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Spadicoides cordanoides sp. nov., a new dematiaceous hyphomycete from submerged wood in Australia, with a taxonomic review of the genus

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Abstract: *Spadicoides cordanoides* sp. nov. occurring on submerged wood in north Queensland, Australia is described and illustrated. It differs from all previously described *Spadicoides* species in having predominately obpyriform, versicolored, two celled conidia, in which the apical cell is verruculose. The current generic concept of the genus is briefly discussed and the 21 accepted species are illustrated. A key to *Spadicoides* species is provided.

Key Words: litter fungi, systematics, taxonomy, ultrastructure

INTRODUCTION

The genus *Spadicoides* S. Hughes (1958), as typified by *S. bina* (Corda) S. Hughes, has similar conidial ontogeny to the closely related genus *Diplococcium* Grove (1912). In both genera conidiogenous cells are terminal or intercalary, and polytretic with several unthickened conidiogenous loci (pores). Conidial ontogeny is holoblastic and the conidiogenous pores are easily visible after conidial secession. The conidia are also acropleurogenous, dry, dematiaceous, usually thick-walled, 0–5 septate and may often have thick, black or dark brown bands at the septa. The branching of conidiophores and the catenation of conidia, in combination, have been used to separate the two genera. In *Diplococcium,* conidia develop in short or long, branched or unbranched chains and conidiophores are generally branched, whereas in *Spadicoides* conidia are produced singly and conidiophores are normally unbranched (Ellis, 1971, Holubová-Jechová, 1982; Hughes, 1958). Some species previously described in *Spadicoides,* however, do form conidia in chains (Ellis, 1972; Hughes, 1958; Pirozynski, 1972; Wang and Sutton, 1982), while others produce solitary conidia on branched conidiophores (Bhat, 1985; Subramanian and Vittal, 1974).

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The separation of these two genera on the basis of conidial catenation has been questioned by Wang and Sutton (1982). In reviewing the relative importance of branched conidiophores versus catenation of conidia, Sinclair et al. (1985) proposed that at the generic level, the catenation of conidia is taxonomically more important than the branching of the conidiophores. They emended the generic description of *Spadicoides* to include species that produce solitary conidia from conidiophores that may be simple or branched. Catenation of conidia was the sole diagnostic character separating *Diplococcium* from *Spadicoides.* This emended generic concept has been accepted by several authors in their descriptions of new *Spadicoides* species e.g. *S. subramanianii* Bhat (1985), *S. cuneata* Kuthubutheen & Nawawi (1991a), *S. obclavata* Kuthubutheen & Nawawi (1991a), *S. goanensis* Bhat & Kendrick (1993), *S. macrocontinua* Matsushima (1993), and *S. macroobovata* Matsushima (1995), all of which produced solitary conidia.

Thirty species have previously been included in *Spadicoides,* of which 21 are accepted in the genus following the generic emendation of Sinclair et al. (1985) (TABLE I). One species was transferred to *Hemicorynespora* M. B. Ellis and 6 were placed in the genus *Diplococcium* (TABLE II). The identity of *S. tropicalis* remains doubtful (Kuthubutheen and Nawawi, 1991a). *Spadicoides calcarata* (Mercado-Sierra) Mel'nik (1992), however, based on the unique shape of its conidia which consist of a reniform to ellipsoidal, dark brown basal cell terminating in a hyaline spur-like apical cell (Kuthubutheen and Nawawi, 1991b), does not belong in *Spadicoides.* It should therefore be retained as the type species of *Polytretophora* Mercado-Sierra (1983). *Spadicoides goanensis* should probably be excluded from the genus because it has partly verrucose conidiophores with only one, intercalary, monotretic conidiogenous cell on each conidiophore and 3-pseudoseptate, large (23–40 × 14–22 μm) conidia.

TAXONOMY

In our study of tropical freshwater fungi, we collected a dematiaceous hyphomycete on submerged wood from a stream in north Queensland, Australia, which possessed morphological characters and conidioge-

TABLE I. List of currently accepted *Spadicoides* species

S. afzeliae M. B. Ellis, Mycol. Pap. 103: 42 (1965).

S. aggregata Subram. & Vittal, Proc. Ind. Acad. Sci. B. 80: 219 (1974).

S. americana C. J. K. Wang, Mem. New York Bot. Gard. 28: 222 (1976).

S. atra (Corda) Hughes, as "*atrum*", Canad. J. Bot. 36: 805 (1958).
- ≡ *Psilonia atra* Corda, Icon. Fung. 6: 9 (1854).
- ≡ *Acladium atrum* (Corda) Bon., Handb. allgem. Mykol., Stuttgart. p. 87 (1851).
- ≡ *Catenularia atra* (Corda) Sacc., Syll. Fung. 4: 304 (1886).
- = *Virgaria indivisa* Sacc., Michelia 2: 560 (1882).
- ≡ *Diplococcium indivisum* (Sacc.) Hughes, Canad. J. Bot. 31: 634 (1953).
- = *Haplaria ellisii* Cooke, Grevillea 17: 69 (1889).
- = *Trichosporium populneum* Lamb. & Fautr., Rev. Mycol. 18: 145 (1896).

