Phytopathogenic micromycetes from India (II)

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Phyllactinia gmelinae sp. nov., *Pseudocercospora eupatorii-formosani* sp. nov., and *P. paradoxa* sp. nov. are described, the new combinations *Pseudocercospora agarwalii*, *P. punjabensis*, *P. tecomicola*, and *Stenella weberi* are introduced, and the morphology and taxonomy of *Pseudocercospora elaeodendri*, *P. eupatorii*, and *P. tecomae-heterophyllae* are discussed. A collection of a hyperparasitic hyphomycete on uredosori on *Leucaena glauca*, very morphologically similar to *Ramularia maculicola*, is briefly described and discussed, *Cladosporium subtile* Rabenh. is reduced to synonymy with *Cladosporium oxysporum* Berk. & Curt., and thirteen new Indian collections of phytopathogenic micromycetes are recorded.

Keywords: *Phyllactinia gmelinae, Pseudocercospora eupatorii-formosani, P. paradoxa,* new combinations, new records, micromycetes, India, taxonomy.

Braun & Bagyanarayana (1996) recorded various phytopathogenic micromycetes from India. In 1997, G. Bagyanarayana collected additional specimens from Andhra Pradesh (A.P.), Goa, Karnataka, Kerala, and Tamil Nadu (T.N.). Some of the specimens collected by G. Bagyanarayana or examined in connection with the present investigation turned out to belong to undescribed or invalidly published species. Some other specimens represent new fungal records for India in general or some Indian states in particular, or are recorded on new host species (symbols: !! = new to India, ! = new to a particular Indian state, + = new host). Host range and distribution in India have been checked using Bilgrami & al. (1991). Duplicates of all collections are deposited at HAL and in G. Bagyanarayana's private herbarium (Hyderabad, India).

Terminology, style of descriptions, and drawings follow Braun (1987) for *Phyllactinia gmelinae* and Braun (1995) for hyphomycetes.

1. ***Phyllactinia gmelinae*** U. Braun & Bagyan. sp. nov. – Fig. 1.

≡ *Phyllactinia suffulta* var. *gmelinae* B. V. Patil, Curr. Sci. 30: 156 (1961), nom. inval. (ICBN, Art. 36).

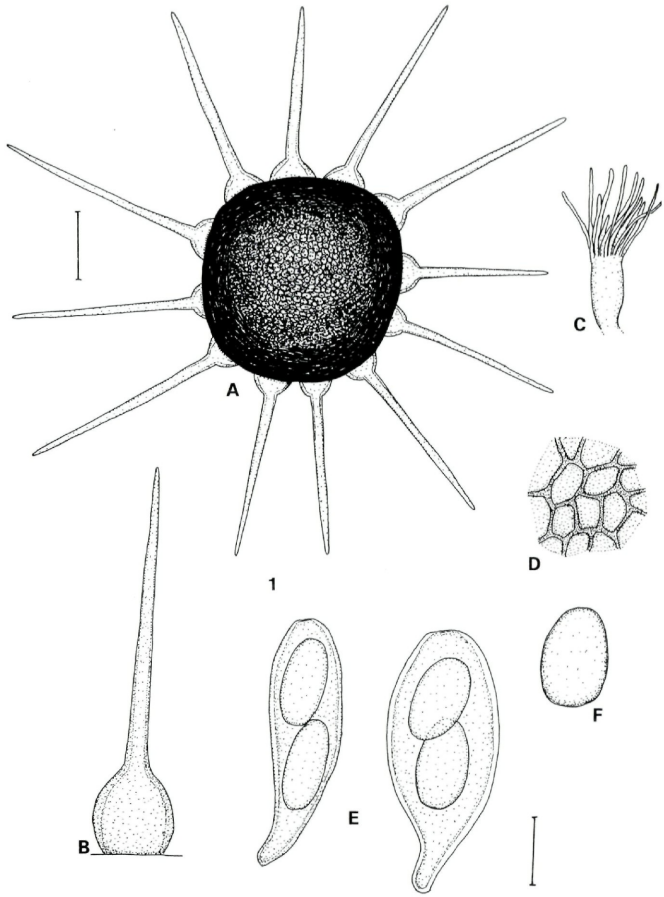

Fig. 1. *Phyllactinia gmelinae* sp. nov. – A. cleistothecium. – B. appendage. – C. penicillate cell. – D. peridial cells. – E. asci. – F. ascospore. – Bar = 100 µm (cleistothecium), 20 µm (asci and other structures). – U. Braun del.

Mycelium hypophyllum, superficiale, maculiforme vel effusum, griseo-album, evanescens. Hyphae hyalinae, septatae, ramosae, leves, 2–7 µm latae. Conidiophora ex hyphis repentibus lateraliter oriunda, erecta, subcylindrico-filiformes, 80–140 × 7–9 µm, septata, hyalina. – Conidia solitaria, late ellipsoideo-ovoidea,

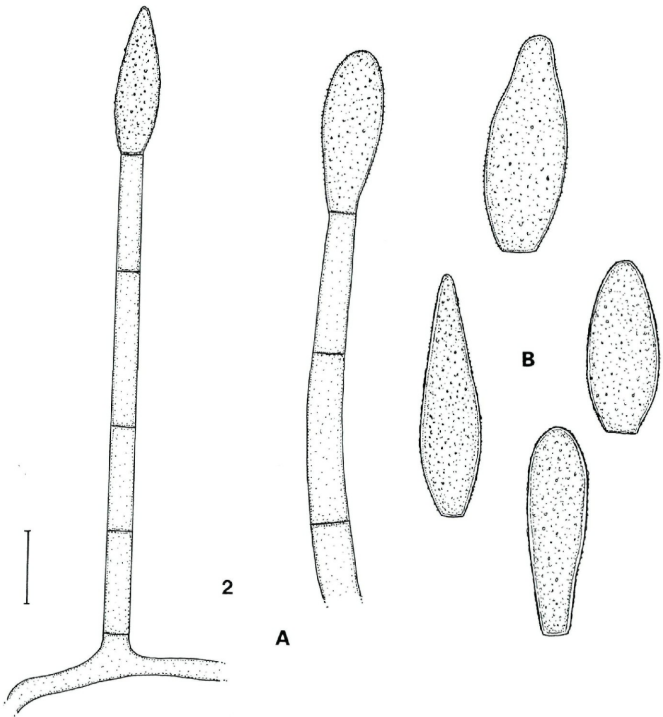

Fig. 2. *Phyllactinia gmelinae* sp. nov. – A. conidiophores. – B. conidia. – Bar = 20 µm. – U. Braun del.

