

SHORT COMMUNICATION

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***Flagelloscypha japonica*: a new species of minute basidiomycete (Niaceae) from Japan**

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Abstract A minute basidiomycete belonging to *Flagelloscypha* (Niaceae, Agaricales) was found on blighted leaves of *Rodgersia podophylla* in Aomori Prefecture, Japan. The fungus proved to be a new species and was named *Flagelloscypha japonica* based on its morphological characteristics.

Key words Crystals · *Flagelloscypha japonica* · Hair · New species

During investigations of microfungus succession and fungal flora on *Rodgersia podophylla* A. Gray (Saxifragaceae) at Kudoji, Hirosaki, Aomori Prefecture, we discovered white fungal structures on blighted leaves of the plant in November 2003. Under microscopic observations, the fungal structures showed cyphellaceous fruit-bodies whose encrusted surface hyphae had whiplike naked terminal.

Formerly, the hymenomycetes with cyphellaceous fruit-bodies were often accepted as a special family, Cyphellaceae. However, the group is extremely heterogeneous and unnatural (Donk 1951). Most cyphellaceous fungi were once included in the genus *Lachnella* Fr. s. l., which was characterized by a white cup-shaped fruit-body, finely encrusted, apically rounded surface hairs, and colorless spores. The genera of cyphellaceous fungi are distinguished from each other by the features of the surface hairs. The genus *Flagelloscypha* Donk, which is at present placed in the Niaceae of Agaricales (Bodensteiner et al. 2004), was emphasized by the colorless surface hyphae with a whiplike naked distal end (flage llum), as well as its widespread distribution (Agerer 1975, 1983). In this coun-

try, however, only one unidentified species has been known so far (Tanaka 2003). In this article, we report a new species of *Flagelloscypha* from blighted leaves of *Rodgersia podophylla* in Japan.

The fungal structures were mounted for light microscopic observation in 10% (w/v) KOH, 1 M HCl, Melzer's reagent, and distilled water with 0.1% cotton blue, if necessary. The basidiocarps were sectioned using a microtome according to Ooki et al. (2003) and observed under a light microscope. Growth of the fungus was recorded from potato dextrose agar (PDA; Difco, Detroit, MI, USA) and potato sucrose agar (PSA; potato 200 g, sucrose 20 g, agar 20 g, distilled water 1000 ml) in 9-cm petri dishes, incubated at 20°C 12:12 L:D under a fluorescent lamp. Colony colors were determined using the Methuen Handbook of Colour (Kornerup and Wanscher 1978). The specimens were deposited in the Herbarium of Hirosaki University (HHUF).

Flagelloscypha japonica T. Handa & Y. Harada., sp. nov.

Figs. 1–11

Etymology: *japonica*, referring to Japan where the fungus was first collected.

