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New species, combinations and records of hyphomycetes

Uwe Braun

Abstract: Braun, U. 2009: New species, combinations and records of hyphomycetes. Schlechtendalia **19**: 63–71.

The new species *Cladosporium sarmentorum*, *C. yuccae* and *Fusicladium variabile* are described, illustrated and discussed and the new name *Pseudocercospora colebrookiae-oppositifoliae* (≡ *Mycovellosiella colebrookiae*) is proposed. The new combination *Pseudocercospora malloti* is introduced and the combination *P. physostegiae* is validated. *Mycovellosiella mucunae* is reduced to synonymy with *Pseudocercospora mucunae-ferrugineae* and *M. viticis* is considered to be conspecific with *P. viticicola*. *Cercospora heraclei* is shown to be synonymous with *Passalora angelicae*. Furthermore, various new records of *Passalora milii* are listed.

Zusammenfassung: Braun, U. 2009: Neue Arten, Kombinationen und Funde von Hyphomyzeten. Schlechtendalia **19**: 63–71.

Die neuen Arten *Cladosporium sarmentorum*, *C. yuccae* und *Fusicladium variabile* werden beschrieben, abgebildet und diskutiert und der neue Name *Pseudocercospora colebrookiae-oppositifoliae* (≡ *Mycovellosiella colebrookiae*) wird vorgeschlagen. Die Neukombination *Pseudocercospora malloti* wird eingeführt und die Kombination *P. physostegiae* wird validiert. *Mycovellosiella mucunae* ist ein Synonym von *Pseudocercospora mucunae-ferrugineae* und *M. viticis* hat sich als identisch mit *P. viticicola* herausgestellt. *Cercospora heraclei* hat sich als Synonym von *Passalora angelicae* erwiesen. Weiterhin werden verschiedene neue Funde von *Passalora milii* angegeben.

Key words: Mitosporic fungi, *Cladosporium*, *Fusicladium*, *Passalora*, *Pseudocercospora*.

During the course of examinations of various collections of cercosporoid, cladosporioid and fusicladioid hyphomycetes, some new species and numerous new records have been found. The new species, belonging in the genera *Cladosporium* Link and *Fusicladium* Bonord., the new records of cercosporoid and ramularioid hyphomycetes, and some nomenclatural reassessments represent additions to monographic treatments carried out by Braun (1995, 1998), Schubert et al. (2003), Crous & Braun (2003), Schubert (2005) and Crous et al. (2007). The new species are described, illustrated and discussed. Nomenclatural changes and new records of anamorphic species and new host species are listed and briefly annotated.

(1) ***Cladosporium sarmentorum*** (Riedl & Ershad) U. Braun, **comb. nov.** **Fig. 1**
MycoBank, MB 512707

≡ *Acrosporella sarmentorum* Riedl & Ershad, Sydowia 29: 166, 1977.

Illustration: Riedl & Ershad (1977: 167, Fig. 4).

Material examined: On dead tendrils of *Rubus* sp. (Rosaceae), Iran, Love near Minoudasht, 100–200 m high, 23 Apr. 1974, Riedl & Ershad F5 (W), holotype of *A. sarmentorum*. On wood (planks), Italy, South

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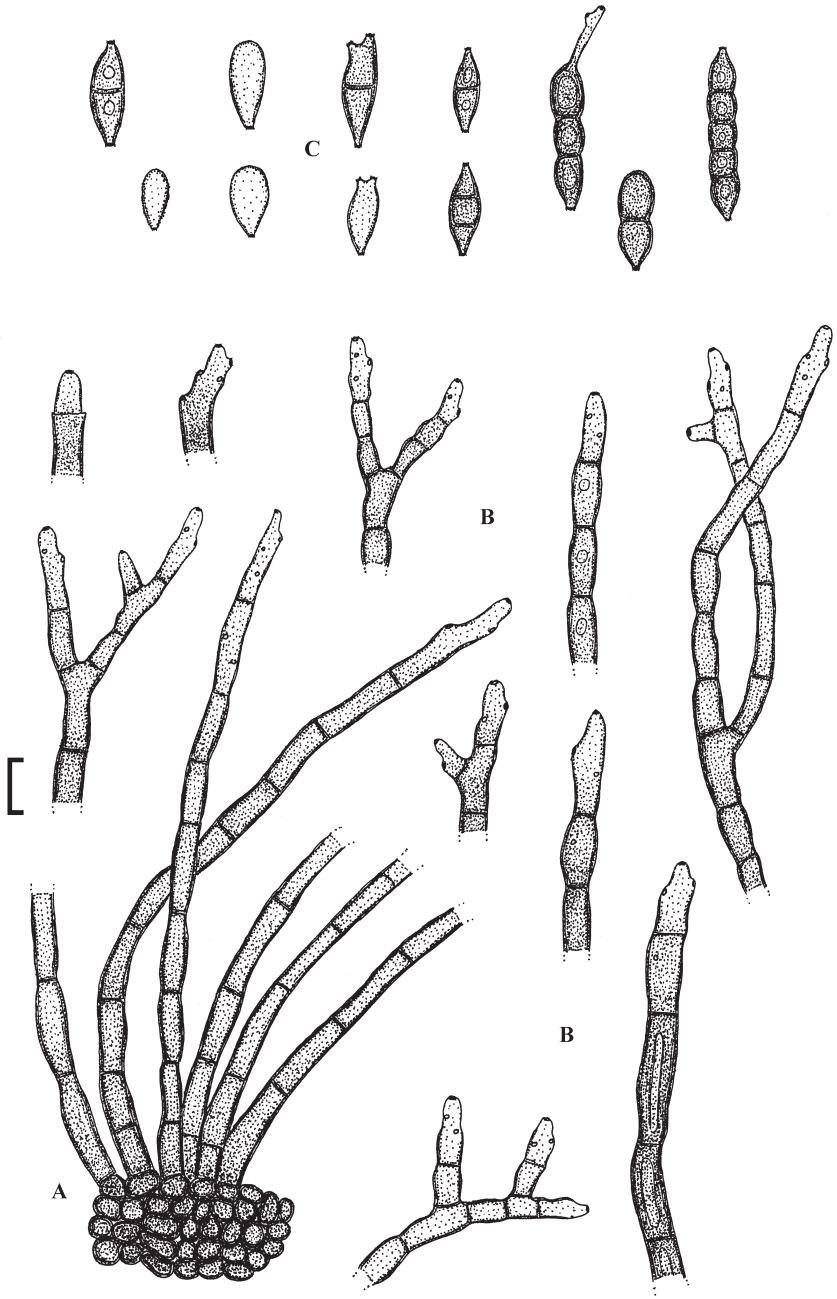


