

A new species of *Aniptodera* (Ascomycetes) from Hong Kong and the Philippines

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Aniptodera inflatiascigera sp. nov. collected on submerged wood in the Lam Tsuen River in Hong Kong is described and illustrated. It differs from other *Aniptodera* species in having large asci which swell in water, and in the size and shape of its ascospores, which are relatively large and thick-walled. *A. inflatiascigera* is compared with other freshwater *Aniptodera* species.

Keywords: aquatic ascomycetes, freshwater fungi, taxonomy.

The genus *Aniptodera* was established by Shearer & Miller (1977) to accommodate ascomycetes with hyaline, soft-walled ascospores, having asci with an apical thickening, and hyaline, 1-septate ascospores with thick walls and lacking appendages. A number of species have since been added to this genus, including both marine and freshwater taxa. These include ascospores with thick and thin walls and species with appendaged ascospores, and this has resulted in an unclear delineation of the genus (Volkman-Kohlmeyer & Kohlmeyer, 1994).

Four species of *Aniptodera* have been described from freshwater habitats (Shearer, 1989; Hyde, 1992a). In an investigation of fungal diversity on submerged woods in the Lam Tsuen River, Hong Kong, a new *Aniptodera* species was identified. It is described in this paper and compared with other freshwater species in the same genus and *Nais aquatica* (Hyde, 1992b).

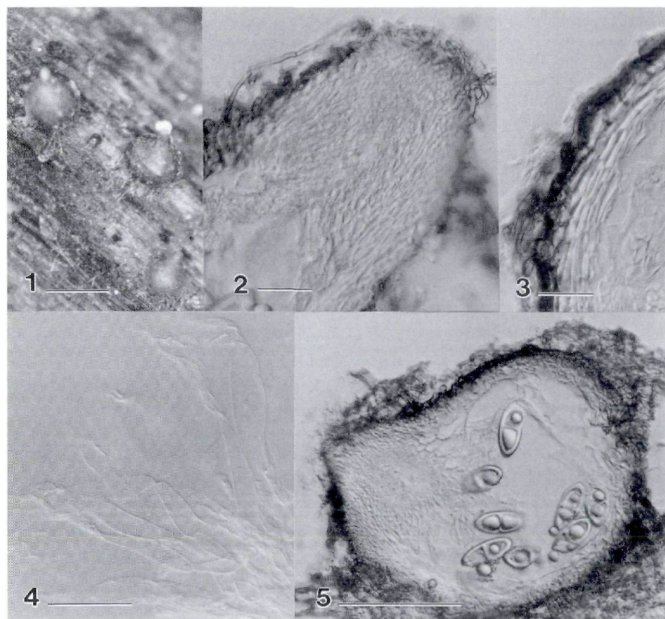
Materials and methods

Submerged wood was collected from the Lam Tsuen River, in the New Territories, Hong Kong, and returned to the laboratory in plastic bags. The samples were then rinsed in distilled water and incubated on moist paper in sterile plastic boxes. Material was examined under a dissecting microscope for fruiting bodies after one week. Isolation was attempted by dissecting the ascospores, then placing the

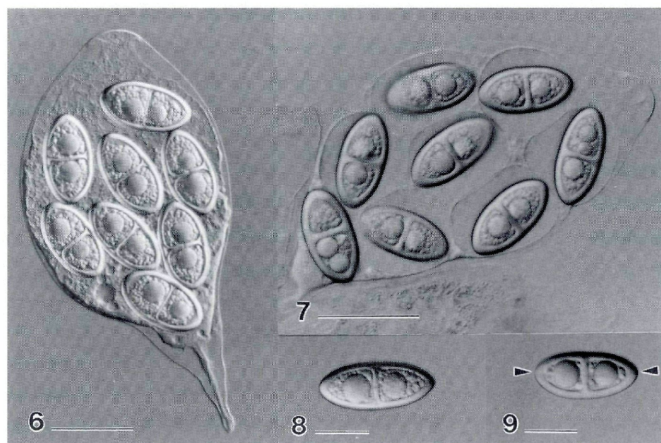
contents into sterile distilled water, and then transferring the asci aseptically to PDA with streptomycin. Isolation was not successful.

