

## Fungi from palms. XXIII<sup>1</sup>. *Rachidicola* gen. et sp. nov.

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Hyde, K. D. (1995). Fungi from palms. XXIII. *Rachidicola* gen. et sp. nov. – *Sydowia* 47(2): 217–222.

*Rachidicola palmae* gen. et sp. nov. is described from *Calamus* sp. in Hong Kong and *Daemonorops* sp. in Malaysia. The genus is characterized by 3-celled, hyaline ascospores surrounded by a mucilaginous sheath, sheet-like paraphyses embedded in a gelatinous matrix, and ascomata immersed under a clypeus with a central periphysate ostiolar canal.

Keywords: palm fungi, *Melomastia*, *Rachidicola*, *Swampomyces*.

Studies on the ascomycetes developing on living and dead palm fronds yielded an interesting taxon with 3-celled, hyaline ascospores surrounded by a mucilaginous sheath. Ascomata were immersed beneath a clypeus, asci were cylindric-clavate, unitunicate and with a non-refractive, I-, subapical ring. Furthermore, paraphyses were sheet-like and embedded in a gelatinous matrix.

We could find no genus that can suitably accommodate this species. We also believe that these features suitably delineate this collection from all other apparently similar ascomycete genera and therefore *Rachidicola* gen. nov. is introduced.

### Taxonomy

***Rachidicola*** K. D. Hyde & J. Fröhlich, gen. nov.

Ascomata sub clypeo immersa, ellipsoidea vel conica, ostiolata, paraphysata. Asci 8-spori, cylindraneo-clavati, pedunculati, unitunicati, apparato apicali praediti. Ascosporae 2–3-seriatae, tricellulares, hyalinae, tunica gelatinosa praeditae. Status anamorphosis non visus.

Typis generis: *Rachidicola palmae* K. D. Hyde & J. Fröhlich

**Etymology.** – from *Rachis* (greek for rachides) and *cola* meaning 'dwelling on', with reference to the palm habitat.

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<sup>1</sup>XXII in *Sydowia* 47(2): 213–216.

Ascomata immersed, ellipsoidal to conical, clypeate, with a central periphysate ostiolar canal, surrounded by a variable amount of stromatic tissue. – Peridium composed of angular, hyaline or brown-walled cells. – Paraphyses individually hypha-like, filamentous, septate, hyaline; collectively sheet-like and embedded in a gelatinous matrix. – Asci 8-spored, cylindric-clavate, pedunculate, unitunicate, with a non-refractive apical apparatus. – Ascospores 2–3-seriate, 3-celled, hyaline, smooth-walled and surrounded by a spreading mucilaginous sheath.

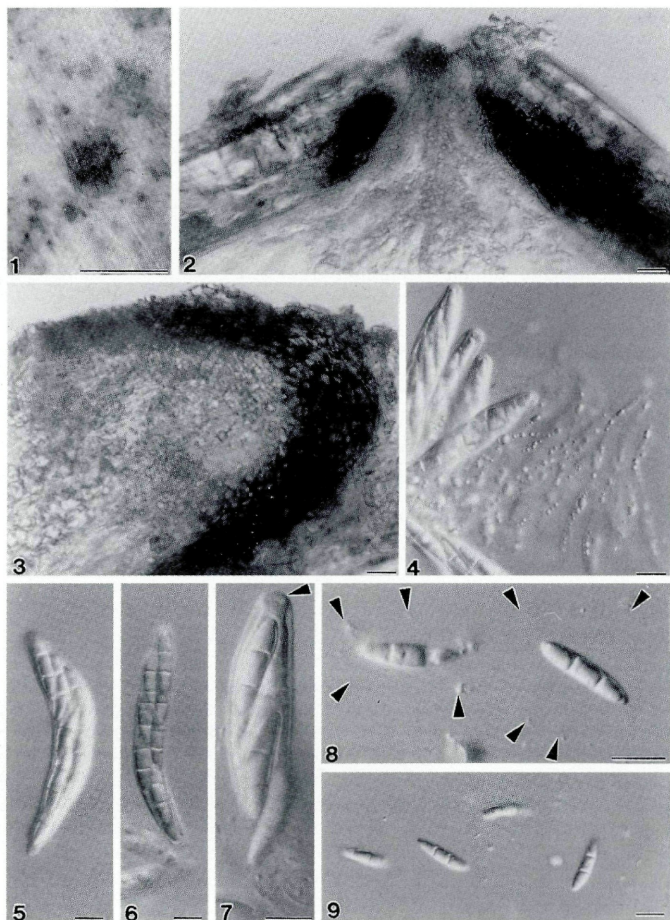
Type species: *Rachidicola palmae* K. D. Hyde & J. Fröhlich

***Rachidicola palmae*** K. D. Hyde & J. Fröhlich, sp. nov. – Figs 1–18.

Ascomata sub clypeo immersa, 265–350  $\mu\text{m}$  diam, 125–210  $\mu\text{m}$  alta, ellipsoidea vel conica, ostiolata, paraphysata. Asci 70–102.5  $\times$  10–20  $\mu\text{m}$  ( $\bar{x}$ : 84.35  $\times$  13.75  $\mu\text{m}$ ,  $n = 25$ ), octospori, cylindraco-clavati, pedunculati, unitunicati, apparatu subapicali praediti. Ascospores 20.5–25.5  $\times$  5–6.5  $\mu\text{m}$  ( $\bar{x}$ : 23.165  $\times$  5.84  $\mu\text{m}$ ,  $n = 50$ ), 2–3-seriatae, tricellulares, hyalinae, tunica gelatinosa praeditae.

