

Note

New observations on *Monotosporella rhizoidea*

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Monotosporella rhizoidea is described, and illustrated with light and scanning electron micrographs, from submerged wood in Hong Kong. Our collection differs from the protologue, in having smaller conidia and longer conidiophores. The formation of multiple lobes which swell downwards over the conidiophore or existing conidiogenous cells is an unusual feature in *Monotosporella*. A synopsis and a key, as well as diagrammatic representations of the species of *Monotosporella* are provided.

Key Words—freshwater fungi; hyphomycetes; lignicolous fungi; systematics.

We have been investigating the fungi occurring on wood submerged in freshwater (Hyde, 1995; Hyde and Goh, 1997; Hyde et al., 1998) and in this paper we report on a collection of *Monotosporella rhizoidea*. It differs from the protologue in having smaller conidia and longer conidiophores. The repeated percurrent proliferations of the conidiogenous cells, and the formation of lobes which swell downwards over the conidiophore or existing conidiogenous cells is typical of this species, and in this paper this feature is more elaborately illustrated.

Submerged wood was collected from the Plover Cove Reservoir and returned to the laboratory in sterile plastic bags. Samples were incubated in moist plastic boxes at room temperature and examined periodically over 2–3 mo. All measurements were made in water. Single spore cultures were obtained as follows: a suspension of the conidia in sterile distilled water was pipetted onto potato dextrose agar (PDA) plates. Single conidia were allowed to germinate (ca. 2d) and transferred to PDA plates for further growth.

Monotosporella rhizoidea Vasant Rao & de Hoog, Stud. Mycol. 28: 6, 1986. Figs. 1–16.

Colonies on PDA slow-growing, reaching 25 mm after one month at room temperature (25°C), dark grey, growing in concentric rings with greyish white aerial hyphae, reverse black in colour, conidia produced following 1 mo of incubation. Conidiophores reddish brown to black, smooth-walled, uniform in width, unbranched, 1–2-septate, 50–70 µm long, 4–5 µm wide. Conidia 20–32.5 × 20–32.5 µm, smooth-walled; pyriform to obovoid, 2-septate, not constricted at the septa, upper cells black, basal cell hyaline to pale-brown. No lobe-like structures are observed on the conidiogenous cells in culture.

Colonies on natural substrate effuse, scattered,

black. Mycelium immersed. Conidiophores erect, reddish brown to black, smooth-walled, uniform in width, unbranched, 1–2-septate, 70–87.5 µm long, 4–5 µm wide, lacking a scar at the tip, with basal rhizoids. Conidiogenesis begins with the production of a pyriform, hyaline conidial initial growing from the conidiogenous cell. Conidiogenous cells 7–10 × 3–5 µm long, with lobes which measure 3.8–5 × 2.5–3.8 µm, proliferating up to 7 times, in side view, one side of the swelling is hemispherical, while on the other side the conidiogenous cell swells further downwards and has the appearance of a mitten holding the old conidiophore. These lobes appear to give strength to the conidiophore so that they can support the large conidia. Conidia solitary, 20–32.5 × 20–32.5 µm, smooth-walled; pyriform to obovoid, 2-septate, not constricted at the septa, upper cells black, basal cell hyaline to pale-brown, conidial secession schizolytic.

Material examined. Hong Kong. The Plover Cove Reservoir, on submerged wood, 26 Jan. 1997, V. M. Ranghoo (HKU(M) 5242).

