

Fungi from palms. XI*. *Appendispora frondicola* gen. et sp. nov. from *Oncosperma horridum* in Brunei

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Appendispora gen. nov. is characterised by brown, bicelled, appendaged ascospores, with irregular wall striations, bitunicate asci with fissitunicate dehiscence, trabeculae and ascomata immersed in a stroma. The genus is presently monotypic with *A. frondicola* from *Oncosperma horridum* collected in Brunei Darussalam. The genus and species are diagnosed and illustrated.

Keywords: Ascomycetes, taxonomy, new genus, new species.

The study of microfungi colonizing dead palm rachides has resulted in descriptions of several new species (Hyde, 1992a; 1993a; 1993b). *Oncosperma horridum* (Griff.) Scheff. is a palm of lowland forests in Borneo and is striking due to the numerous spines that cover the stem and rachides (Whitmore, 1973). During a visit to Brunei in November 1992, I visited several stands of this palm and collected decaying fronds from the forest floor. Although considerable care was needed in the handling of these specimens because of the numerous spines, several fungi were found to colonise the decaying fronds. In this paper a new genus collected on *O. horridum* is described.

Taxonomy

Appendispora K. D. Hyde, gen. nov.

Ascomata immersa, stromatica, gregaria ostiolata, trabeculata. Asci octospori, cylindrici, fissitunicati, ad apicem rotundati, apparato apicali praediti. Ascosporae fusiformes, brunneae, bicellulares, ornamentatae, appendicibus augustis praeditae.

Typus generis: *Appendispora frondicola* K. D. Hyde

Ascomata immersed beneath a stroma, axis horizontal, oblique or vertical to the host surface, clustered, ostiolate. – Peri-

* X in *Sydowia* 46 (1): 23–28.

dium inwardly comprising hyaline elongate cells, outwardly small brown angular cells. – Hamathecium of trabeculae. – Asci 8-spored, cylindrical, fissitunicate, apically rounded with an ocular chamber and faint ring. – Ascospores uniseriate or overlapping uniseriate, fusiform, brown, bicellular, with wall ornamentation and narrow appendages at each end.

Type species: *Appendispora frondicola* K. D. Hyde

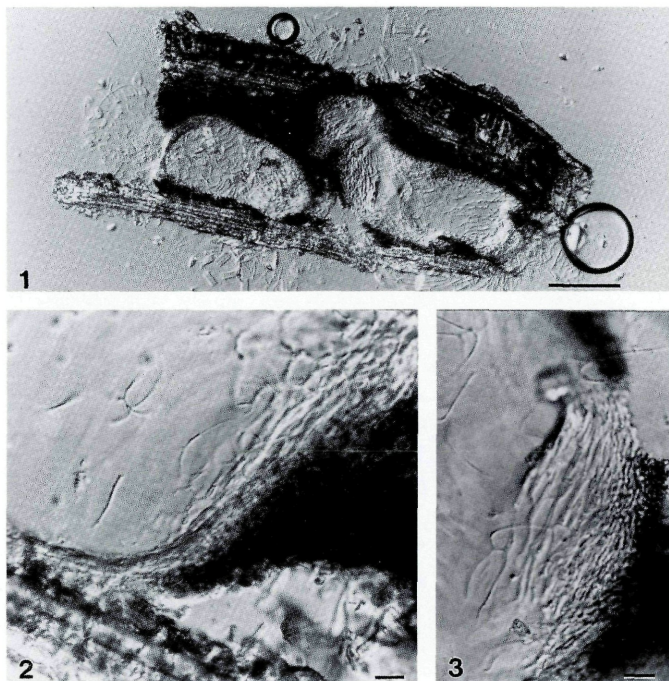
***Appendispora frondicola* K. D. Hyde, sp. nov. – Figs. 1–13.**

Ascomata 180–280 µm diam, 120–280 µm alta, immersa, stromatica, gregaria, ostiolata, trabeculata. Asci 130–144 × 11–13 µm, octospori, cylindracei, fissitunicati, ad apicem rotundati, apparato apicali praediti. Ascosporae 21–30 × 7–9 µm, fusiformes, brunneae, bicellulares, ornamentatae, appendicibus augustis praeditae.