obovoidea, interdum obclavata, 30–50 × 15–20 µm, hyalina, verruculosa. Cleistothecia hypophylla, dispersa, 250–340 µm diam., subglobosa, nigra. Appendices 5–12, aequatoriales, horizontaliter expansae, diametro cleistotheciis 1–1.25 × longgiores, hyalinae, ad basim bulbosae, 35–65 µm diam., ad apicem acutae vel subacutae. Cellulae penicillatae numerosae, ad 60 µm longae, ad basim subcylindricae vel doliiformes, ad apicem plurifiliformes, 1.5–5 µm latae. Cellulae peridii angulares vel irregulares, 8–30 µm diam. – Asci numerosi, saepe 20–40, late subcylindrici vel saccati, stipitati, 70–100 × 25–45 µm, 2-spori. Ascosporae late ellipsoideae-ovoideae, 25–40 × 15–25 µm, hyalinae.

Holotypus. – On *Gmelina arborea* Roxb. (Verbenaceae), India, Sinhgad (Pune), M. S., 1972, V. G. Rao (AMH 2026).

Paratypus. – on *G. arborea*, India, Sinhgad (Pune), M. S., 1963, P. G. Patwardhan (AMH 1429).

Additional material examined (anamorph only). – On *G. arborea*, India, Sri Tirumala Hills, Chittoor, A. P., April 1997, Bagyanarayana (HAL and herb. Bagyanarayana).

Mycelium hypophyllous, superficial, forming thin patches or effuse, greyish white, evanescent. – Hyphae hyaline, septate, branched, smooth, 2–7 µm wide. – Conidiophores arising from creeping hyphae, lateral, erect, subcylindric-filiform, 80–140 × 7–9 µm, septate, hyaline. – Conidia solitary, broadly ellipsoid-ovoid, obovoid, occasionally obclavate, 30–50 × 15–20 µm, hyaline, verruculose. – Cleistothecia hypophyllous, scattered, 250–340 µm diam., subglobose, black. – Appendages equatorial, 5–12, about 1–1.25 × as long as the cleistothecial diam., hyaline, bulbose base of the appendages 35–65 µm diam., apex acute or subacute. – Apical penicillate cells abundant, up to 60 µm long, basal cell subcylindric-doliiform, apical filiform segments 1.5–5 µm wide. – Peridial cells polygonal to irregularly shaped, 8–30 µm diam. – Asci numerous, usually 20–40 per ascocarp, broadly subcylindric to saccate, stalked, 70–100 × 25–45 µm. Ascospores two per ascus, large, broadly ellipsoid-ovoid, 25–40 × 15–25 µm, hyaline.

This powdery mildew on *Gmelina arborea* is a new species of the genus *Phyllactinia*, distinguished from *Phyllactinia guttata* s.lat. by having large cleistothecia with uniformly short appendages, about as long as the cleistothecial diameter, and verruculose, usually non-clavate conidia. Furthermore, *P. gmelinae* differs from all species of the genus *Phyllactinia* in the conidial shape and ornamentation.

2. ***Pseudocercospora elaeodendri*** (G. P. Agarwal & Hasija) Deighton, Mycol. Pap. 140: 143 (1976). – Fig. 3.

≡ *Cercospora elaeodendri* G. P. Agarwal & Hasija, Proc. Natl. Acad. Sci. India, Sect. B, 31(3): 355 (1961).

Leaf spots amphigenous, subcircular to somewhat angular-irregular, 1–4 mm diam., brown, later pale greyish white to white, with narrow dark brown border, often somewhat raised. – Caespituli amphigenous, punctiform, dark brown to blackish, scattered to loosely grouped. – Mycelium internal. – Stromata small, almost lacking, to well-developed, up to 50 µm diam., substomatal, composed of swollen hyphal cells, brown, 3–7 µm diam. – Conidiophores in small to moderately large fascicles, loose to dense, arising from stromata, through stomata, erect, straight, subcylindric to somewhat geniculate-sinuous, usually simple, 5–25 × 3–8 µm, 0–1(–2)-septate, pale olivaceous to olivaceous brown, smooth, conidiogenous cells integrated, terminal or conidiophores reduced to a single conidiogenous cell, conidial scars inconspicuous, loci sometimes subdenticulate. – Conidia solitary, cylindrical-obclavate (-sub-

acicular), 15–70 × 2.5–5 µm, 2–7-septate, pale olivaceous, smooth, apex obtuse, occasionally subacute, base obconically truncate, sometimes truncate, hilum unthickened and not darkened.

Material examined. – On *Elaeodendron glaucum*, Sri Tirumala Hills, Chittoor (A.P.), Apr. 1997, Bagyanarayana; on *Elaeodendron glaucum*, India, Jabalpur, near M.M.V. Bldg., 7 Dec. 1959, Agarwal 6, holotype (IMI 79006).

According to the original description of *C. elaeodendri* (Agarwal & Hasija, 1961), the conidiophores may be up to 35 µm long, with conidia up to 80 µm in length and up to 11 septa.

Patil & Thirumalachar (1968) introduced *Cercospora elaeodendri* ("*elaeodendronis*") sp. nov., described on *Elaeodendron roxburgii* from Maharashtra, India. Based on the original description, the latter species seems to be quite distinct from *P. elaeodendri* and well-characterized by having long, slender conidiophores, 20–51 × 3–4 µm, with 2–6 septa, and subhyaline conidia. The generic affinity of *C. elaeodendri* Patil & Thirum. is, however, unclear since type material could not be traced and examined.

A second collection, deposited under the name *C. elaeodendri* G. P. Agarwal & Hasija (IMI 259299) has been studied, but this fungus is not conspecific with the latter species and belongs to an undescribed, unusual species of *Pseudocercospora*. The conidiogenous cells are terminal as well as intercalary and conspicuously denticulate. The walls of mature, older conidia are somewhat thickened, and one or two oblique or longitudinal septa are occasionally formed. Intercalary conidiogenous cells, denticulate loci, somewhat thickened conidial walls, and oblique-longitudinal septa are not uncommon in *Pseudocercospora*, but the combination of these features in a single species is very unusual. Nevertheless, an exclusion of this taxon from *Pseudocercospora* and the introduction of a new genus for it are not justified, and it is, therefore, described as a new species of *Pseudocercospora* below.