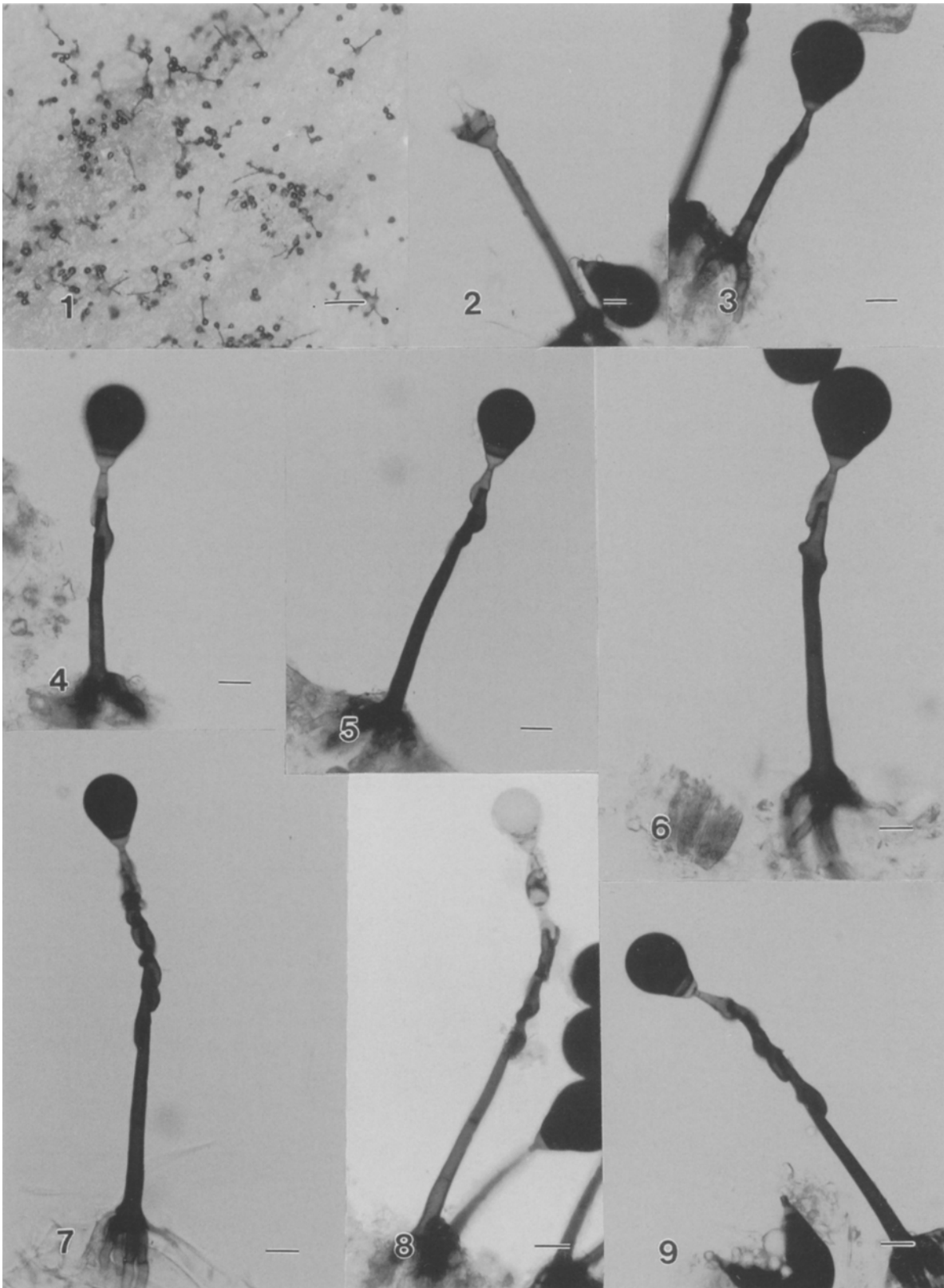
Known distribution: India, Hong Kong

Monotosporella was introduced by S. Hughes (1958) with *M. setosa* Berk. & M. A. Curtis as the type species. *Monotosporella* is characterised by unbranched, percurrently proliferating conidiophores, which produce septate, pyriform to obovoid, dark-brown to black conidia at their apices.