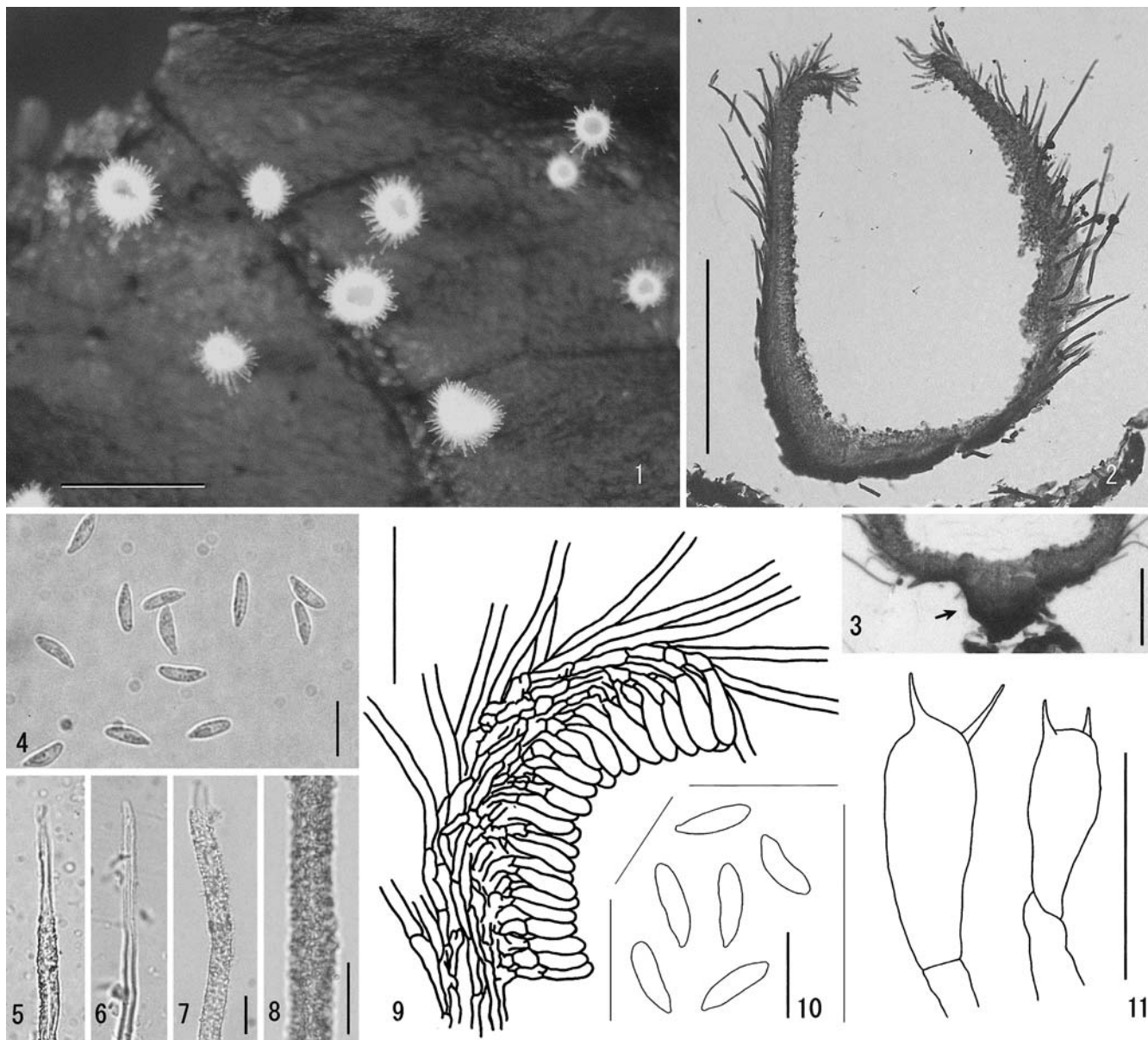
Basidiocarpia cupularia, stipitata, villosa, alba, ad 0.7 mm alta et in diametro, solitaria, sparsa vel gregaria. Pili externi, in basilaribus fibuligeri, superficie, crystallis obsiti, 2.5–3.3 µm in diametro, pariete ad 1 µm lati, in 10% KOH leviter dilatati, apice flagelliformes 55 µm longi. Crystalla grosse granularia, ad (0.5–)3.5 µm longis, in 10% KOH lente dissolventia, in 1 M HCl velociter dissolventia. Hyphae inter basidia et pilos leviter tortiles. Hyphae tramatis, subagglutinatae, fibuligerae, 1.5–2.7 µm in diametro. Basidia 8–14.6(–17) × 3–4 µm, suburniformia, 2 vel 4 sterigmatibus ferentia, fibuligera. Basidiosporae hyalinae, laeves, tenuitunicatae, asymmetricae oblongae vel subcymbiformes, 7.6–9.7 × 2.6–3 µm.

Holotypus: Japan, Honshu: Kudoji, Hirosaki, Aomori Prefecture (140°25'E, 40°31'N), November 26, 2003, leg. T. Handa (HHUF28263).