S. bina (Corda) Hughes, as "*binum*", Canad. J. Bot. 36: 806 (1958).
- ≡ *Helminthosporium binum* Corda, Icon. Fung. 6: 9 (1854).
- ≡ *Scolecotrichum binum* (Corda) Sacc., Syll. Fung. 4: 349 (1886).
- = *Virgaria uniseptata* Berk. & Curt., Grevillea 3: 145 (1875).
- ≡ *Cladotrichum uniseptatum* (Berk. & Curt.) Sacc., Syll. Fung. 4: 373 (1886).
- ≡ *Diplococcium uniseptatum* (Berk. & Curt.) Hughes, Canad. J. Bot. 31: 634 (1953).
- = *Cladosporium aterrimum* Ell. & Ev., Proc. Acad. Nat. Sci. Philad. p. 378 (1894).
- = *Cladotrichum simplex* Sacc., Ann. Mycol. 4: 278 (1906).
- = *Cladotrichum tapesiae* Sacc., Ann. Mycol. 6: 565 (1908).

S. canadensis Hughes, Fungi Canadenses No 9 (1973).

S. carpatica Holubová-Jechová, Folia Geobot. Phytotax. 17: 305 (1982).

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S. cubensis Holubová-Jechová, Ceska Mykol. 37: 17–18 (1983).

S. cuneata Kuthubutheen & Nawawi, Mycol. Res. 95: 164 (1991).

S. curvularioides Sutton & Hodges, Nova Hedwigia 29: 604 (1978).

S. klotzschii Hughes, Fungi Canadenses No 8 (1973).

S. macrocontinua Matsushima, Matsushima Mycological Memoirs 7: 67 (1993).

S. macroobovata Matsushima, Matsushima Mycological Memoirs 8: 36 (1995).

S. obclavata Kuthubutheen & Nawawi, Mycol. Res. 95: 166 (1991).

TABLE I. List of currently accepted *Spadicoides* species (Cont.)

S. obovata (Cooke & Ellis) Hughes, as "*obovatum*", Canad. J. Bot. 36: 806 (1958).
- ≡ *Acrothecium obovatum* Cooke & Ellis, Grevillea 5: 50 (1876).
- ≡ *Scolicotrichum obovatum* (Cooke & Ellis) Hughes, Canad. J. Bot. 31: 634 (1953).

S. penatium Holubová-Jechová, Folia Geobot. Phytotax. 17: 304 (1982).

S. sphaerospermum McKenzie, New Zealand J. Bot. 20: 246 (1982).

S. subramanianii Bhat, Proc. Indian Acad. Sci. (Pl. Sci.) 94: 269 (1985).

S. verrucosa V. Rao & de Hoog, Stud. Mycol. 28: 42 (1986).

S. xylogena (A. L. Smith) Hughes, as "*xylogenum*", Canad. J. Bot. 36: 806 (1958).
- ≡ *Spondylocladium xylogenum* A. L. Smith, Trans. Brit. Mycol. Soc. 3: 37 (1908).

nesis suggesting species of *Spadicoides*. It clearly differed from other species in the genus by producing predominately 2-celled, obpyriform, verrucose conidia on unbranched conidiophores. The combination of these characters is unique and warrants the description of a new species.

Spadicoides cordanoides Goh et K. D. Hyde, sp. nov. FIGS. 1–25

Coloniae effusae, atro-brunneae, pilosae. Mycelium partim superficiales, partim in substrato immersum, ex hyphis pallide brunneis, septatis, laevis, ramosis, 2.5–4 μm crassis compositum. Conidiophora macronematosa, mononematosa, singulariter erecta, non ramosa, recta vel leniter flexuosa, crassitunicata, laevia, multiseptata, ad apicem tumida, 100–400 μm longa, ad basim 4–4.5 μm lata, ad apicem 5.5–6 μm lata, brunnea, apicem versus pallidiora. Cellulae conidiogenae polytreticae, in conidiophoris incorporatae, terminales et intercalares. Conidia 1(-2)-septata, 13–20 × 9–12.5 μm, acropleurogena, solitaria, versicoloria, crassitunicata, plerumque bicellularia et obpyriformia (raro tricellularia et limoniformia), cellula basilaris subhyalina vel pallide brunnea, laevia, cellula apicalis maiore, modice vel atro brunnea vel fere nigra, verrucosa.

HOLOTYPUS. AUSTRALIA. QUEENSLAND: Mt. Lewis, in ligno submerso rivuli, April 1995, *T. M. Hyde et K. D. Hyde* (BRIP 23201).

Etymology. referring to the predominately two-celled conidia resembling the conidia of *Cordana* species.

Colonies on decaying wood effuse, dark brown, hairy

TABLE II. Rejected or dubious *Spadicoides* species.

Diplococcium asperum Pirozynski, Mycol. Pap. 129: 14 (1972).

≡ *Spadicoides aspera* (Pirozyn.) Wang & Sutton, Mycologia 74: 498 (1982).

Despite the unbranched nature of the conidiophores, this species is retained in the genus *Diplococcium* since its conidia are produced in short chains (Sinclair et al., 1985).

Diplococcium catenulatum (Wang & Sutton) Sinclair, Eicker & Bhat, Trans. Brit. Mycol. Soc. 85: 736 (1985).

≡ *Spadicoides catenulata* Wang & Sutton, Mycologia 74: 498 (1982).

Main reason of transfer: As the species epithet suggests, the conidia are catenate.

Diplococcium clavariarum (Desm.) Holubová-Jechová (1982), Folia Geobot. Phytotax 17: 324 (1982).