Holotypus. – HONG KONG: Tai Po Kau Country Park, on rachis of *Calamus* sp., May 1993, J. Fröhlich, JF 3, BRIP 22762.

Ascomata developing under slightly darkened, raised, conical areas, 182–308  $\mu\text{m}$  long and 182–308  $\mu\text{m}$  wide (Fig. 1); in vertical section 265–350  $\mu\text{m}$  diam, 125–210  $\mu\text{m}$  high, ellipsoidal to conical, immersed beneath a clypeus, with a central periphysate ostiolar canal (Figs 2, 10, 11). – Clypeus forming a disc, up to 320  $\mu\text{m}$  diam, composed of host cells containing intracellular, dark-brown, angular hyphae (Figs 2, 10, 11). – Pseudostromatic tissues (cells & hyphae) also occur variably at the sides of each ascoma (arrowed in Fig. 10). At the periphery is a wedge-shaped area of cells forming a *textura intricata* (arrowed in Fig. 11). – Peridium: lateral walls 22.5–37.5  $\mu\text{m}$  wide, comprising 4–6 layers of angular, hyaline or brown-walled cells, fusing above with the clypeus or at the periphery with the wedge of cells. Base thin (Figs 3, 11). – Paraphyses individually 55–75  $\times$  3–4.75  $\mu\text{m}$  diam, hypha-like, filamentous, septate, hyaline; collectively sheet-like and embedded in a gelatinous matrix (Fig. 4). – Asci 70–102.5  $\times$  10–20  $\mu\text{m}$  ( $\bar{x}$ : 84.35  $\times$  13.75  $\mu\text{m}$ ,  $n = 25$ ), 8-spored, cylindric-clavate, pedunculate, thin-wall, unitunicate, apically rounded or moderately truncate, with a non-refractive, I-, apical apparatus (Figs 5–7, 12, 17, 18). – Ascospores 20.5–25.5  $\times$  5–6.5  $\mu\text{m}$  ( $\bar{x}$ : = 23.2  $\times$  5.8  $\mu\text{m}$ ,  $n = 50$ ), 2–3-seriate, 3-celled, cells of equal length, straight or slightly curved, slightly constricted at the septa, hyaline, smooth-walled and surrounded by a spreading mucilaginous sheath (Figs 8, 9, 13–16).



Figs 1-9. *Rachidicola palmae* (holotype). - 1. Appearance of ascoma on host surface. - 2, 3. Sections through ascomata, illustrating the clypeus (in 2) and peridium (in 3). - 4-7. Asci. Note the apical apparatus (arrowed in 7) and the collectively sheet-like paraphyses (in 4). - 8, 9. Ascospores surrounded by mucilaginous sheaths (arrowed). - Bars: 1 = 500  $\mu\text{m}$ ; 2, 3 = 100  $\mu\text{m}$ ; 4-9 = 10  $\mu\text{m}$ .

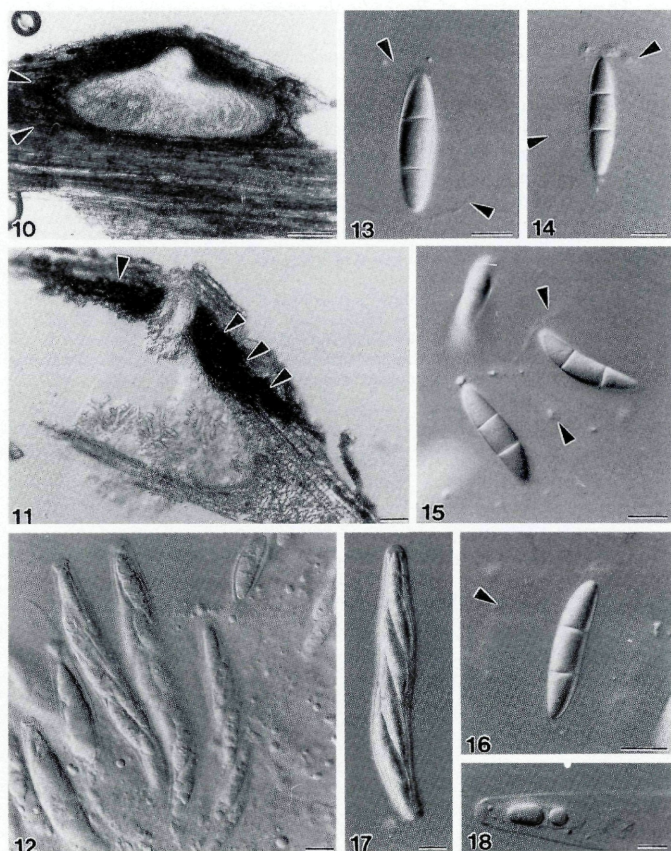
**A n a m o r p h .** – Unknown.