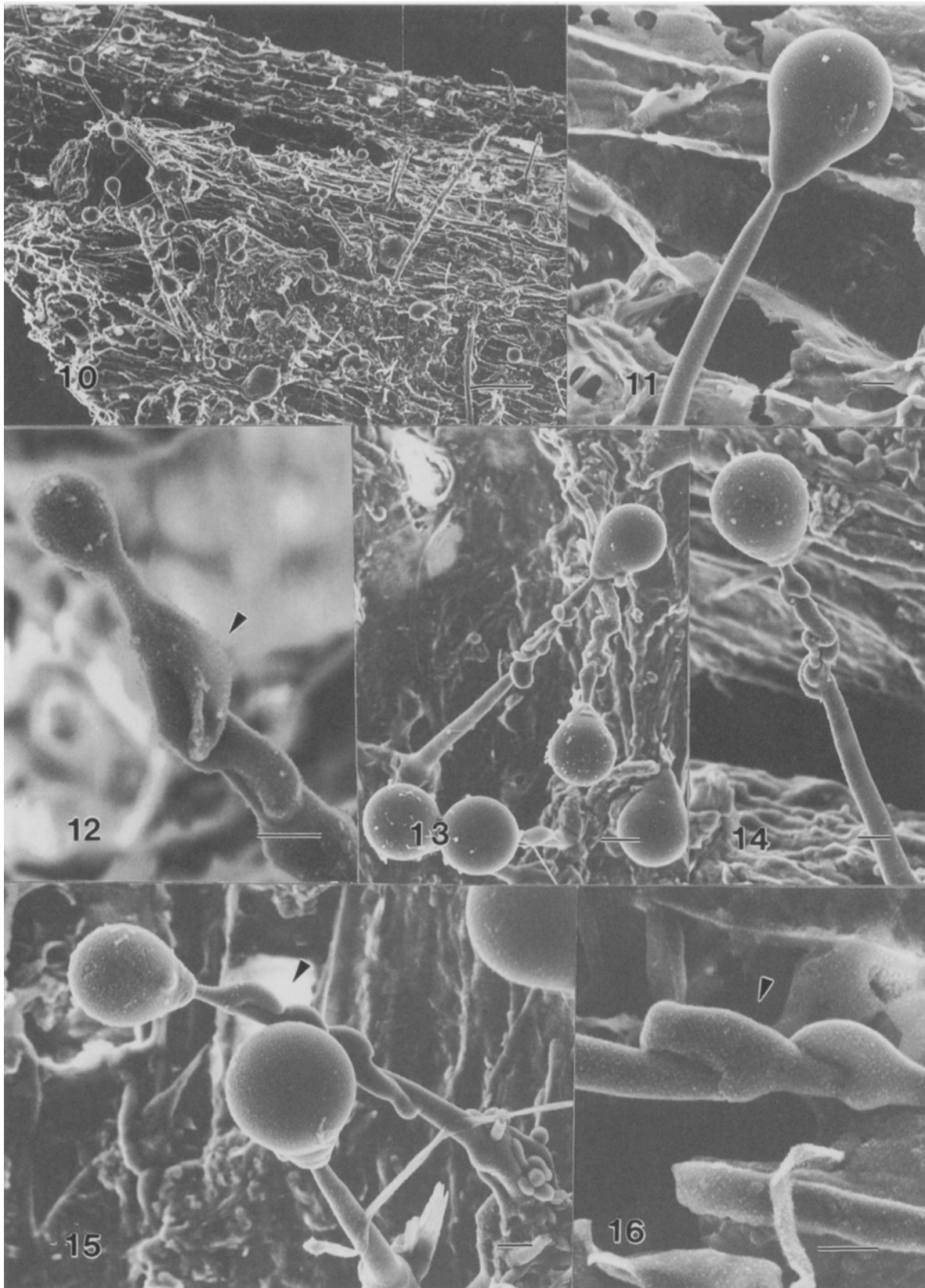
The genus *Monotosporella* comprises seven taxa including two varieties: *Monotosporella* state of *Ascotaiwania grandispora* Ranghoo & Hyde (Ranghoo and Hyde, 1998), *Monotosporella* state of *Ascotaiwania sawada* H. S. Chang & Y. S. Hsieh (Sivichai et al., 1998), *M. rhizoidea* V. G. Rao & G. S. de Hoog (Rao and de Hoog, 1986), *M. setosa* var. *macrospora* S. Hughes

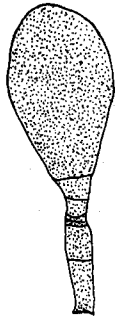
Table 1. Synopsis of the main characters of *Monotosporella* species.