Holotype. – BRUNEI, Jalan Muara, Simpang 835, on dead rachis of *Oncosperma horridum* on forest floor, Nov. 1992, K. D. Hyde 1652, BRIP 21354.

Ascomata forming under raised, slightly darkened regions, on the host surface, with minute ostioles visible through cracks or blackened dots on the host surface and clustered; in horizontal section subglobose; in vertical section 180–280 µm diam., 120–280 µm high, subglobose or irregularly pyriform, immersed beneath a stroma, axis horizontal, oblique or vertical to the host surface, and ostiolate (Fig. 1). – Peridium to 40 µm thick, inwardly comprising several layers of hyaline elongate cells becoming small, and brown, angular cells towards the outside where they fuse with host tissue (Figs. 2, 3). – Stroma variable, surrounding several ascomata, comprising host cells with brown intracellular hyphae (Fig. 1). – Trabeculae to 1 µm wide, in a gelatinous matrix (Fig. 13). – Asci 130–144 × 11–13 µm, 8-spored, cylindrical, pedunculate, fissitunicate, apically rounded with an ocular chamber and faint ring (Figs. 8, 10–12). – Ascospores 21–30 × 7–9 µm, uniseriate or overlapping uniseriate, fusiform, brown, bicellular, slightly constricted at the septum, with an irregular ridged ornamentation and 3–5 narrow appendages at each end (Figs. 4–7, 9).

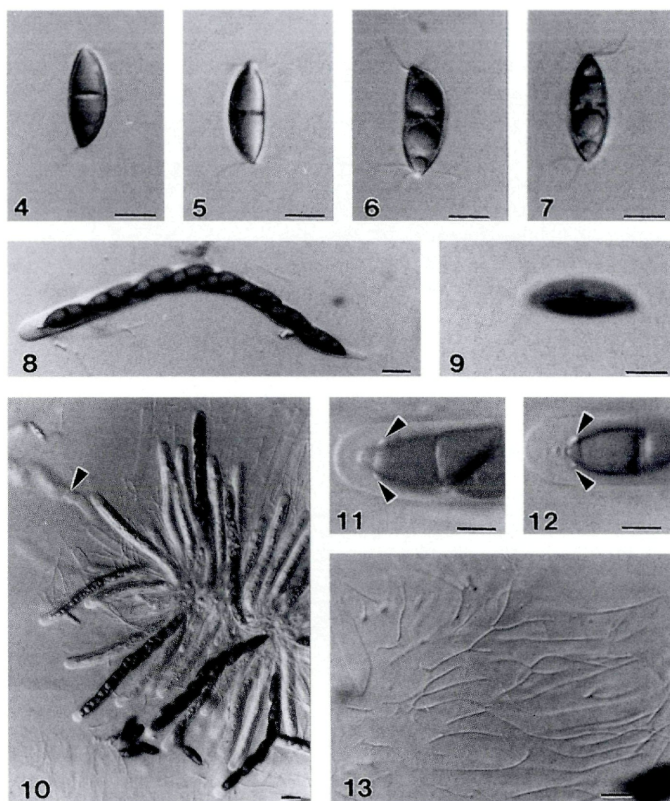
Appendispora can be placed in the Dothideales, Didymosphaeriaceae (*sensu* Eriksson & Hawksworth, 1991) or Melanommatales, Didymosphaeriaceae (*sensu* Barr, 1987). The hamathecium comprising trabeculae in a gel and brown ascospores are distinctive of this family. Hawksworth (1985) provided a key to 15 genera and notes on 35 generic names used for bitunicate pyrenomycetes with brown 1-septate ascospores. *Appendispora* is closest to *Didymosphaeria* Fuckel, but must be excluded on the nature



Figs. 1-3. Interference contrast micrographs of *Appendispora frondicola*. – Fig. 1. Section through stroma and ascomata. – Figs. 2, 3. Peridium. – Bars 1 = 100 µm; 2, 3 = 10 µm.

of the ascospore appendages and reticulate wall ornamentations (Scheinflug, 1958). Furthermore, ascomata in *Didymosphaeria* are immersed under a clypeus with their axis vertical to the host surface, whereas in *Appendispora* ascomata are clustered under stromata and their axes are horizontal, oblique or vertical.