Aniptodera inflatiascigera K. M. Tsui, K. D. Hyde & I. J. Hodgkiss, sp. nov. – Figs. 1–9.

Ascomata 250–350 μm diam., 160–200 μm alta, globosa ad subglobosa, pyriformia, superficialia, partim immersa, interspersa, gregaria, hyalina vel griseola, membranacea. Colli 100–150 μm longi, 100–120 μm diam., cylindrici vel conici. Peridium 22–25 μm crassum, ex duobus stratis compositum, exterius 2–3 stratis cellularum polygonarum, interius 3–4 stratis cellularum hyalinarum angularum compositum. Catenophyses praesentes. Asci 135–200 \times 50–87 μm (\bar{x} = 152 \times 70 μm , n = 50), clavati vel inflati, pedicellati, unitunicati, ad apicem crassi. Ascospores



Figs. 1–5. – Interference light micrographs of *Aniptodera inflatiascigera* (from holotype). – 1. Ascomata on submerged wood. – 2. Longitudinal section of neck containing periphyses. – 3. Section through peridium illustrating wall layers. – 4. Catenophyses. – 5. Section through ascoma. – Bars: 1 = 300 μm ; 2–3 = 20 μm ; 4 = 50 μm ; 5 = 100 μm .



Figs. 6-9. - Interference light micrographs of *Aniptodera inflatiascigera* (from holotype). - 6. Ascus showing the apical thickening and the retraction of cytoplasm behind the apex. - 7. Ascus showing the ballooning of the ascus and the delimiting membranes around the ascospores. - 8, 9. Ascospores. Note the pores at the spore ends (arrowed in 9) through which delicate appendages may be released (not shown). - Bars: 6 = 30 μm ; 7 = 40 μm ; 8-9 = 20 μm .

32-46 \times 15-22 μm (\bar{x} = 37 \times 18 μm , n = 50), crassitunicatae, uniseptatae, ellipsoideae, hyalinae, saepe non appendiculatae.

Holotypus. - Hong Kong: New Territories, Tai Po, Lam Tsuen River, on submerged wood, 27 Nov. 1996, K. M. Tsui, KM127 (HKU(M) 4672).

Etymology. - *inflatiascigera* - in reference to the swollen, balloon shape of the ascus.

Ascomata 200-300 μm diam., 160-200 μm high, globose, subglobose or pyriform, superficial or partly immersed, scattered or gregarious, hyaline or greyish, membranaceous. Neck 100-150 μm long, 100-120 μm diam. cylindrical to conical, hyaline, with periphyses. - Peridium 22-25 μm thick, two layered; outer layer composed of 2-3 rows of polygonal cells; inner layer composed of 3-4 rows of hyaline, angular cells. - Catenophyses present. - Ascus 135-200 \times 50-87 μm (\bar{x} = 152 \times 70 μm , n = 25), 8-spored, clavate, becoming balloon-shaped or swollen, pedicellate, thin-walled, uni-

tunicate, with an apical thickening. – Ascospores $32\text{--}46 \times 15\text{--}22 \mu\text{m}$ ($\bar{x} = 37 \times 18 \mu\text{m}$, $n = 50$), thick-walled ($2\text{--}3 \mu\text{m}$ thick), 1-septate, ellipsoidal, hyaline, usually lacking appendages, occasionally with delicate appendages released from the pores at the ascospore tips.

Habitat. – Lignicolous and saprobic on submerged wood.

