

A new species of *Appendicospora* from Hong Kong

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A new species of *Appendicospora*, *A. hongkongensis*, occurring on fronds of *Livistona chinensis* in Hong Kong is described and illustrated with interference contrast micrographs. It differs from *A. coryphae* in having larger ascomata and ascospores, and a peridium of brown-walled cells. The differences between *Apiospora* and *Appendicospora* are reexamined in the light of the cultural characteristics of the latter.

Key Words—*Apiospora*; *Appendicospora*; *Arthrimum*; palm fungi; systematics.

In a study of the succession of fungi occurring on dead rachides of *Livistona chinensis* (Jacq.) R. Br. (Arecaceae), we identified a species of *Appendicospora* K. D. Hyde with ascospores that are much larger than those of the type of this monotypic genus. *Appendicospora hongkongensis* sp. nov. is described and illustrated based on a specimen collected on a rachis of *L. chinensis* in Hong Kong. This species is similar to *Appendicospora coryphae* (Rehm) K. D. Hyde (Hyde, 1995) in having ascospores with basal bifurcate appendages. Asci are also clavate, early deliquescing and lack an apical apparatus. In *A. hongkongensis*, the ascomata (226–270 μm in diam, 108–128 μm high) and the ascospores (17–24 \times 5–8 μm) are larger than those in *A. coryphae*, and the peridium comprises brown-walled, as compared to hyaline cells. A synopsis of these differences is provided in Table 1.

Appendicospora was introduced to accommodate *Apiosporella coryphae* Rehm, which differed from typical *Apiospora* species in having ascospores provided with basal bifurcate appendages. In the type species, *Apiospora montagnei* Sacc., the ascomata are immersed, darkened, globose and occur in linear rows, the peridium consists of elongate angular brown cells, and the ascospores are 1–2-seriate and lack appendages. The anamorphs of several *Apiospora* species have been shown to be species of *Arthrimum* Kunze and these readily form in association with the teleomorphs on the host tissues and in cultures (Samuels et al., 1981; Müller, 1992; Hyde, personal observation). The anamorph of *Appendicospora*, however, has not been seen in association with the teleomorph on the host and has not been produced in culture.

The cultural characteristics of the two genera also differ. In *A. hongkongensis*, no *Arthrimum* anamorph is produced and the colonies are slow growing (2 cm diam in 3 mo on PDA at 25°C), dirty white in colour, powdery, with an outer brown radiating margin, brown from below, producing clusters of rounded light brown chlamydo-spores on the surface; in *Apiospora setosa* Samuels,

McKenzie & D. E. Buchanan, colonies are relatively fast growing (4–5 cm in 1 wk on PDA at 18–20°C), very pale pink, felty, with conidia forming in white hyphal tufts after 2 wk (Samuels et al., 1981). Other *Apiospora* species produce similar cultural characteristics and an *Arthrimum* anamorph (Taylor, personal observations). This further exemplifies the differences between these genera.

The taxonomic position of *Appendicospora*, which may have taxonomic relationships with *Apiospora*, is uncertain. *Apiospora* has been placed at one time or another in the outdated Dothideales (bitunicate ascomycetes; Theissen and Sydow, 1915), then the Amphisphaeriaceae (Müller and von Arx, 1962), or Hyponec-triaceae (Barr, 1976) and more recently in the Lasiosphaeriaceae (Barr, 1990). It will probably eventually require placement in a new family.