Pseudocercospora paradoxa U. Braun & Bagyan. sp. nov. – Fig. 4.

Maculae nullae. Coloniae hypophyllae, subpunctiformes vel tenuiter effusae, atro-brunneae vel subnigrae, fuliginosae. Mycelium primarium immersum. Stromata nulla vel minuta, substomatalia, brunnea. Mycelium secundarium externum, superficiale. Hyphae per stoma emergentiae, ramosae, septatae, 1.5–5 µm latae, leves, primo subhyalinae, flavidae vel pallide olivaceae, tenuitunicatae, deinde crassitunicatae et brunneae. Conidiophora solitaria, ex hyphis secundariis lateraliter, interdum terminaliter oriunda, interdum per stoma emergentia, solitaria vel pauca, laxe aggregata, erecta vel decumbentia, 10–200 × 3–7 µm, simplicia vel ramosa, recta, subcylindrica vel geniculata-sinuosa, omnino pluriseptata, leves, primo tenuitunicata, pallide flavo-olivacea, deinde crassitunicata et modice brunnea vel atro-brunnea. Cellulae conidiogenae integratae, terminales vel intercalares,

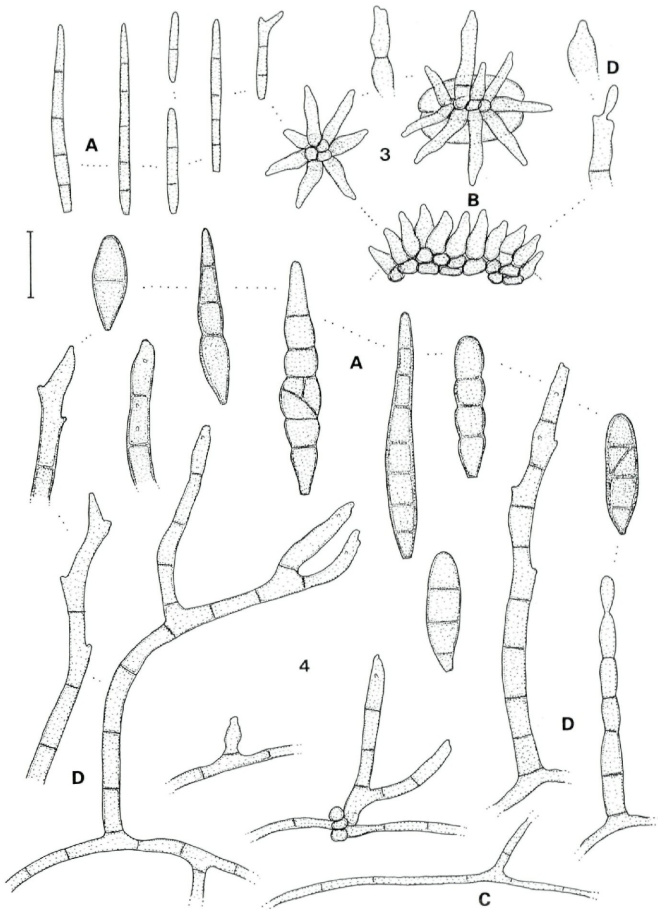

Fig. 3–4. – 3. *Pseudocercospora elaeodendri*. – 4. *P. paradoxa* sp. nov. – A. conidia. – B. conidiophore fascicles. – C. secondary hyphae. – D. conidiophores. – Bar = 20 µm. – U. Braun del.

10–55 × 3–6 µm, sympodiales, saepe denticulatae, cicatrices conidiales inconspicuae vel minute denticulatae, ad apicem conice truncatae, autem non incrassatae et non fuscatae, interdum leniter refractivae. Conidia solitaria, obclavata, subcylindrica, obovoidea, late ellipsoidea-fusiformia, 15–55 × 4–8 µm, transverse 1–8-septata,

interdum longitudinaliter vel oblique 1–2-septata, non-constricta vel conspicue constricta, leves, interdum subtiliter verruculosa, primo tenuitunicata et pallide olivacea, deinde crassitunicata et pallide brunnea vel modice atro-brunnea, apice obtusa, saepe late rotundata, basi obconice truncata, saepe denticuloida, autem non-incrassata, non-fuscata, interdum leniter refractiva.

Holotypus. – On *Elaeodendron* sp. (Celastraceae), India, Gorakhpur (U.P.), 19 May 1981, A. N. Rai, KR 530 (IMI 259299).

Leaf spots lacking. – Colonies hypophyllous, subpunctiform to effuse, thin, dark brown to blackish, sooty. – Primary mycelium internal. – Stromata lacking or small, substomatal, composed of a few brownish swollen hyphal cells. – Secondary mycelium external, superficial, hyphae emerging through stomata, branched, septate, 1.5–5 µm wide, smooth, at first subhyaline, yellowish to pale olivaceous, thin-walled, but walls later somewhat thickened, turning brown. – Conidiophores solitary, arising from creeping secondary hyphae, lateral, occasionally terminal, sometimes emerging through stomata, solitary or in small, loose groups, erect to decumbent, 10–200 × 3–7 µm, simple or branched, straight, subcylindric to geniculate-sinuous, pluriseptate throughout, smooth, at first thin-walled, pale yellowish-olivaceous, later thick-walled and medium to medium dark brown. – Conidiogenous cells integrated, terminal as well as intercalary, 10–55 × 3–6 µm, proliferation sympodial, often denticulate, conidial scars inconspicuous, unthickened, not darkened, sometimes somewhat refractive, but often visible as minute conically truncate denticles. – Conidia solitary, shape variable, obclavate, subcylindric, obovoid, broadly ellipsoid-fusiform, 15–55 × 4–8 µm, with 1–8 transverse septa, occasionally with 1–2 longitudinal or oblique septa, non-constricted to conspicuously constricted, smooth, occasionally faintly rough, at first thin-walled and pale olivaceous, later thick-walled and pale to medium dark brown, apex obtuse, often broadly rounded, base obconically truncate, often denticle-like, but hilum neither thickened nor darkened, occasionally somewhat refractive.

