Eckel, Buffalo Museum of Science, for providing the Latin diagnoses. I am very grateful to Dr. N. Hiratsuka, M. J. A., the director of the Tottori Mycological Institute, for his encouragement.

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