Species	<i>Monotosporella</i> state of <i>Ascotaiwania</i> <i>grandispora</i> (Ranghoo & Hyde, 1998)	<i>Monotosporella</i> state of <i>Ascotaiwania</i> <i>sawada</i> (Sivichai et al., 1998)	<i>M. rhizoidea</i> (Vasant Rao & de Hoog, 1986) from India	<i>M. rhizoidea</i> from Hong Kong	<i>M. setosa</i> (var. <i>macrospora</i>) (Hughes, 1978)	<i>M. setosa</i> (var. <i>setosa</i>) (Hughes, 1978)	<i>M. tuberculata</i> (Gönczöl, 1976)
Described from:	Culture of <i>Ascotaiwania</i> <i>grandispora</i>	Culture of <i>Ascotaiwania</i> <i>sawada</i>	Decaying bark	Submerged decaying wood	Decaying wood	Decaying wood and bark	Decaying leaves
Conidiophores							
Size	25–75 μm long, 6–9 μm wide at the base	7.5–12 long, 5–10 μm wide at the base	3–40 μm long 4–5 μm wide at the base	70–87.5 μm long, 4–5 μm wide at the base	170 μm long	130–150 μm long 11.5 μm wide at the base tapering to 5.5 μm at the apex	10–90 μm or longer
Conidiogenous cell with lobe-like swellings	Absent	Absent	Present	Present (Figs. 12, 15, 16)	Absent	Absent	Absent
Conidia							
Size (height \times diam.)	30–35 \times 10–20 μm	25–35 \times 17.5–25 μm	35–40 \times 27–35 μm	20–32.5 \times 20–32.5 μm	38–48 \times 27–36 μm	30–50 \times 18–30 μm	25–30 \times 10–18 μm
Septation	2-septate	1–4-septate	2–3-septate	2-septate	2-septate	2-septate	1-septate
Protuberances	Absent	Absent	Absent	Absent	Absent	Absent	4–6 node-like protuberances (Fig. 21)
Known Distribution	Hong Kong (Fig. 24)	Thailand (Fig. 23)	India (Fig. 19)	Hong Kong (Fig. 22)	New Zealand (Fig. 18)	New Zealand (Fig. 17)	Northern Hungary (Figs. 20, 21)

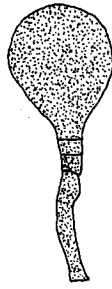


Figs. 1-9. Light micrographs of *Monotosporella rhizoidea*. Fig. 1. Colony on wood. Fig. 2. Conidium developing from conidiogenous cell. Figs. 3-9. Conidiophore with one to seven percurrent proliferations. Scale bars: 1 = 100 μm , 2-9 = 10 μm .

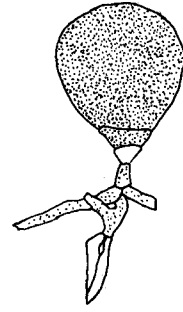




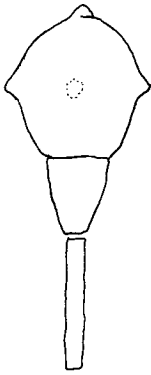
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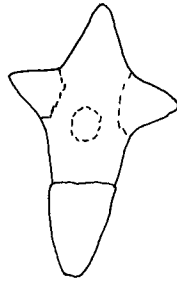
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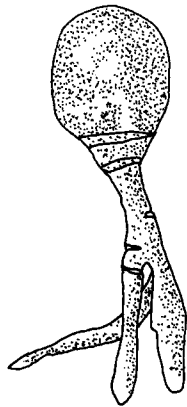
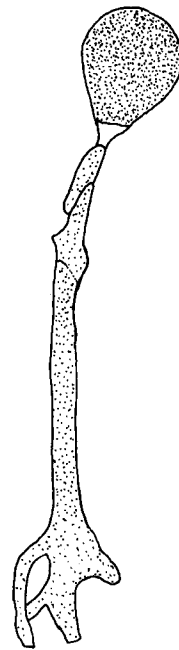
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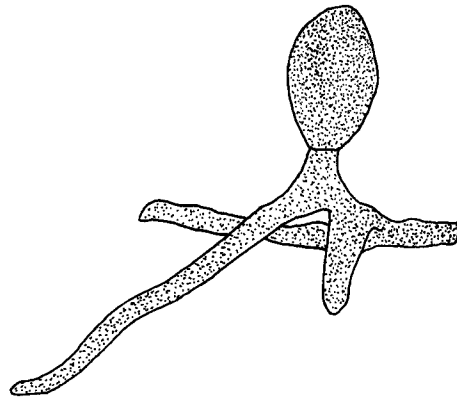
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(Hughes, 1978), *M. setosa* S. Hughes var. *setosa* (Hughes, 1958), *M. tuberculata* J. Gönczöl (Gönczöl, 1976). A synopsis of species characters is provided in Table 1.