3. ***Pseudocercospora eupatorii-formosani***

The taxonomy of *Pseudocercospora* spp. on *Eupatorium* spp. is complicated and confusing. Braun & Castañeda (1991) examined type material of *Cercospora eupatorii* Peck, compared it with a collection on *Eupatorium* sp. from Cuba, and re-allocated this species to *Pseudocercospora*. Later, Bagyanarayana et al. (1991), referred an Indian collection on *Eupatorium* sp. to *P. eupatorii*. The type material of *C. eupatorii* has been re-examined and compared with some collections of *Pseudocercospora* spp. on *Eupatorium* spp. from Bru-

nei (Sivapalan 8042), Cuba and India. It turned out that at least two taxa are involved, viz. *Pseudocercospora eupatorii* s.str., confined to North America, and *P. eupatorii-formosani* (Sawada) Yen ex Y.-L. Guo & W.-H. Hsieh (nom. illeg.). *Cercospora eupatorii-formosani* Sawada (1943: 169) is an invalid name, published without Latin diagnosis. Yen (in Yen & Lim, 1980: 175), introduced the invalid combination *Pseudocercospora eupatorii-formosani*, based on Sawada's invalid name. Hsieh & Goh (1990: 84) used Yen's illegitimate combination, although *C. eupatorii-formosani* was correctly marked as invalid name. Guo & Hsieh (1995: 67) tried to validate this name, introduced the confusing construction "*P. eupatorii-formosani* (Sawada ex Guo & Hsieh) Yen ex Guo & Hsieh com. nov.", added a Latin description, and cited nine Chinese collections on various hosts, but failed to designate a type (ICBN, Art. 37.4). Guo et al. (1998: 86) cited the name *Pseudocercospora eupatorii-formosani* Yen ex Guo & Hsieh. Hence, the following validation is necessary:

Pseudocercospora eupatorii-formosani U. Braun & Bagyan. sp. nov. – Fig. 5.

≡ *Cercospora eupatorii-formosani* Sawada, Taiwan Agric. Res. Inst. Rept. 86: 169 (1943), nom. inval.! (ICBN, Art. 36.1).

≡ *Pseudocercospora eupatorii-formosani* (Sawada) J.-M. Yen, Gdn's Bull. Singapore 33: 175 (1980), comb. inval.!

≡ *Pseudocercospora eupatorii-formosani* (Sawada) J.-M. Yen ex Y.-L. Guo & W.-H. Hsieh, Mycosystema Monographicum Series, No. 2: 67 (1995), nom. inval.! (ICBN, Art. 37.4).

Latin description. – Guo & Hsieh (1995: 67).

Holotypus. – on *Eupatorium formosanum* Hayata (Asteraceae), Taiwan, Taipei, 19 Oct. 1919, K. Sawada (TAI, Plant Pathology Herbarium, Dept. of Plant Pathology and Entomology).

Leaf spots amphigenous, subcircular, angular-irregular, often vein-limited, 2–20 mm diam., sometimes confluent and larger, greyish green, brown to almost blackish, later paler, greyish brown to dingy grey, margin indefinite or dark. – Caespituli amphigenous, usually hypophyllous, not very conspicuous. – Primary mycelium internal. – Hyphae branched, septate, subhyaline to pale olivaceous, 1–2 µm wide. – Stromata lacking or small to moderately wide, 10–50 µm diam., olivaceous to dark brown. – Secondary mycelium lacking to well-developed. – Secondary hyphae superficial, creeping, arising from internal hyphae or stromata, sparsely branched, septate, 1–2.5 µm diam., pale olivaceous to olivaceous brown. – Primary conidiophores in small to moderately large, loose to dense fascicles, occasionally solitary, arising from internal hyphae or stromata, erumpent or emerging through

stomata. – Secondary conidiophores solitary, arising from creeping secondary hyphae, lateral or terminal. – Conidiophores straight, subcylindric to geniculate-sinuous, simple, rarely branched, 5–30(–60) × 2–4 µm, 0–1(–2)-septate, subhyaline, pale olivaceous to olivaceous brown, smooth, conidial scars inconspicuous. – Conidia solitary, narrowly subcylindric-obclavate, occasionally acicular, 30–80(–105) × 1.5–4 µm, 1–8(–10)-septate, subhyaline to pale olivaceous, apex subobtuse to subacute, base obconically truncate, sometimes truncate in small, cylindrical conidia, hilum unthickened, not darkened.

Material examined. – On *Eupatorium* sp., Goa, October 1997, Bagyanarayana.

There are collections of *P. eupatorii-formosani* without any secondary mycelium as well as specimens with well-developed superficial hyphae. In other collections, secondary mycelium is sparsely developed. Therefore, the separation of two taxa characterized by the presence or absence of secondary mycelium is difficult and hardly tenable.

The North American *Pseudocercospora eupatorii* on *Eupatorium* spp. is allied to *P. eupatorii-formosani*, but differs in having longer conidia, 20–190 × 2.5–5 µm, and robust, wide conidiophores, 5–30 × 3–8 µm. Furthermore, secondary mycelium is consistently absent.

Pseudocercospora eupatorii (Peck) U. Braun & R. F. Castañeda, Cryptog. Bot. 2/3: 293 (1991) – Fig. 6.

≡ *Cercospora eupatorii* Peck, Ann. Rep. N.Y. State Mus. Nat. Hist. 33: 29 (1880).