Fig. 1: *Cladosporium sarmentorum*, **A** – fascicles of conidiophores, **B** – conidiophores, **C** – conidia. Bar = 10 µm (U. Braun del).

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Tirol, Trentino, Seis, 1870, G. Hausmann (B 700006723). On wood of *Picea abies*, Russia, Leningrad Oblast', Roshchino District, Pioners'koje Forest, 23 Aug. 2005, D.A. Shabunin (HAL 2172 F).

Colonies on dead stems, wood and tendrils, punctiform, scattered to aggregated, or forming dense villose black patches or layer. Mycelium internal, sometimes also external; hyphae pale olivaceous to medium brown or olivaceous-brown, 2–7 µm diam., septate, smooth. Stromata lacking to well-developed, immersed to erumpent, 20–120 µm diam., dark brown, composed of swollen hyphal cells, 3–15 µm diam., brown, wall up to 1.5 µm thick, often with diffuse aggregations and layers of stromatic hyphal cells, often forming superficial strands of swollen cells, up to 10 µm diam., with constrictions at the septa, monilioid. Conidiophores solitary, caespitose, in small to large, loose to moderately dense fascicles, arising from swollen hyphal cells or stromata, erect to decumbent, 20–250 × 3–9 µm, simple to frequently branched in the upper portion, with short lateral branchlets or long branches, up to 90 µm in length, subcylindrical to sinuous, slightly geniculate, rarely subnodulose, pluriseptate throughout, often densely septate and constricted at the septa, pale to dark brown or olivaceous-brown, tips usually paler, subhyaline to olivaceous, wall 0.5–1(–2) µm thick, smooth to somewhat rough-walled or rugose, cells sometimes with distinct lumina, provoking the impression that the walls are very thick, occasionally guttulate, rarely with monopodial rejuvenation. Conidiogenous cells integrated, terminal and intercalary, 5–25 µm long, at first often monoblastic, later polyblastic, sympodial, but conidiogenous cells not or only slightly geniculate, conidiogenous loci (1–)1.5–2(–2.5) µm diam., less conspicuous than in most other species of the genus, barely or only slightly protuberant, slightly darkened-refractive, central dome not very conspicuous. Conidia solitary and catenate, in short simple to branched chains, subglobose, broadly ellipsoid-ovoid, fusiform, subcylindrical, limoniform, (3–)5–24(–30) × (2–)4–7(–8) µm, 0–3(–5)-septate, often slightly constricted at the septa, small, young conidia subhyaline, later olivaceous, olivaceous-brown to medium brown, wall up to 1 µm wide, smooth, rarely faintly rough-walled, ends rounded to somewhat attenuated, hila not or somewhat protuberant, 0.75–2 µm diam., slightly darkened-refractive; occasionally with microcyclic conidiogenesis.