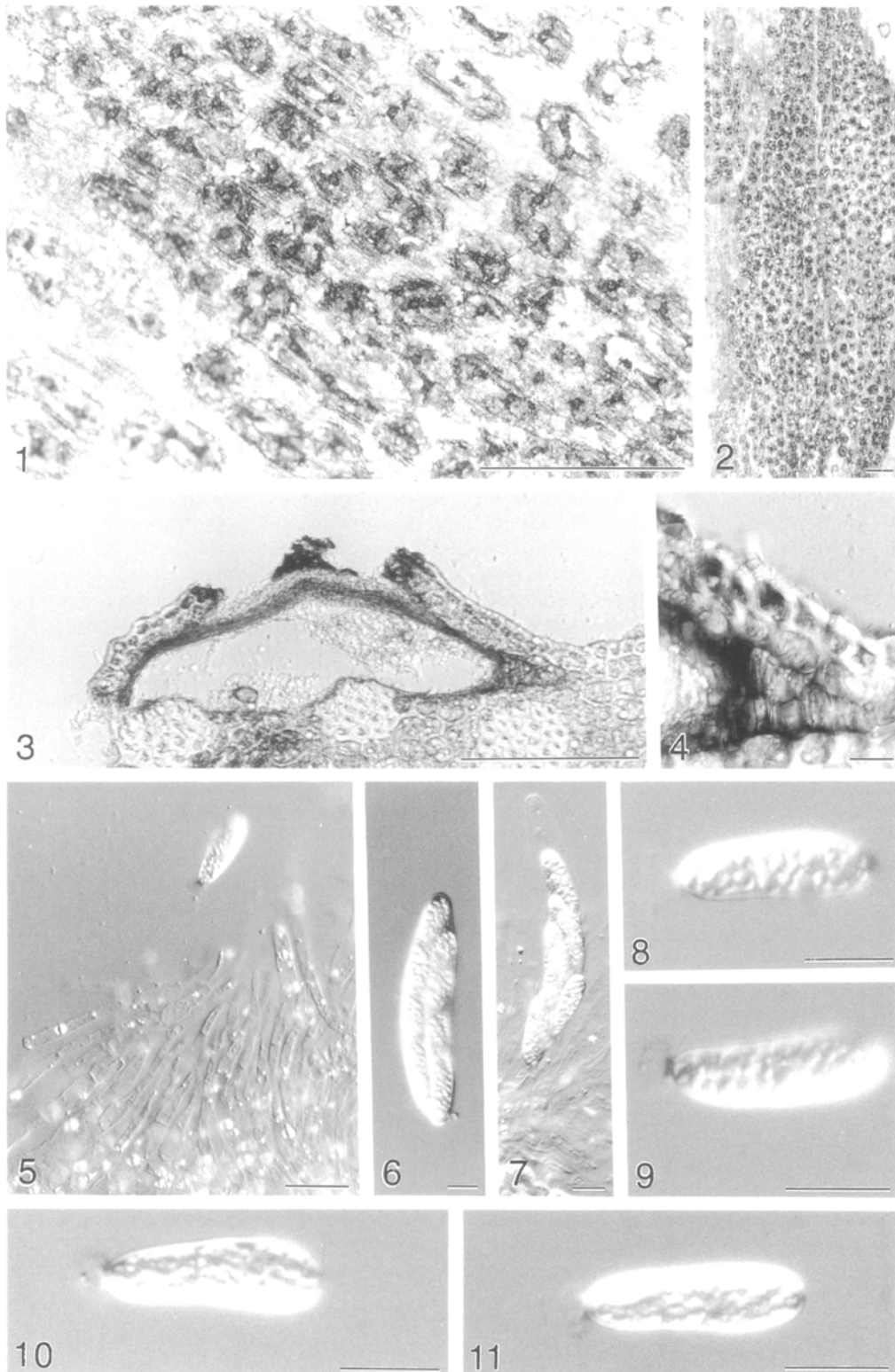
Materials and Methods

The fungi examined in this study were collected from dead fronds of *L. chinensis* in Hong Kong. Dead fronds were cut, placed in plastic bags and brought back to the laboratory for microscopic examination. The dead fronds were first incubated in moist boxes at 25°C for 3–5 d. Single ascospore isolations were made from ascospore suspensions placed onto PDA. Germinated ascospores were transferred onto new agar plates and grown at 25°C. Ascomatal sections were prepared using a freezing microtome at –20°C. All measurements given refer to water mounts.

Taxonomy

Appendicospora hongkongensis Yanna, K. D. Hyde & J. Fröhlich, sp. nov. Figs. 1–11

Pseudostromata usque ad 45 mm longa, 3 mm crassa, nigra. Ascomata immersa 226–270 μm diam, 108–128 μm alta, lenticularia, ad basim applanata, unilocularia, periphysata, ostiolata. Peridium 5–8 μm crassum,



Figs. 1–11. Interference contrast micrographs of *Appendicospora hongkongensis*.