Leaf spots amphigenous, subcircular to angular-irregular, 2–5 mm diam., dark, purplish to blackish, often somewhat raised. – Caespituli amphigenous, usually hypophyllous, not very conspicuous, olivaceous brown. – Mycelium internal. – Hyphae branched, septate, pale olivaceous, 1–3 µm diam., forming small intraepidermal, rarely substomatal stromatic hyphal aggregations, 10–30 µm diam., cells brownish, 3–6 µm diam. – Conidiophores in small, loose to moderately dense fascicles, arising from stromata, erumpent through the cuticle, or emerging through stomata, subcylindric to geniculate-sinuous, usually narrowed towards the apex, simple, rarely branched, 5–30 × 3–8 µm, 0–1-septate, olivaceous, olivaceous brown to medium brown, smooth, proliferation sympodial, occasionally percurrent, conidial scars inconspicuous, neither thickened nor darkened, but occasionally somewhat refractive, in front view visible as minute circles. – Conidia solitary, narrowly obclavate-subcylindric, filiform-fusoid, 20–190 × 2.5–5 µm, 1–14-septate,

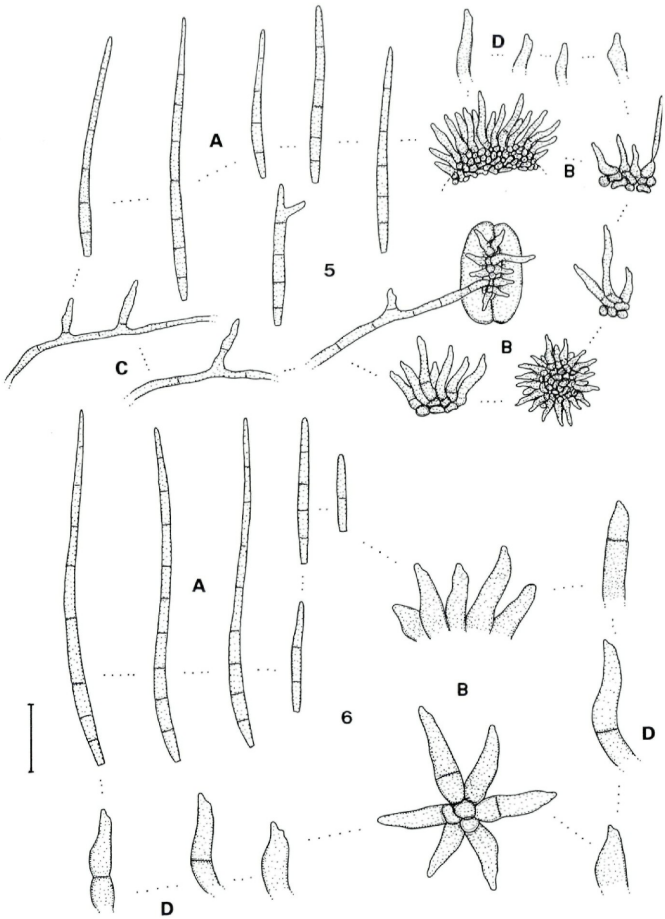

Fig. 5–6. – 5. *Pseudocercospora eupatorii-formosani* sp. nov. – 6. *P. eupatorii*. – A. conidia. – B. conidiophore fascicles. – C. secondary hyphae with secondary conidiophores. – D. conidiophores. – Bar = 20 µm. – U. Braun del.

subhyaline to pale olivaceous, apex obtuse to subacute, base long obconically truncate in longer conidia, sometimes truncate in short, cylindrical conidia, hilum unthickened, not darkened.

Material examined. – On *Eupatorium* sp., USA, N.Y., Long Island, E. S. Miller, holotype (NYS).

4. ***Pseudocercospora punjabensis*** (Syd.) U. Braun & Bagyan. comb. nov. – Fig. 7.

Bas.: *Cercospora punjabensis* Syd., Ann. Crypt. Exot. 2: 268 (1929).

Leaf spots amphigenous, subcircular to angular-irregular, 1–4 mm diam., centre pale, brownish, ochraceous, later greyish to whitish, margin narrow to moderately wide, dark, dull blackish brown to almost black. – Caespituli amphigenous, mostly hypophyllous, not very conspicuous. – Mycelium internal. – Stromata absent or small, substomatal, composed of a few brownish swollen hyphal cells. – Conidiophores in small, loose fascicles, emerging through stomata, erect to decumbent, often branched, straight, subcylindric to somewhat geniculate-sinuous, 40–100 × 3–6.5 µm, pluriseptate, yellowish to medium dark brown, tips paler, pale olivaceous to brownish, smooth, conidiogenous cells integrated, terminal as well as intercalary, 5–40 × 3–5 µm, conidial scars inconspicuous to conspicuously denticulate, denticles small, conically truncate, but wall neither thickened nor darkened, occasionally at most slightly refractive. – Conidia solitary, obclavate, small conidia sometimes cylindrical, 20–90 × 3.5–5 µm, 1–8-septate, subhyaline to yellowish, occasionally pale olivaceous, smooth, apex obtuse, sometimes subacute, base obconically truncate, hilum unthickened, not darkened, occasionally slightly refractive.

Material examined. – On *Vallaris* sp., Dharwad (Karnataka), October 1997, Bagyanarayana.

Type material of this species (on *Vallaris heynei*, India, Punjab, Pathankot, J. H. Mitter 2280, Aug. 1910) is not preserved in Sydow's herbarium at S and could not be traced, but the new Indian collection from Karnataka agrees well with the original description of *C. punjabensis*. Since the conidial scars and hila are neither thickened nor darkened, this species has to be placed in *Pseudocercospora*. *C. punjabensis* has been recorded on *Vallaris heynei* from Jammu, northern India (Ganguly & Pandotra, 1963; Bilgrami & al., 1991). This record is, however, not included in Pandotra's (1997) treatment of fungi from north India. The branched conidiophores are usually formed in erect fascicles. Decumbent conidiophores are, however, hardly separable from creeping secondary hyphae. *Cercospora punjabensis* var. *forsteroniae* Batista & Peres (Batista & al., 1965: 8) has been described from Brazil on *Forsteronia glabrescens*. According to the original description and illustration, this variety is morphologically very similar to *P. punjabensis*, but a re-examination

of type material, deposited in IMUR, is necessary for a final conclusion.

5. ***Pseudocercospora tecomae-heterophyllae*** (J.-M. Yen) Y.-L. Guo & X.-J. Liu, Acta Mycol. Sinica 12: 30 (1993). – Fig. 8.

≡ *Cercospora tecomae-heterophyllae* J.-M. Yen, Rev. Mycol. 31(2): 144 (1966).
≡ *Cercoseptoria tecomae-heterophyllae* (J.-M. Yen) J.-M. Yen, in Yen & Lim, Gdns' Bull. Singapore 33: 153 (1980).