≡ *Helminthosporium clavariarum* Desm., Ann. Sci. nat. Sér. 2. 2: 70 (1834).

≡ *Spadicoides clavariarum* (Desm.) S. Hughes, Canad. J. Bot. 36: 806 (1958).

Main reason of transfer: Conidia produced in short branched chains.

Diplococcium constrictum (Wang & Sutton) Sinclair, Eicker & Bhat, Trans. Brit. Mycol. Soc. 85: 736 (1985).

≡ *Spadicoides constricta* Wang & Sutton, Mycologia 74: 498 (1982).

Main reason of transfer: Suggestive conidial catenation based on observation of new conidia being produced from basal cells of primary conidia.

Diplococcium grovei (M. B. Ellis) Sinclair, Eicker & Bhat, Trans. Brit. Mycol. Soc. 85: 736 (1985).

≡ *Spadicoides grovei* M. B. Ellis, Mycol. Pap. 93: 12 (1963).

Main reason of transfer: Conidial catenation is obvious, as illustrated by Wang (1976).

Diplococcium stoveri (M. B. Ellis) Sinclair, Eicker & Bhat, Trans. Brit. Mycol. Soc. 85: 736 (1985).

≡ *Spadicoides stoveri* M. B. Ellis, Mycol. Pap. 131: 22 (1972).

Main reason of transfer: Conidia occasionally produced in short chains.

Hemicorynespora mitrata (Penz. & Sacc.) M. B. Ellis, Mycol. Pap. 131: 21 (1972).

≡ *Cladotrichum mitratum* Penz. & Sacc., Malpighia, 15: 246 (1901).

≡ *Spadicoides mitrata* (Penz. & Sacc.) S. Hughes, Canad. J. Bot. 36: 806 (1958).

Main reason of transfer: Conidiogenous cells annellidic.

Polytretophora calcarata Mercado-Sierra, Acta Bot. Cubana 16: 1 (1983).

≡ *Spadicoides calcarata* (Mercado-Sierra) Mel'nik, Novosti System. Nizsh. Rastenii 28: 68 (1992).

= *Parahelminthosporium malabaricum* Subramanian & Bhat, Kavaka 15: 61 (1989).

Although in *Polytretophora* Mercado-Sierra and *Spadicoides* conidiophores and conidiogenesis are similar, the fungus is separated from *Spadicoides* evidently based on the unique shape of its conidia which consist of a brown to dark brown, reniform to ellipsoidal basal cell with a conspicuously thickened basal hilum; and terminating in a hyaline, spur-like, apical cell. (Kuthubutheen and Nawawi, 1991b).

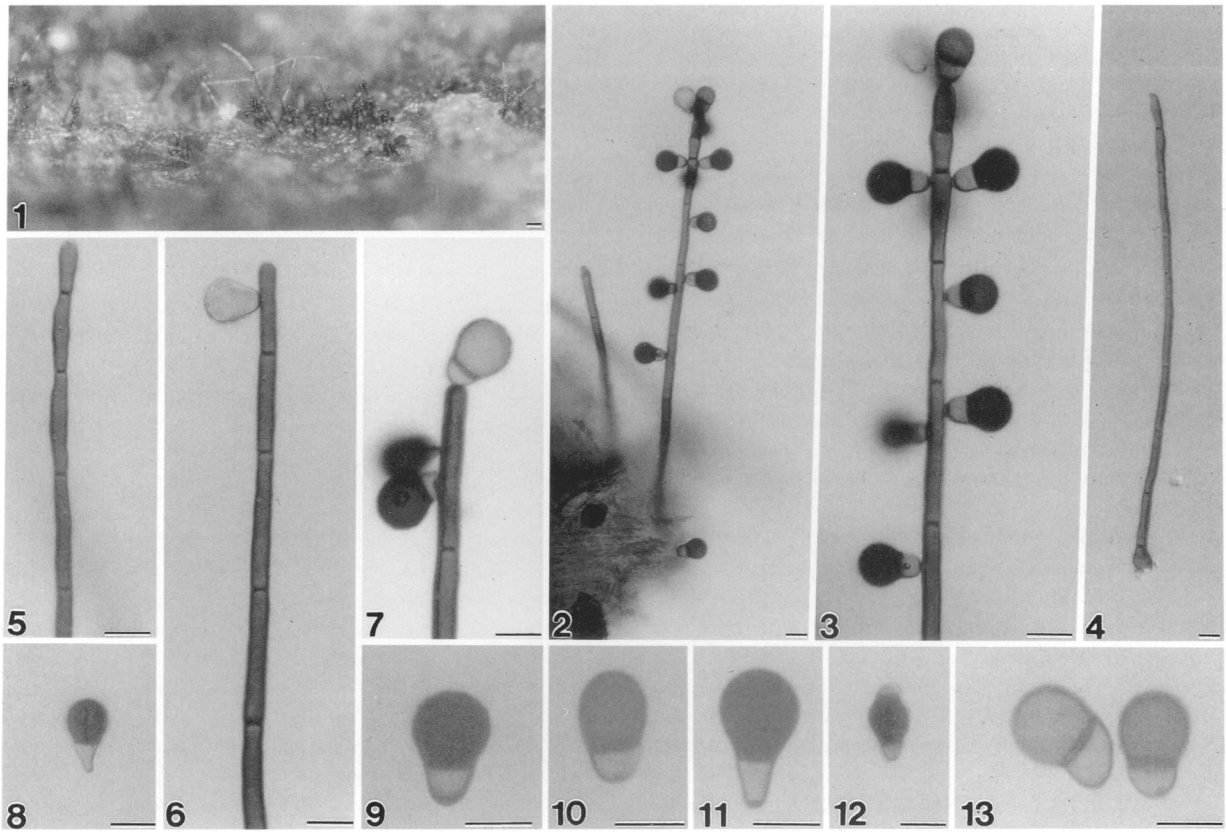
Spadicoides goanensis Bhat & Kendrick, Mycotaxon 49: 66 (1993).