New observations have been made on this collection of *M. rhizoidea*. The Hong Kong strain of *M. rhizoidea* differs from the Indian strain in having longer conidiophores and relatively smaller conidia. The conidia in the

Hong Kong strain of *M. rhizoidea* are 2-septate while they are 2–3-septate in the Indian strain. A larger number of lobe-like structures are observed on the conidiogenous cells of the Hong Kong strain of *M. rhizoidea*. The presence of the lobe-like swellings of the conidiogenous cells is a distinguishing character of this species from other *Monotosporella* species.

Key to *Monotosporella* species

1. Conidia with protuberances, 25–30 × 10–18 µm, conidiophores 10–90 µm in length *Monotosporella tuberculata*
1. Conidia lacking protuberances 2
 2. Conidiophores with percurrent proliferation of the conidiogenous cells and formation of lobe-like structures *Monotosporella rhizoidea*
 2. Conidiophores with percurrent proliferation of the conidiogenous cells lacking formation of lobe-like structures ... 3
3. Conidiophores more than 100 µm in length 4
3. Conidiophores less than 100 µm in length 5
 4. Conidiophores 130–150 µm long, conidia 30–50 × 18–30 µm *Monotosporella setosa* var. *setosa*
 4. Conidiophores 170 µm long, conidia 38–48 µm × 27–36 µm *Monotosporella setosa* var. *macrospora*
5. Conidiophores 25–75 µm long, conidia 30–35 × 10–20 µm *Monotosporella* state of *Ascotaiwania grandispora*
5. Conidiophores 7.5–12 µm long, conidia 25–35 × 15.5–25 µm *Monotosporella* state of *Ascotaiwania sawada*

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Figs. 10–16. Scanning Electron micrographs of *Monotosporella rhizoidea*. Fig. 10. Colony on wood. Fig. 11. Close-up of a conidium. Fig. 12. Young, developing conidium. Note the lobe-like structures (arrowed). Figs. 13, 14. Conidiophore with 5–6 percurrent proliferations. Note the proliferating conidiogenous cells and the lobe-like swellings formed on the conidiophores. The swellings are of different size on different sides of the conidiophore. Figs. 15, 16. Close-up to show the conidiogenous cells with lobes swelling downwards over the conidiophores (arrowed). Scale bars: 10 = 100 µm, 11–16 = 10 µm.

Figs. 17–24. Diagrammatic representation of *Monotosporella* species. Fig. 17. *Monotosporella setosa* var. *setosa* (redrawn from micrographs of Hughes, 1958). Fig. 18. *Monotosporella setosa* var. *macrospora* (redrawn from micrographs of Hughes, 1978). Fig. 19. *Monotosporella rhizoidea* (redrawn from diagrams of Rao & de Hoog, 1986). Figs. 20, 21. *Monotosporella tuberculata* (redrawn from diagrams of Gönczöl, 1976). Fig. 22. *Monotosporella rhizoidea* (Hong Kong strain). Fig. 23. *Monotosporella* state of *Ascotaiwania sawada* (redrawn from micrographs of Sivichai et al., 1998). Fig. 24. *Monotosporella* state of *Ascotaiwania grandispora* (redrawn from micrographs of Ranghoo & Hyde, 1998). Scale bars: 17–24 = 10 µm.