Stromata subglobose, 20–30 µm diam., brown. – Secondary hyphae abundant, superficial. – Conidiophores numerous, in dense fascicles, arising from stromata, or solitary, arising from creeping hyphae, 5–15 × 2–4.5 µm, 0–1-septate, pale olivaceous to olivaceous brown. – Conidia narrowly obclavate-subcylindric, 20–60 × 2–3 µm, 2–6-septate, subhyaline to pale olivaceous, smooth, apex subacute or subobtuse, base obconically truncate.

Material examined. – On *Tecoma undulata*, Tirumala Hills, Chittoor (A. P.), April 1997, Bagyanarayana.

The collection on *Tecoma undulata* is distinguished from the original description of *C. tecomae-heterophyllae* by having smaller stromata and somewhat shorter conidiophores, but agrees well with a description and illustration of this species published by Guo & Hsieh (1995), based on Chinese material on *Tecomaria capensis*. *Cercospora tecomicola* J.-M. Yen (1967), described from Singapore on *Tecoma stans* (≡ *Stenolobium stans*), is closely allied to *P. tecomae-heterophyllae*, but differs in having angular-irregular, vein-limited leaf spots and cylindrical conidia with truncate bases. Since the conidial scars are inconspicuous and the conidial bases are truncate, Yen (in Yen & Lim, 1980), placed this species in the genus *Cercoseptoria*, which is now synonymous with *Pseudocercospora* (Deighton, 1987; Braun, 1988) sect. *Cercoseptoria* (Petr.) U. Braun (1998):

Pseudocercospora tecomicola (J.-M. Yen) U. Braun & Bagyan. comb. nov.

Bas.: *Cercospora tecomicola* J.-M. Yen, Rev. Mycol. 32(3): 198 (1967).
≡ *Cercoseptoria tecomicola* (J.-M. Yen) J.-M. Yen, in Yen & Lim, Gardens' Bull., Singapore 33: 154 (1980).

6. ***Ramularia maculicola*** U. Braun & Rogerson, Mycotaxon 46: 271 (1993). – Fig. 9.

The identity of this fungus is not quite certain, but it is morphologically very close to *Ramularia maculicola*, described from North America on leaf spots caused by *Ramularia inaequalis* (Preuss)

U. Braun (= *R. taraxaci* P. Karst.). The hyphae grow hyperparasitically on uredosori, are colourless, smooth, septate and very narrow, 0.5–2 µm wide, the conidiophores are little differentiated, and the conidia are cylindrical-fusiform, 5–13(–20) × 1–2 µm, 0–1(–2)-septate, hyaline, smooth.

Material examined. – Hyperparasitic on uredosori on *Leucaena glauca*, Sri Tirumala Hills, Chittoor, April 1997, Bagyanarayana (A.P.)!!

Cladosporium subtile Rabenh. (Fungi eur., Ed. nov., Ser. II, Cent. 24, No. 2364, 1876, nom. nud.) was described from India on old pods of *Leucaena glauca* (Calcutta, botanic garden, S. Kurz). Original material, deposited in HAL, has been examined, and it turned out that this species is quite distinct from the present ramularioid fungus. *C. subtile* is characterized by having long conidiophores, up to 200 µm, with some intercalary nodulose swellings, and ellipsoid-ovoid to subcylindric, pigmented, 0–1-septate, almost smooth to verruculose conidia, 6–15(–20) × 4–6 µm. Hence, *C. subtile* has to be reduced to synonymy with *Cladosporium oxysporum* Berk. & Curt.

7. *Stenella weberi* (Chupp) U. Braun & Bagyan. comb. nov. – Fig. 10–11.

Bas.: *Cercospora weberi* Chupp, A monograph of the fungus genus *Cercospora*: 597, Ithaca, New York (1954).

Leaf spots amphigenous, subcircular to angular-irregular, 1–8 mm diam., sometimes confluent, dingy greyish brown to greyish white, margin narrow, dark brown to blackish. – Caespituli hypophyllous, not very conspicuous. – Primary mycelium internal. – Secondary mycelium external, superficial. – Hyphae septate, branched, (0.5–)1–3(–4) µm wide, subhyaline, pale olivaceous to olivaceous brown, verruculose. – Stromata absent, occasionally with a few brown swollen hyphal cells in the substomatal cavities. – Conidiophores in small, loose fascicles, emerging through stomata, or solitary, arising from creeping secondary hyphae, lateral, rarely terminal, erect, straight and subcylindric to slightly geniculate-sinuous, simple, occasionally branched, 10–30 × 2–3 µm, hardly attenuated towards the apex or tips somewhat swollen, up to 5 µm wide, 0–2-septate, pale olivaceous to olivaceous brown, almost smooth to verruculose, conidiogenous cells integrated, terminal, conidial scars apically aggregated, conspicuous, minutely subdenticulate, hardly thickened, but somewhat darkened, 0.5–1 µm diam. – Conidia solitary, ellipsoid-ovoid, subcylindric (– narrowly obclavate), 5–25 × 1.5–2.5 µm, 0–3-septate, subhyaline to pale olivaceous brown, verruculose, apex obtuse, base obconically truncate, hilum hardly thickened, but slightly darkened.