This is not a species of *Spadicoides* because of (i) the presence of only one, monotretic conidiogenous cell on each conidiophore, (ii) the production of pseudoseptate, large conidia. We do not know of any genus that can accommodate this combination of characters.

Spadicoides tropicalis Castañeda & G. Arnold, Rev. Jardin Bot. Nacion. 6: 51 (1985).

Although the conidiogenous loci in this species are described as polytretic, the loci illustrated in the original article appear to be denticulate. Moreover, the elongation of the conidiophores was described and illustrated to be proliferating percurrently, a character which has never been observed in other species of *Spadicoides*. Kuthubutheen and Nawawi (1991a) suggested that this species might be synonymous with *S. curvularioides* because both have 4-celled, versicolored, cymbiform conidia. However, *S. curvularioides* has polytretic conidiogenous loci and verruculose conidial wall ornamentation. *Spadicoides tropicalis* might well be a species of *Nakataea* Hara or *Pyriculariopsis* M. B. Ellis, both of which conidia are almost always 3-septate and versicolored (Ellis, 1971).

(FIGS. 1, 14). *Mycelium* partly superficial, partly immersed in the substratum, composed of pale brown, septate, smooth, branched hyphae 2.5–4 μm wide. *Conidiophores* macronematous, mononematous, erect, solitary, not branched, straight or slightly flexuous, thick-walled, smooth, multiseptate, 100–400 μm long, more or less uniform in width (4–4.5 μm) but swollen or nodulose at the apex (5.5–6 μm diam) and slightly bulbose at the base (ca 9–12 μm diam), mid greyish brown to dark olivaceous brown, paler towards the apex or otherwise uniform in color (FIG. 2–7, 15–16, 18–20). *Conidiogenous cells* polytretic (up to 5 pores per cell), integrated, terminal and intercalary (FIGS. 5–7, 16, 21–23). *Conidia* 1(-2) septate, darkly banded at the septa, 13–20 × 9–12.5 μm, acropleurogenous, solitary, versicolored, thick-walled, predominately 2-celled and obpyriform or ovoid; basal cell smooth, subhyaline to pale brown, 4–6.5 long, 5–6 μm wide, more or less obtrapezoidal or subcylindrical with a small round hilum (ca 0.5 μm diam) at the end; apical cell enlarged, subglobose, 8–12 μm long, 9–12.5 μm wide, mid to dark brown or almost black, verrucose; sometimes the conidia possessing an extra terminal cell similar to the



FIGS. 1–13. *Spadicoides cordanoides,* light micrographs. 1. A portion of the colonies on submerged decaying wood. 2, 3. Conidiophores with conidia. 4. A whole conidiophore showing the apex and the bulbose base. 5. Portion of conidiophore showing the nodulose apex. Note the conidiogenous pores. 6, 7. Upper portions of conidiophores showing production of conidia. Figs. 8–13. Conidia. Scale bars: Fig. 1 = 100 μm, 2–13 = 10 μm.

basal cell and thus becoming 3-celled and limoniform (FIGS. 8–13, 17, 18–22, 24, 25).