Basidiocarps cupulate or slightly bell shaped, stipitate, finely hairy and slightly bristly, white, up to 0.7 mm high and

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Figs. 1–11. *Flagelloscypha japonica*. **1** Basidiocarps on blighted leaf of *Rodgersia podophylla*. **2** Longitudinal section of basidiocarp. **3** Section of basidiocarp with stalk (arrow). **4** Basidiospores. **5** Flagellum with whiplike end. **6** Flagellum in HCl (note soluble crystals). **7** Flagellum in KOH (note a swelling). **8** Encrusted flagellum (note granular crystals). **9** Drawing of the edge of basidiocarp. **10** Drawing of basidiospores. **11** Drawing of basidia. Bars **1** 1 mm; **2** 200 μ m; **3** 50 μ m; **4, 9** 20 μ m; **5–8, 10, 11** 10 μ m

wide, solitary, sparse, or gregarious. Surface hairs clamped at the base, encrusted with crystals, 2.5–3.3 μ m in diameter (measured without the crystal layer), with walls up to 1 μ m thick, in 10% KOH slightly swelling, slightly dextrinoid, aseptate or rarely secondarily septate, whiplike ends up to 55 μ m long. Crystals coarsely granular, up to (0.5–)3.5 μ m long, in 10% KOH slowly soluble, in 1M HCl readily soluble. Hyphae between young basidia and surface hairs slightly distorted. Hyphae of the trama subagglutinated, with clamps, 1.5–2.7 μ m in diameter. Basidia 8–14.6(–17) \times 3–4 μ m, suburniform, 2 (4)-sterigmata, clamped at the base. Spores hyaline, smooth, tunicate, asymmetrically oblong-elliptical or slightly naviculate, 7.6–9.7 \times 2.6–3 μ m, L/W 2.8–3.7; IKI –.

Cultural characteristics: colonies on PDA attaining a diameter of 20–27 mm within 21 days, yellowish white (4A2) to grayish yellow (4B5); reverse pale yellow (4A3) to dark yellow (4C8); radiately sulcate, margin entire. Colonies on PSA attaining a diameter of 39–40 mm within 21 days, white (1A1); reverse similar; plate, margin entire.

Habitat: blighted leaves of *Rodgersia podophylla* A. Gray. (Japanese name: yagurumaso).

Other specimens examined: on blighted leaves of *R. podophylla*, Kudoji, Hirosaki, Aomori Prefecture, November 26, 2003, leg. T. Handa (HHUF28264, 28265).

Culture: ex-holotype cultures are kept in the culture collection of the National Institute of Agrobiological Science, Tsukuba (MAFF Genebank) (MAFF239298) and the

Table 1. Morphological comparisons of some related species of *Flagelloscypha*

Species	Basidia (μm)	Number of sterigmata	Basidiospores (μm)	Crystals		References	Specimens examined
				Shape	Size (μm)		
<i>F. japonica</i>	8–14.6 (–17) \times 3–4	2 (4)	7.6–9.7 \times 2.6–3	Granular	(0.5–) 3.5	Present study	
<i>F. faginea</i>	17–23 \times 6–8	2 (4)	9–13 \times 3–4.5	Acicular to rhomboidal	<5	Agerer (1975) / BPI 292815	
<i>F. minutissima</i>	17–23 \times 5–6.5	2 (4)	7–10.5 \times 4–5.5	Acicular to rhomboidal	<5 (–7)	Agerer (1975)	
<i>F. dextrinoidea</i>	20–26 \times 6–7.5	4	9.5–12.5 \times 3.5–4.5	Granular	1–2.5 (4)	Agerer (1975)	

Japan Collection of Microorganisms RIKEN, Wako (JCM) (JCM12855).

Notes: *Flagelloscypha japonica* is characterized by its small size of basidia and granularly encrusted surface hairs (Table 1). The present species resembles *F. faginea* (Lib.) W.B. Cooke or *F. minutissima* (Burt) Donk according to the key in Agerer (1983), but has different surface hairs: the hairs of *F. faginea* and *F. minutissima* are encrusted with acicular to rhomboid crystals while those of *F. japonica* have granular crystals (see Fig. 8). Moreover, the basidia of the fungus is smaller than those of these two species. *Flagelloscypha japonica* and *F. dextrinoidea* Agerer are similar in the shape of crystal, but they differ from each other in sizes of basidia and basidiospores (Table 1).

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