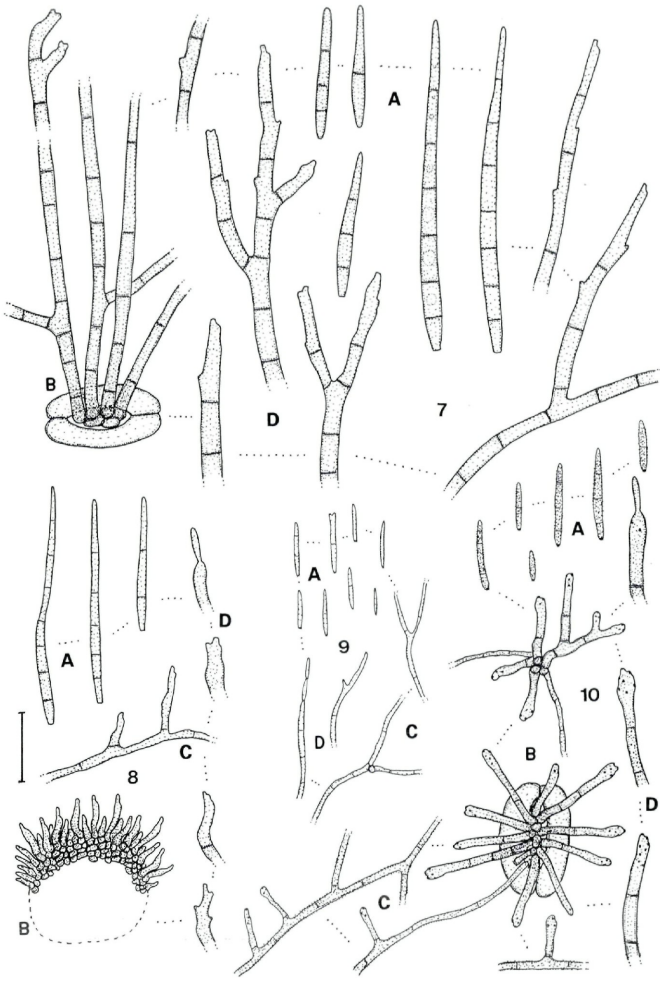

Fig. 7–10. – 7. *Pseudocercospora punjabensis*. – 8. *P. tecomae-heterophyllae*. – 9. *Ramularia maculicola*. – 10. *Stenella weberi* (Indian material). – A. conidia. – B. conidiophore fascicles. – C. secondary hyphae. – D. conidiophores. – Bar = 20 µm. – U. Braun del.

Material examined. – On *Vitex altissima* L. f. (Verbenaceae), India, Sri Tirumala Hills (A.P.), April 1995, Bagyanarayana; on *V. agnus-castus*, USA, Florida, Gainesville, 23 Sept. 1938, Geo. Weber, holotype (CUP 41567); both collections are mixed infections with *Pseudocercospora viticicola* (J.-M. Yen & Lim) J.-M. Yen *emend.* U. Braun.

The Indian collection represents a mixed infection of *Pseudocercospora viticicola* (J.-M. Yen & Lim) J.-M. Yen *emend.* Braun (1998) and *Stenella weberi*. Some colonies of the latter species have been associated with sterile, immersed stromata (immature ascomata of *Mycosphaerella* sp.?). Type material of *C. weberi* has been examined and compared with the Indian specimen. The conidiophores are somewhat longer, 10–50(–80) × 1.5–3.5 µm, the tips of the conidiophores are more variable, ranging from attenuated towards the tip, width subequal throughout to slightly enlarged, and the conidia are 5–40(–50) × 1.5–3 µm, with 0–3(–5) septa (Fig. 11). These differences are, however, not sufficient for a separation of two taxa. The type material is also a mixed collection of *Stenella weberi* and *Pseudocercospora viticicola* (= *Cercospora viticis* Ellis & Everh.). Caespituli of the latter species are epiphyllous, the colonies of *St. weberi* are mainly hypophyllous, but Chupp (l. c.) clearly described the *Stenella* with secondary mycelium, long conidiophores, and small conidia. There are three additional cercosporoid fungi on *Vitex* spp., viz. *Pseudocercospora viticicola* s. lat. (Braun, 1998), with inconspicuous conidial scars, *Mycovellosiella viticis* Kharwar et al. (1996: 691), characterized by having smooth secondary hyphae, conspicuous conidial scars, and much larger conidia, and *Cercospora agarwalii* Chupp (in Agarwal and Hasija, 1961: 56). Type material of the latter species has been examined (on *Vitex negundo*, India, Jabalpur, Beoharbag, 7 Dec. 1959, G. P. Agarwal 374, CUP 41035). Since the conidial scars and hila are unthickened and not darkened, this species belongs in *Pseudocercospora*:

Pseudocercospora agarwalii (Chupp) U. Braun & Bagyan. comb. nov. – Fig. 12.

Bas.: *Cercospora agarwalii* Chupp, in Agarwal & Hasija, Proc. Natl. Acad. Sci. India, Sect. B, 31(3): 56 (1961).

≡ *Pseudocercospora agarwalii* (Chupp) P.-K. Chi, Fungal diseases of cultivated medical plants in Guangdong Province: 150 (1994), comb. inval. (basionym not cited, ICBN, Art. 33.2.).

Leaf spots amphigenous, subcircular to irregular, 1–8 mm diam., pale brown, greyish brown, dingy grey, surrounded by a narrow margin or marginal line, dark purplish brown or dark brown. – Caespituli epiphyllous, punctiform, dark brown to blackish

brown. – Mycelium internal. – Stromata immersed, brown to dark brown, small, 10–30 µm diam. – Conidiophores in small to moderately large fascicles, loose to moderately dense, arising from stromata, erect, straight and subcylindric to geniculate-sinuous, usually unbranched, 20–130 × 3–5 µm, short conidiophores 0–2-septate, long conidiophores pluriseptate, pale to medium dark brown, often paler towards the tip, wall somewhat thickened, smooth, conidiogenous cells integrated, terminal, 10–50 × 3–5 µm, conidiophores rarely reduced to a single conidiogenous cell, conidial scars inconspicuous, unthickened, not darkened, occasionally subdenticulate. – Conidia solitary, obclavate-cylindrical, 25–50 × 3–6 µm, (2–)3–4(–7)-septate, subhyaline, pale olivaceous to olivaceous brown, smooth, apex obtuse, occasionally subacute, base short obconically truncate, hilum unthickened, not darkened.

Additional records of phytopathogenic micromycetes from India

Asteromella sp.

On *Anogeissus latifolius*, Sri Tirumala Hills (A.P.)!!

Pycnidia are (50–)80–120 µm diam., and the conidia are 2.5–3 × 1 µm, ellipsoid-ovoid, one-celled, hyaline. *Phyllosticta anogeissi* Sahni (1968: 268) is a distinct species, characterized by having larger, often curved conidia, 3.3–8.3 × 1.2–1.8 µm.

Cercospora bidentis Tharp, Mycologia 9: 108 (1917).

On *Bidens pilosa*, Sri Tirumala Hills, Chittoor (A.P.) +

Cercospora ricinella Sacc. & Berl., Atti Ist. Ven. Sci. 6 Ser. 3: 721 (1885).

On *Ricinus communis*, Mysore (Karnataka).

Mycovellosiella brachycarpa (Syd.) Deighton, Mycol. Pap. 137: 8 (1974).