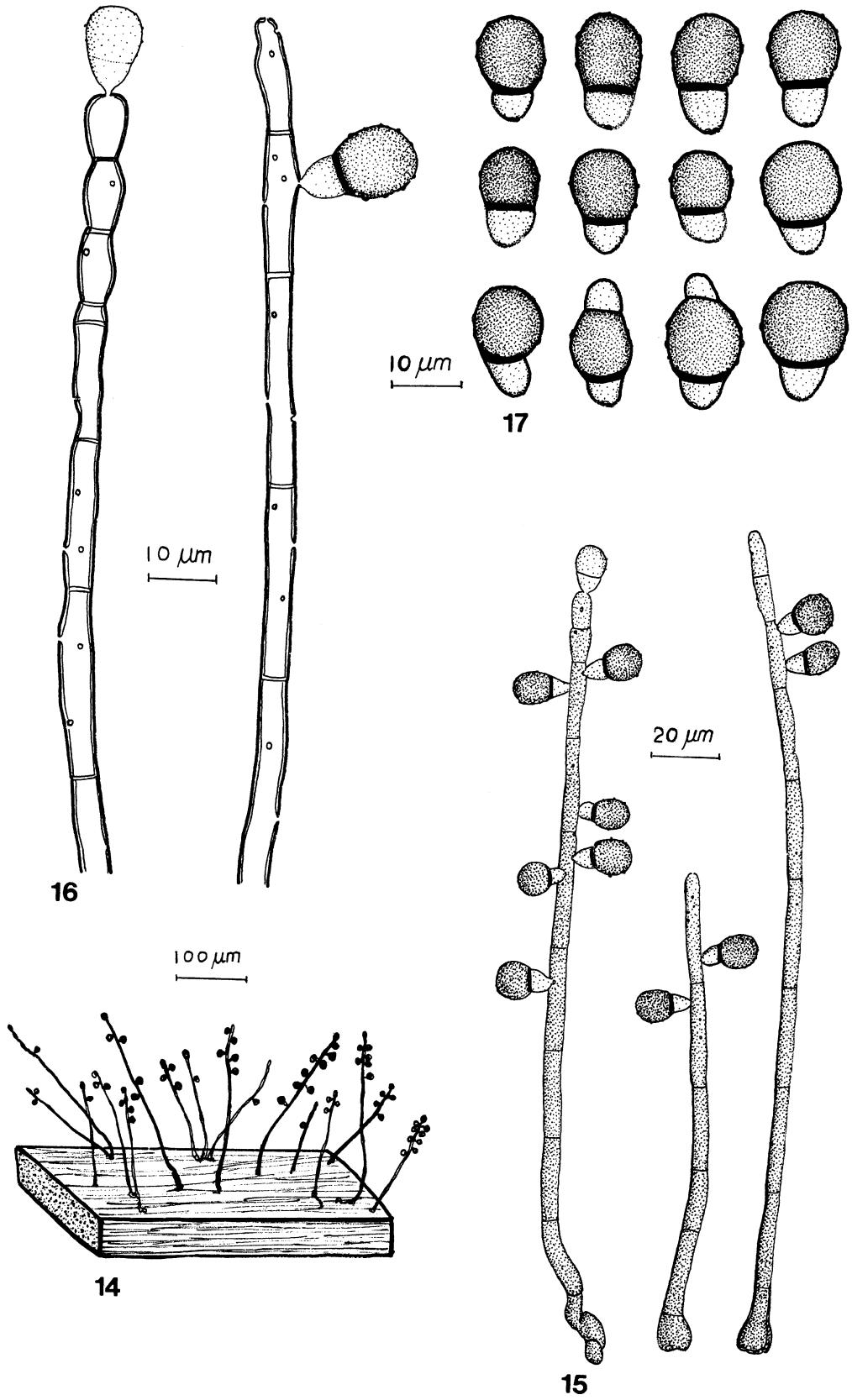
DISCUSSION

Twenty one species of *Spadicoides* (TABLE I) can now be accepted according to the emended generic concept of Sinclair et al. (1985), whilst the 10 rejected or dubious species are given in TABLE II. A synopsis of the morphological characters of these currently accepted species is presented in TABLE III, and their conidia are illustrated in FIGS. 26–46. All of these species have unbranched conidiophores except *S. aggregata* and *S. subramanianii.* The conidiophores of all *Spadicoides* species are generally erect and may be uniform in width, or their apices may be swollen or tapered. The conidiophore apices in *S. curvularioides,* however, are slightly geniculate. The conidia of these 21 *Spadicoides* species are mostly ellipsoidal, obovoidal, or cylindrical, but may also be cuneate, fusiform, cymbiform, doliiform, or obpyriform. The conidia are mostly thick-walled, with thick, dark bands at the septa and versicolored, although some are thin-walled, or may be concolorous. Six species produce verruculose conidia, viz., *S. afzeliae* (FIG. 44), *S. aggregata* (FIG. 29), *S. carpatica* (FIG. 35), *S. cordanoides* (FIG. 30), *S. curvularioides* (FIG. 43), and *S. verrucosa* (FIG. 28). Only 5 species produce nonseptate conidia, viz., *S. atra* (FIG. 27), *S. cuneata* (FIG. 26), *S. macrocontinua* (FIG. 45), *S. sphaerospermum* (FIG. 46), and *S. verrucosa* (FIG. 41), while most form 1–3 euseptate conidia, although in *S. afzeliae* (FIG. 44) and *S. xylogena* (FIG. 41), the conidia may be up to 5-euseptate. *Spadicoides* species mostly occur on decaying wood or dead leaves, however, three species occur on foliicolous or lignicolous fungi, viz., *S. verrucosa* on dead fungi on bamboo leaf litter, *S. carpatica* and *S. xylogena* on living carpophores of resupinate hymenomycetes (Corticiaceae, Basidiomycotina).