**K n o w n d i s t r i b u t i o n .** – Brunei, Hong Kong, Malaysia.

**K n o w n h o s t s .** – *Calamus*, *Daemonorops*.

**M a t e r i a l e x a m i n e d .** – BRUNEI DARUSSALAM: Temburong, Kuala Belalong, Field Studies Centre, on rachis of *Oncosperma horridum*, Jul 1993, K. D. Hyde (B39) 1739, BRIP 22754. – HONG KONG: Tai Po Kau Country Park, on rachis of *Calamus* sp., May 1993, J. Fröhl., JF 3, BRIP 22762 (holotype). – MALAYSIA: Pasoh Forest Reserve, on petiole of *Daemonorops* sp., Oct. 1991, K. D. Hyde 1581, BRIP 22763.

*Rachidicola palmae* is distinct from other palm taxa in having three-celled, hyaline ascospores, which are surrounded by a mucilaginous sheath (Figs 8, 9, 13–16). The asci are unitunicate with an apical apparatus. This is visible due to the indentation of the cytoplasm (Figs 7, 18). A similar apical structure is found in *Swampomyces* Kohlm. & Volkm.-Kolhm. (Kohlmeyer & Volkmann-Kohlmeyer, 1987; Hyde & Nakagiri, 1992). Our taxon, however, differs in ascospore septation and ornamentation, nature of the paraphyses, ascoma and clypeal form and habitat, and it is unlikely the two genera are related. It is difficult to know exactly where the taxonomic affinities of *Rachidicola* lie. *Swampomyces* was tentatively placed in the Phyllachoraceae by Kohlmeyer & Volkmann-Kohlmeyer (1987), but this seems unlikely as the ascomata do not form under well developed stromata. Inclusion in the Amphisphaeriaceae may be possible, since not all amphisphaeriaceous taxa have blue staining ascal rings. However, the paraphyses are sheet-like (Fig. 4), unlike those found in most other amphisphaeriaceous genera (Hyde, 1994). The Hyponectriaceae may be suitable, but the family is presently poorly documented and no adequate description of the type species exists. The recently revived Pleurotremaceae (Barr, 1994) is another possibility. In this family, the monotypic *Melomastia* Nitschke ex Sacc., has 3-celled ascospores surrounded by a mucilaginous sheath (Barr, 1994). In *Melomastia mastoidea* (Fr.) Schröt. (CANADA: British Columbia, Sydney, on twigs of *Lonicera involucrata*, 16 Nov 1994, M. E. Barr 8851), however, the ascospores are oblong and distinct from those of *Rachidicola*. Furthermore, in *Melomastia* the asci are narrowly cylindrical with a reduced ring, unlike those of *Rachidicola*, whose asci are cylindrical-clavate with an apically thickened wall and subapical ring. The paraphyses of the two genera also differ markedly, being collectively sheet-like and embedded in a gelatinous matrix in *Rachidicola*, as compared to narrow, septate hyphae coated in a gel in those of *Melomastia*. Therefore, *Rachidicola* is presently



Figs 10–18. *Rachidicola palmae* (from Malaysia). – 10, 11. Sections of ascomata. Note the pseudostroma at the sides (arrowed in 10) and clypeus (arrowed in 11). – 12. Squash mounts illustrating asci. – 13–16. Ascospores with mucilaginous sheaths (arrowed). – 17, 18. Asci. Note the apical apparatus in 18. – Bars: 10, 11 = 100  $\mu\text{m}$ ; 12–18 = 10  $\mu\text{m}$ .

placed in Ascomycetes incertae sedis until more information becomes available.

Three collections of *Rachidicola palmae* are reported, one from Hong Kong (designated the holotype), one from Brunei and one from Malaysia. In the Brunei collection ascospores, 20–25 x 4–5 µm, were a similar dimension to those from Hong Kong. In the Malaysian collection dimensions were larger: asci 104–130 x 14–20 µm; ascospores 28–36 x 6–8 µm. Although there is no overlap in the length ranges in the asci and ascospores of these collections, morphologically the fungi are identical. Until further collections or data become available, we are reluctant to describe a second species.

### Acknowledgments

We would like to thank Professors A. Nawawi, A. Kuthubutheen and E. B. G. Jones for inviting us to Malaysia to work on palm fungi. Miss T. Caguioa is thanked for typing the manuscript and Miss Helen Leung and Mr. A. Y. P. Lee are thanked for technical assistance. Dr M. E. Barr is thanked for useful discussions concerning these fungi and for the loan of material of *Melomastia mastoidea*.

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(Manuscript accepted 18th June 1995)

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Artikel/Article: [Fungi from palms. XXIII. Rachidicola n.gen. et spec. 217-222](#)