1, 2. Fungal colonies on host surface. 3. Section of an ascoma. Note the brown peridium and the upper layer of host cells filled with brown fungal hyphae. 4. Cells at periphery of ascoma. 5. Paraphyses. 6, 7. Asci. 8–11. Ascospores with basal bifurcate appendages. Scale bars: 1, 2 = 1 mm; 3 = 100 μm ; 4–11 = 10 μm .

Table 1. Differences between *Appendicospora coryphae* and *A. hongkongensis*.

	<i>A. coryphae</i>	<i>A. hongkongensis</i>
Size of colony on natural substrate (mm)	up to 10	up to 25
Diameter of ascomata (μm)	140–180	226–270
Height of ascomata (μm)	40–60	108–128
Size of asci (μm)	36–45 \times 12–14	70–80 \times 16–24
Size of ascospore (μm)	10–15 \times 5–8	17–24 \times 5–8
Colour of peridium	hyaline	brown
Host	<i>Corypha elata</i>	<i>Livistona chinensis</i>

brunneum. Asci unitunicati, 70–80 \times 16–24 μm , 8-spore, clavati, breviter pedicellati. Ascosporeae 17–24 \times 5–8 μm , 2–3-seriatae, clavatae, hyalinae, inaequaliter 2-cellulares, cellula inferna parva, basi appendiculatae; appendiculae bifurcatae.

Holotypus: Hong Kong, forest behind the campus of The University of Hong Kong, on dead rachis of *L. chinensis*, 14 Sep. 1996, Yanna (HKU(M) 5301, dried material and living culture).

Ascomata clustered under slightly raised blackened regions, which are irregular in outline, up to 45 \times 3 mm, individually light or dark brown in the middle and black at the periphery; in section 226–270 μm in diam, 108–128 μm high, lenticular, epapillate, with a flattened base and a central periphysate ostiole. Pseudostroma comprises a layer of host epidermal cells and cuticle containing brown fungal hyphae covering numerous ascomata. A region of host cells filled with hyphae is situated at the periphery. Peridium 5–8 μm wide, comprising several layers of flattened brown-walled cells. Paraphyses up to 4 μm wide at the base, hypha-like, septate, hyaline, numerous, tapering distally, not branching, not embedded in a gelatinous matrix. Asci 70–80 \times 16–24 μm (mean = 77.2 \times 19.6, $n=5$), 8-spored, clavate, short pedicellate or lacking, thin-walled, unitunicate, lacking an apical apparatus, deliquescing early and releasing spores. Ascospores 17–24 \times 5–8 μm (mean = 21.53 \times 7.36 μm , $n=16$), 2–3-seriate, clavate, hyaline, unequally 2-celled, lower cell smaller, not constricted at the septum, with a basal bifurcate appendage.

Colonies on PDA slow growing, attaining a diameter of 2 cm in 3 mo at 25°C, dirty white in colour, texture powdery, with an outer radiating margin, not staining the media; reverse brown. Surface comprising erumpent clusters of rounded, light brown chlamydo-spores 11–12 \times 11 μm (mean = 11.2 \times 11 μm , $n=10$), not form-

ing conidia or ascomata.

Other material examined: Hong Kong, Hong Kong Island, Pokfulam, forest behind the campus of The University of Hong Kong, on dead rachis of *L. chinensis*, 14 Sep. 1996, Yanna (HKU(M) 5302); *ibid.* 19 Oct. 1996 (HKU(M) 5303); *ibid.* 13 Dec. 1996 (HKU(M) 5304); Pokfulam Country Park, Victoria Peak, on dead petiole of *L. chinensis*, Aug. 1993, J. Fröhl. (HKU(M) JF183); *ibid.* Jul. 1994 (HKU(M) JF419); *ibid.* Jun. 1994, J. E. Taylor and K. D. Hyde (HKU(M) JP408).

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