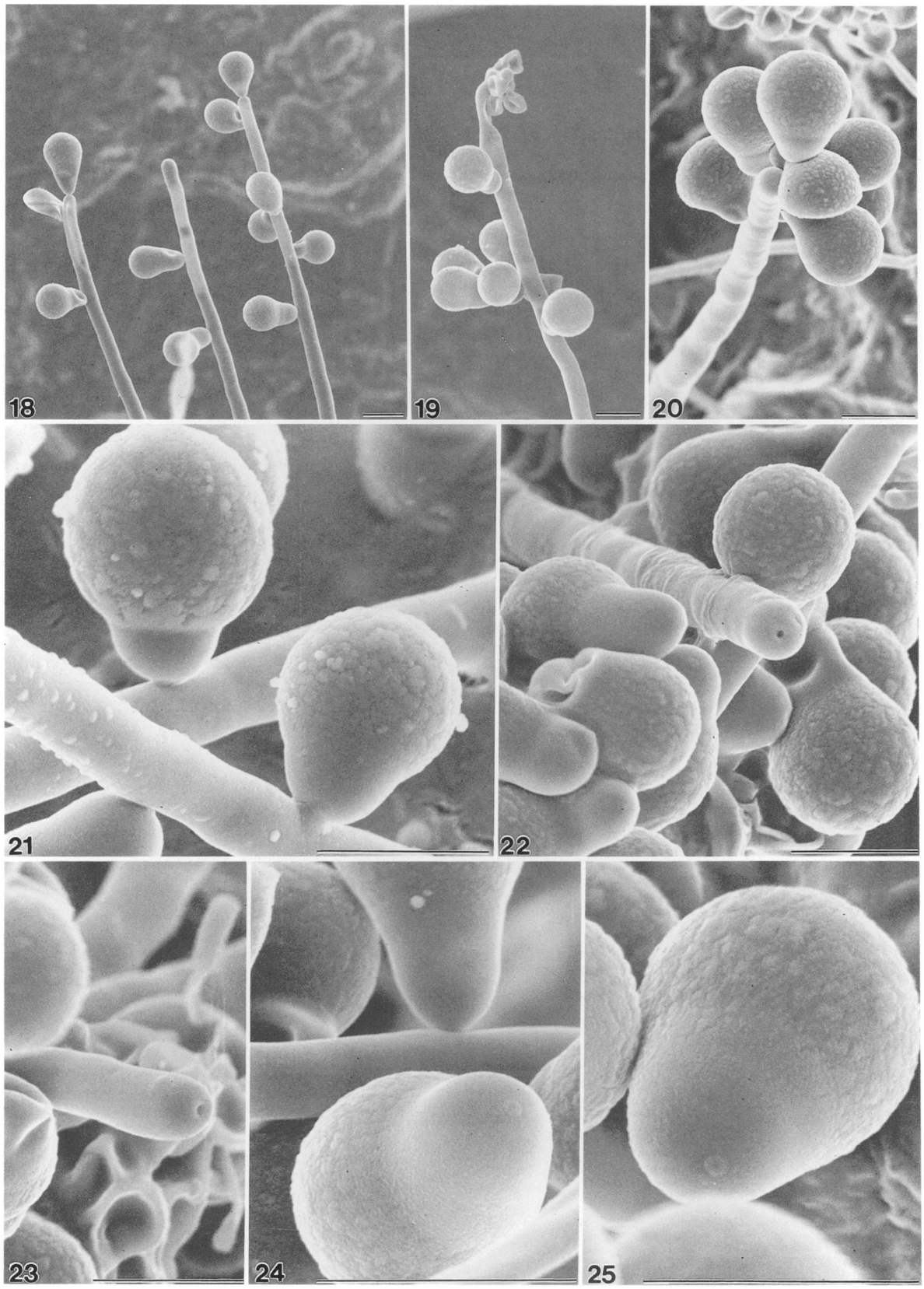
Keys to species of *Spadicoides* have been given by Wang (1976), Holubová-Jechová (1982), and Kuthubutheen and Nawawi (1991a), based mainly on conidial morphology. Following is an expanded key that includes additional species and newly discovered diagnostic characters.

KEY TO SPECIES OF *SPADICOIDES*

1. Conidia nonseptate 2
1. Conidia septate 6
2. Conidia cuneate, with germ pores, 9–12 × 6–8 μm ..... *S. cuneata*
2. Conidia globose, obovoid or ellipsoid, lacking germ pores 3
3. Conidia globose, (4.5-)6–7.5 μm diam ..... *S. sphaerospermum*
3. Conidia obovoid or ellipsoidal 4
4. Conidia 13.5–22 × 7–9 μm ..... *S. macrocontinua*
4. Conidia not exceeding 6.5 × 4 μm 5
5. Conidia pale brown, thin-walled, verruculose, 4–5.5 × 2–3 μm; growing on other fungi ..... *S. verrucosa*
5. Conidia dark brown, thick-walled, smooth, 4–6.5 × 3–4 μm; not growing on other fungi ..... *S. atra*
6. Conidia 16–37 × 11–22 μm, obovate ..... *S. macroobovata*
6. Conidia not exceeding 13 Tm wide, obovate or otherwise 7
7. Conidia verruculose 8
7. Conidia smooth 12
8. Conidia predominately 1-septate, usually darkly banded at the septa 9
8. Conidia predominately more than 1-septate, not darkly banded at the septa 11
9. Conidia predominately obpyriform, versicolored, upper cell dark brown to almost black and verruculose, lower cell pale brown and smooth, 13–20 × 9–12.5 μm ..... *S. cordanoides*
9. Conidia ellipsoidal, obovoid or broadly cylindrical, concolorous, verruculose throughout 10
10. Conidiophores branched, verruculose at the upper part, densely aggregated into sporodochia; conidia 12–16 × 6–8 μm; occurring on dead leaves ..... *S. aggregata*
10. Conidiophores unbranched, smooth, solitary or in small groups; conidia 12.5–17 × 7.5–11 μm; overgrowing living carpophores of resupinate hymenomycetes ..... *S. carpatica*
11. Conidia cymbiform, consistently 3-septate, versicolored, 22–33.5 × 6–7.5 μm; upper part of conidiophores slightly geniculate ..... *S. curvularioides*
11. Conidia slightly curved, ellipsoid, with 2–5 septa, constricted, concolorous, striate, 19–30 × 6–8.5 μm; upper part of conidiophores nodulose ..... *S. afzeliae*
12. Conidia predominately 3-septate, 8.5–13 μm wide; overgrowing living carpophores of resupinate hymenomycetes ..... *S. xylogena*
12. Conidia predominately 1–2-septate, not exceeding 8.5 μm wide; occurring on decaying wood or dead leaves 13
13. Conidia predominately 1-septate 14
13. Conidia predominately 2-septate 17
14. Conidia fusiform, terminal cells apiculate, 13.5–19 × 6.5–7.5 μm ..... *S. penatium*
14. Conidia ellipsoidal, obovate, or cylindrical, terminal cells rounded 15
15. Conidia versicolored, apical cells wider and darker than basal cells, 8–10 × 4–6.5 μm ..... *S. cubensis*
15. Conidia concolorous 16
16. Conidiophores 3–4.5 μm wide; conidia slender, 7–12 × 3.5–5 μm ..... *S. bina*
16. Conidiophores 2.8–3.6 μm wide; conidia broader, 9–12.5 × 5–6.5 μm ..... *S. canadensis*
17. Conidia doliiform or cylindrical; rounded at both ends, apical and basal cells about the same width; conidiophores uniform in width 18
17. Conidia clavate or obclavate; rounded either at the base or at the apex, apical and basal cells not of the same width; conidiophores tapered toward the apices 19
18. Conidiophores branched; mature conidia doliiform, versicolored, 16–20 × 6.5–8.5 μm, end cells frequently collapsing ..... *S. subramanianii*
18. Conidiophores unbranched; conidia cylindrical, concolorous, 10–16.5 × 4–5 μm ..... *S. americana*
19. Conidia obclavate, rounded at the base, distal cells narrower and lighter than the basal cells, 16–22 × 4–6 μm; occurring on dead leaves ..... *S. obclavata*
19. Conidia clavate or obovate, rounded at the apex, distal cells wider and sometimes darker than the others; occurring on decaying wood 20
20. Conidia predominately obovate, sometimes clavate, 12.5–16 × 6–8.5 μm ..... *S. obovata*
20. Conidia predominately clavate, sometimes obovate to ellipsoidal, 10–13 × 4–5.5 μm ..... *S. klotzschii*