Other material examined. – Hong Kong: New Territories, Tai Po, Lam Tsuen River, on submerged wood in freshwater, 27 Nov. 1996, KM127 (HKU(M)4682). – *ibid.* (HKU(M)4684). – PHILIPPINES: Negros Occidentalis, Barrio Alegria, Lupit River, on submerged wood, 27 April 1997, K. D. Hyde, V. A. Arimas & L. Arimas (HKU(M) 5176).

During this study, *Aniptodera inflatiascigera* occurred quite abundantly on the woody substrates in the downstream region of the Lam Tsuen River. *A. inflatiascigera* is unique in the genus in having large asci which swell on release from the ascomata. Similar asci are found in *Halosarphelia lotica* Shearer (1984), but the ascospores in this species differ in shape and have thinner walls. In spore form, it resembles *A. fusiformis* Shearer (1989), *A. limnetica* Shearer (1989) and *A. margarition* Shearer (1989) as it has thick-walled and mostly non-appendaged ascospores, but the ascospores in *A. inflatiascigera* are considerably larger and have thicker walls. It is also similar to *A. lignatilis* K. D. Hyde (1992a), but differs as ascospores in *A. lignatilis* have thinner walls and well developed appendages. The retraction of cytoplasm in the ascus apices of *A. inflatiascigera* is very obvious (Figs. 6–7) and similar to that found in *A. chesapeakensis* Shearer & Miller (1977) and *A. lignatilis*. A comparison of characters of freshwater *Aniptodera* species is given in Tab. 1. *Nais aquatica* K. D. Hyde (1992b) has similar ascospore dimensions. The two genera, however, differ in that an equatorial band of granular globose bodies is lacking in the ascospores of *A. inflatiascigera* and other *Aniptodera* species. The spore wall is rather thin in *N. aquatica*, when compared to *A. inflatiascigera*.

When ascospores of *A. inflatiascigera* are released from the asci, delimiting membranes are often visible around the ascospores (Fig. 7). Furthermore, delicate, thread-like appendages may be released from the narrow pores at the ascospore tips. These appendages, however, may easily be overlooked or lacking.

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Tab. 1. – Comparison of *A. inflatiscigera* with other freshwater *Aniptodera* species and *Nais aquatica* (from Shearer & Miller, 1977; Hyde, 1992a, b; Shearer, 1989).

Species	<i>A. chesapeakeensis</i>	<i>A. fusiformis</i>	<i>A. limnetica</i>	<i>A. margaritum</i>	<i>A. lignatilis</i>	<i>A. inflatiscigera</i>	<i>Nais aquatica</i>
Ascomata	130–300 × 170–325 µm, hyaline to greyish brown	75–139 µm diam.	139–208 × 129–198 µm, hyaline	99–218 µm diam., hyaline	160–350 × 225–400 µm, hyaline to creamy	200–300 × 160–200 µm, hyaline to greyish	115–170 × 220–390 µm, black
Asci	64–116 × 14–38 µm, \bar{x} = 94 × 28 µm	36–60 × 19–35 µm	50–70 × 12–17 µm	48–70 × 19–35 µm, \bar{x} = 58 × 23.5 µm	128–171 × 28–39.5 µm	135–200 × 50–87 µm, \bar{x} = 152 × 70 µm	82 × 46 µm
Ascospores							
size	21–37 × 7–15 µm, \bar{x} = 32 × 11 µm	19–28 × 8–12 µm, \bar{x} = 23.6 × 9.6 µm	18–24 × 8–11 µm, \bar{x} = 21.9 × 9.5 µm	15–22 × 8.8–13.3 µm, \bar{x} = 19 × 10 µm	35–55 × 11.5–17 µm	32–46 × 15–22 µm, \bar{x} = 37 × 18 µm	32–36 × 15–17 µm
wall	thick	1.5–2 µm thick	1.5–3 µm thick	1.5–3 µm thick	thick	2–3 µm thick	thin
appendages	yes/no	no	no	no	yes	ephemeral	yes

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