≡ *Cercospora brachycarpa* Syd., Ann. Mycol. 28: 207 (1930).

On *Solanum verbascifolium*, Ooty (T.N.)!

Parodiella hedysari (Schwein.) Hughes, Can. J. Bot. 36: 793 (1958).

On *Alysicarpus* sp., Sri Tirumala Hills, Chittoor (A.P.)!

Passalora bougainvilleae (Muntañola) U. Braun & R. F. Castañeda, Cryptog. Bot. 2/3: 291 (1991).

≡ *Cercospora bougainvilleae* Muntanōla, Revista Argent. Agron. 24: 84 (1957).

On *Bougainvillea* sp., Sri Tirumala Hills, Chittoor (A.P.)!!

P. bougainvilleae is well-characterised by having pigmented, broadly obclavate conidia, 20–45 × 5–7(–10) µm in the present collection. *Cercospora bougainvilleae* P. N. Rao (1962: 112) is a younger

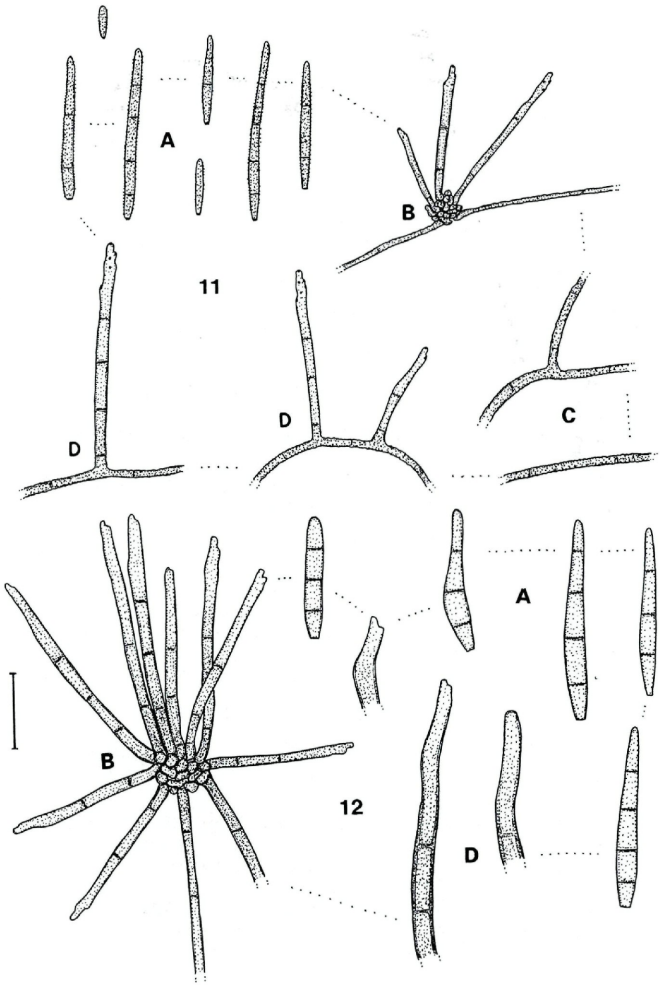

Fig. 11–12. – 11. *Stenella weberi*. – 12. *Pseudocercospora agarwalii*. – A. conidia. – B. conidiophore fascicles. – C. secondary hyphae. – D. conidiophores. – Bar = 20 µm. – U. Braun del.

homonym of *C. bougainvilleae* Muntanõla (1957: 84), but Rao's species is not identical with the latter species, since it is characterised by colourless, slender conidia, 36–64 × 3.2 µm. The generic affinity of *C. bougainvilleae* P. N. Rao is, however, unclear. According to Rao (1962), the type material of this species has been deposited in HY, but a search for the type proved unsuccessful.

Passalora mimosae (F. Stevens & Dalbey) U. Braun, A monograph of *Cercosporella, Ramularia* and allied genera (phytopathogenic hyphomycetes), Vol. 1: 118, Eching (1995).

≡ *Ramularia mimosae* F. Stevens & Dalbey, Mycologia 11: 6 (1919).
= *Cercospora pudicae* J.-M. Yen, Rev. Mycol. 29: 236 (1964).

On *Mimosa pudica*, Sri Tirumala Hills, Chittoor (A.P.)!

Passalora squalidula (Peck) U. Braun, in Braun & Melnik, Trudy Bot. Inst. Im. V. L. Komarova (St. Petersburg) 20: 95 (1997).

≡ *Cercospora squalidula* Peck, Ann. Rep. N.Y. State Mus. Nat. Hist. 33: 29 (1880).

On *Clematis* sp., Sri Tirumala Hills, Chittoor (A.P.).

Pseudocercospora calopogonii (F. Stevens & Solheim) Deighton, Mycol. Pap. 140: 140 (1976).

≡ *Cercospora calopogonii* F. Stevens & Solheim, Mycologia 23: 379 (1931).

On *Calopogonium* sp., Dharwad (Karnataka)!!

Pseudocercospora stahlii (F. Stevens) Deighton, Mycol. Pap. 140: 82 (1976).

≡ *Helminthosporium stahlii* F. Stevens, Trans. Ill. Acad. Sci. 10: 208 (1917).
≡ *Cercospora stahlii* (F. Stevens) Subram., J. Ind. Bot. Soc. 35: 460 (1956).
≡ *Helicomina stahlii* (F. Stevens) M. B. Ellis, More Dematiaceous Hyphoymcetes: 178 (1976).

On *Passiflora* sp., Kochi (Kerala)!

Sirosporium mori (Syd. & P. Syd.) M. B. Ellis, Mycol. Pap. 87: 78 (1963).

≡ *Clasterosporium mori* Syd. & P. Syd., Mém. Herb. Boiss. 4: 6 (1900).

On *Morus alba*, New Delhi!

Stigmina maculata (Cooke) Hughes, Mycol. Pap. 49: 11 (1952).

≡ *Clasterosporium maculatum* Cooke, Grevillea 4(31): 117 (1876).

On *Ficus bengalensis*, Sri Tirumala Hills (A.P.)!

Zygosporium majus Piroz., Mycol. Pap. 129: 60 (1972).

On *Strobilanthes meeboldii*, Sri Tirumala Hills, Chittoor (A.P.)+!!

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