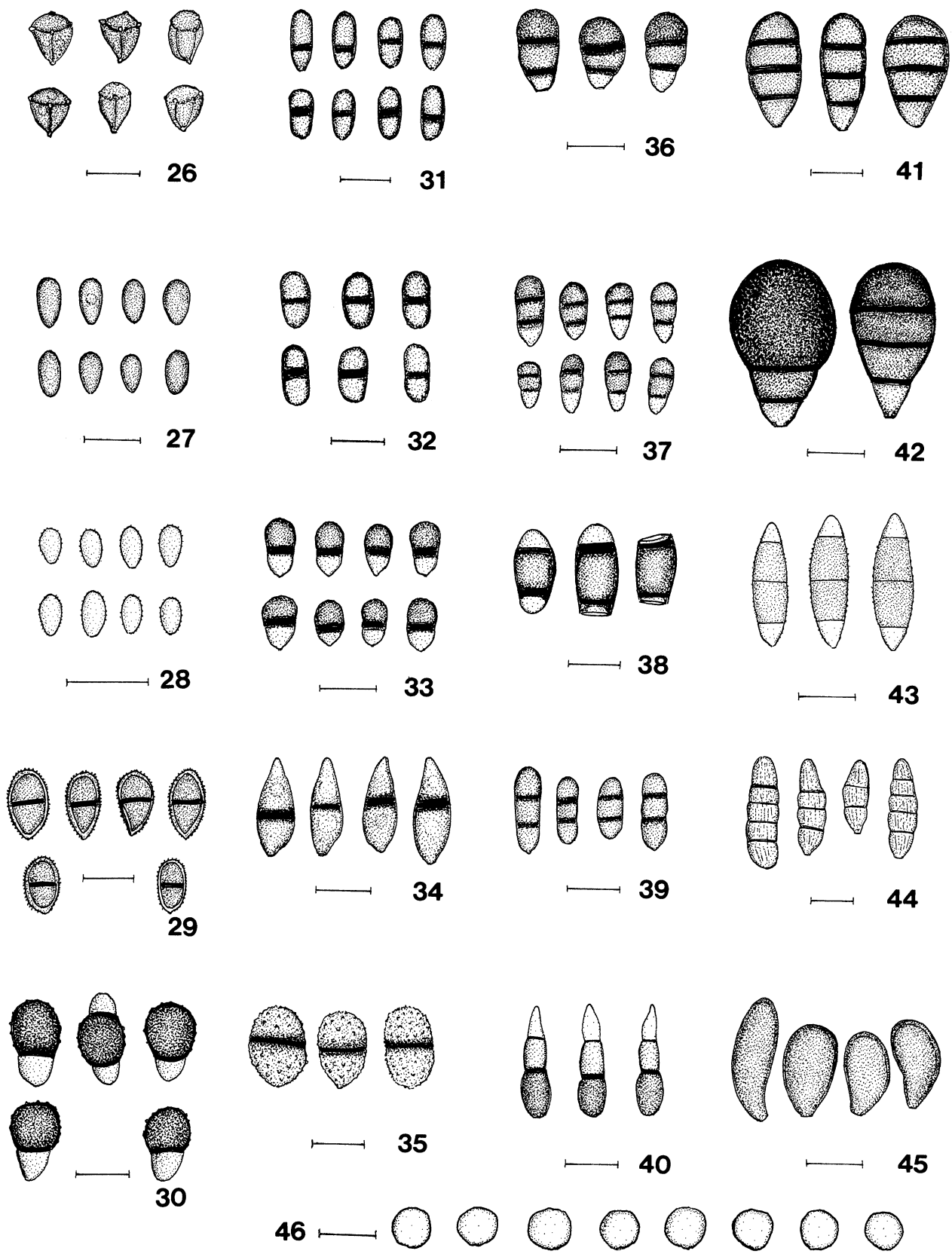
FIGS. 14–17. *Spadicoides cordanoides,* diagramatic representation. 14. Conidiophores on submerged, decaying wood. 15. Conidiophores with conidia. 16. Conidiophores showing the nodulose apices and polytretic conidiogenous cells. Young conidia are blown out from the conidiogenous pores. 17. Conidia. Scale bars: Fig. 14 = 100 µm, 15 = 20 µm, 16–17 = 10 µm.