One taxon in *Didymosphaeria* with appendaged ascospores is *D. polytrichospora* Lucas & DaCamara which is described from branches of *Cytisus multiflorus* (L'Herit ex Ait.) Sweet (Lucas & DaCamara, 1953). The brown two-celled ascospores are provided with 6–7 appendages at each end, which are illustrated as seta-like. Aptroot (pers. comm.) has examined the type material of this taxon and found it to have unitunicate asci with a J^+ , subapical ring. The type is clearly



Figs. 4–13. Interference contrast micrographs of *Appendispora frondicola*. – Figs. 4–7. Ascospores, which are brown, fusiform, centrally septate, with 3–5 narrow appendages at each end. – Fig. 8. Ascus. – Fig. 9. Ascospore with reticulate ornamentation. – Fig. 10. Squash illustrating asci (fissitunicate dehiscence arrowed). – Figs. 11, 12. Ascus apices with ocular chamber and faint rings (arrowed). – Fig. 13. Trabeculae in a gelatinous matrix. Bars = 10 μ m.

amphisphaeriaceous. The taxonomic position of this taxon is presently uncertain, but it is far removed from *Appendispora*, which has bitunicate asci lacking a J⁺ ring.

Roussoëlla Sacc. and *Seynesia* Sacc. are genera which should also be considered. In *Roussoëlla hysteroioides* Sacc. and *Seynesia erum-*

pens (Berk. & Curt.) Sacc. asci are unitunicate (Hawksworth, 1985; Hyde, personal observation). Both genera should be referred to the Amphispheeriaceae, although Barr (1990) has referred *Seynesia* to the Xylariaceae on account of the germ slit on its ascospores. I have seen material of *Seynesia nobilis* (Welw. & Curr.) Winter, which has a germ slit in each cell. However, *Seynesia* may be more closely allied to *Amphispheeria* Ces. & de Not. in the Amphispheeriaceae.

Appendispora differs markedly from both *Seynesia* and *Roussoëlla* because the asci are bitunicate with fissitunicate dehiscence. Some Amphispheeriacous taxa have relatively thick-walled asci and may appear to be bitunicate, but lack fissitunicate dehiscence. The paraphyses, however, are distinctly amphispheeriacous (*sensu* Eriksson, 1966). In *Appendispora* the pseudoparaphyses comprise trabeculae in a gelatinous matrix and are clearly not amphispheeriacous.

The presence of narrow appendages at each end of the ascospore is rare in the Loculoascomycetes. Many of them (e.g., *Massarina* Sacc., *Lophiostoma* Ces. & De Not.) are provided with mucilaginous sheaths, while in *Falciformispora* K. D. Hyde, a scythe-like appendage is present at one end (Holm & Holm, 1988; Hyde, 1991, 1992b). In other taxa ascospores have a peculiar wall ornamentation (e.g., *Belizeana* Kohlm. & Volkm.-Kohlm.) or striations (e.g. *Astrosphaeriella* Syd. & P. Syd.) (Kohlmeyer & Volkmann-Kohlmeyer, 1987; Hyde, 1988) and in others ascospores may lack sheaths or appendages altogether (e.g., *Mycosphaerella* Johanson). Aptroot (1994) has recently described a lichenized loculoascomycete with hyaline, flagellar appendages. The narrow appendages of *Appendispora* are similar to those of many marine species in the Halosphaeriaceae (Kohlmeyer & Volkmann-Kohlmeyer, 1991). Similar types of appendages are found in *Savoryella appendiculata* Hyde & Jones, *Etheiophora* spp. and *Torpedospora* spp. (Jones & Hyde, 1992; Kohlmeyer & Volkmann-Kohlmeyer, 1991). It has still to be established whether the appendages in *Appendispora* form by fragmentation of the exosporium as in *Lanspora coronata* Hyde & Jones or from outgrowths of the endosporium of the polar cell as in *Savoryella appendiculata* (Hyde & Jones, 1986; Read & al., 1993).

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