FIGS. 18–25. *Spadicoides cordanoides,* scanning electron micrographs. 18–20. Conidiophores with conidia attached. 21. Portion of conidiophores showing conidia being blown out from conidiogenous loci. 22, 23. Apical portions of conidiophores showing conidiogenous pores. 24, 25. Close-up of conidia showing the unthickened hilum at the base. Note the verrucose apical cells and the smooth basal cells. Scale bars: Figs. 18–20 = 10 μm, 24–25 = 5 μm.

TABLE III. Synopsis of *Spadicoides* species

Species	Conidiophore branching/apex	Conidia					Habitat
		Septate/ banded	Verru- cose	Color	Size (μm)	Shape	
S. afzeliae	No/swollen	2–5/No	Yes	con-	19–30 × 6–8.5	ellipsoidal	leaves
S. aggregata	Yes/swollen	1/Yes	Yes	con-	12–16 × 6–8	ellipsoidal, obovoid	dead leaves
S. americana	No/uniform	2/Yes	No	con-	10–16.5 × 4–5	cylindrical	dead wood
S. atra	No/swollen	0	No	con-	4–6.5 × 3–4	ellipsoidal, obovoid	dead wood
S. bina	No/swollen	(0–)1(–2)/Yes	No	con-	7–12 × 3.5–5	ellipsoidal, cylindrical	dead wood
S. canadensis	No/swollen	1/Yes	No	con-	9–12.5 × 5–6.5	cylindrical	dead wood
S. carpatica	No/swollen	1/Yes	Yes	con-	12.5–17 × 7.5–11	ellipsoidal, cylindrical	living resupinate hymenomycetes
S. cordanoides	No/swollen	1(–2)/Yes	Yes	versi-	13–20 × 9–12.5	obpyriform, limoniform	dead wood
S. cubensis	No/uniform	(0–)1(–2)/Yes	No	versi-	8–10 × 4–6.5	ellipsoidal, obovoid	dead wood
S. cuneata	No/swollen	0	No	con-	9–12 × 6–8	cuneate, obconical	dead wood
S. curvularioides	No/geniculate	3/No	Yes	versi-	22–33.5 × 6–7.5	cymbiform	dead leaves
S. klotzschii	No/tapered	2/Yes	No	versi-	10–13 × 4–5.5	clavate, ellipsoidal	dead wood
S. macrocontinua	No/swollen	0	No	con-	13.5–22 × 7–9	obovate	dead palm petiole
S. macroobovata	No/tapered	(1–)2(–3)/Yes	No	versi-	16–37 × 11–22	obovate	dead palm petiole
S. obclavata	No/tapered	2/Yes	No	versi-	16–22 × 4–6	obclavate	dead leaves
S. obovata	No/tapered	2/Yes	No	versi-	12.5–16 × 6–8.5	obovate, clavate	dead wood
S. penatium	No/swollen	1/Yes	No	con-	13.5–19 × 6.5–7.5	fusiform	dead wood
S. sphaerospermum	No/uniform	0	No	con-	(4.5–)6–7.5 diam.	globose	dead leaves, sheaths & stems
S. subramanianii	Yes/uniform	2/Yes	No	versi-	16–20 × 6.5–8.5	doliiform, ellipsoidal	dead wood
S. verrucosa	No/uniform	0	Yes	con-	4–5.5 × 2–3	ellipsoidal	old fungi on dead bamboo leaves
S. xylogena	No/tapered	(2–)3(–5)/Yes	No	con-	17–26 × 8.5–13	broadly ellipsoidal, obovate	living resupinate hymenomycetes



FIGS. 26–46. Conidia of *Spadicoides* species. 26. *S. cuneata*. 27. *S. atra*. 28. *S. verrucosa*. 29. *S. aggregata*. 30. *S. cordanoides*. 31. *S. bina*. 32. *S. canadensis*. 33. *S. cubensis*. 34. *S. penatium*. 35. *S. carpatica*. 36. *S. obovata*. 37. *S. klotzschii*. 38. *S. subramanianii*. 39. *S. americana*. 40. *S. obclavata*. 41. *S. xylogena*. 42. *S. macroobovata*. 43. *S. curvularioides*. 44. *S. afzeliae*. 45. *S. macrocontinua*. 46. *S. sphaerospermum*. Scale bars: 10 μm.

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