Notes: The examination of type material of *Acrosporella sarmentorum* showed that this species has to be assigned to *Cladosporium*. The conidiogenous loci and conidial hila are coronate and the amero- to phragmosporous conidia are formed in branched acropetal chains. Since *A. sarmentorum* is the type species of *Acrosporella* Riedl & Ershad, the latter genus becomes a facultative synonym of *Cladosporium*. This species is a saprobic hyphomycete. The colonies, conidiophores and conidia resemble those of *Cladosporium delicatulum* Cooke, but the conidiophores are frequently branched. *C. sarmentorum* differs from most other *Cladosporium* species in having barely geniculate conidiogenous cells with less conspicuous, barely protuberant, barely or only slightly darkened-refractive conidiogenous loci. The loci are cladosporioid, but the central dome is not very conspicuous and the surrounding rim is rather low.

(2) ***Cladosporium yuccae*** U. Braun, **sp. nov.** MycoBank, MB 512708 **Fig. 2**

C. chamaeropis simile, sed conidiophoris saepe ramosis, ad septa constricta, cellulis conidiogenis brevioribus, 10–20 µm longis, et ramoconidiis formantibus.

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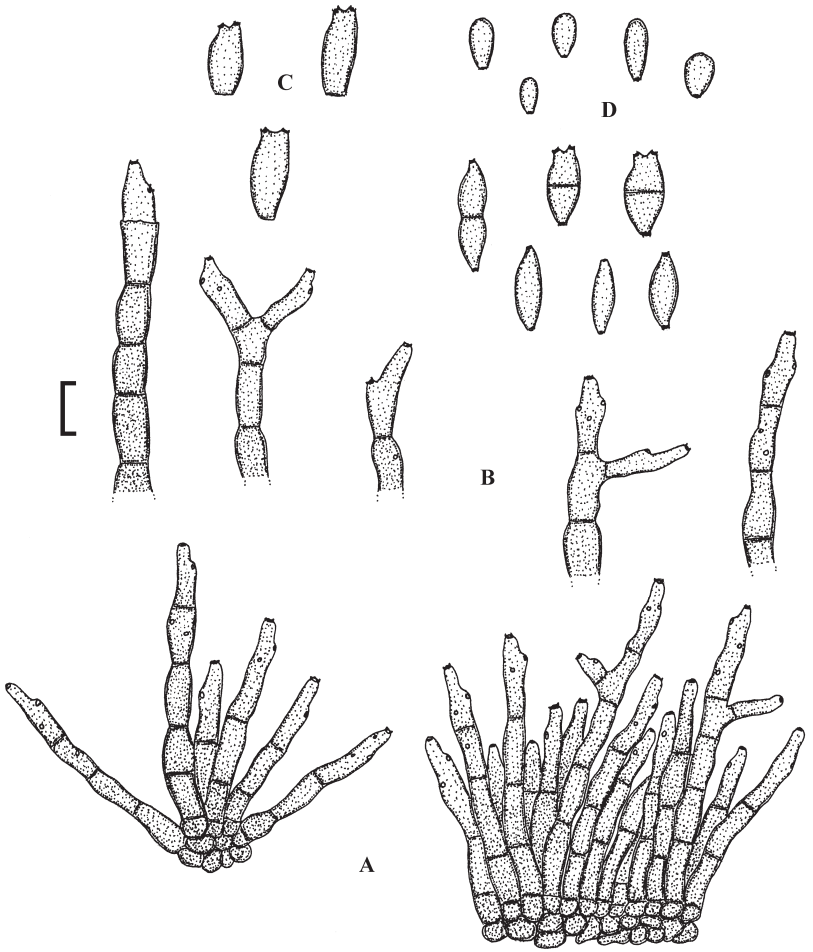


Fig. 2: *Cladosporium yuccae*. **A** – fascicles of conidiophores, **B** – conidiophores, **C** – ramoconidia, **D** – conidia. Bar = 10 µm (U. Braun del).

Holotype: On faded leaves of *Yucca* sp. (Agavaceae), Italy, South Tirol, Neumarkt, Fontane frede, 8 Sep. 1902, P. Magnus (HBG).

Colonies on large necrotic lesions, punctiform, scattered to gregarious, dark brown to blackish. Mycelium internal. Stromatic hyphal aggregations immersed, 10–100 µm diam., occasionally confluent, dark brown, composed of swollen hyphal cells, 2–8 µm diam. Conidiophores in small to very large, loose to dense fascicles, arising from stromatic hyphal aggregations, erumpent, erect, straight, subcylindrical to usually strongly irregularly sinuous to subnodulose by constrictions at the septa, occasion-

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ally geniculate, simple or often branched, 20–80 × 3–8 µm, pluriseptate throughout, pale to medium dark brown or olivaceous-brown, often paler towards the apex, tips occasionally very pale or subhyaline, wall thin, ≤ 1 µm, smooth or almost so, conidiophores occasionally with monopodial rejuvenation leaving simple annellate structures. Conidiogenous cells integrated, terminal and intercalary, 10–20 µm long, subcylindrical to geniculate, with a single to usually several, often crowded conidiogenous loci, distinctly coronate, but only slightly protuberant, (1–)1.5–2 µm diam., somewhat darkened-refractive. Conidia catenate, in branched acropetal chains, ellipsoid-ovoid, obovoid, fusiform, 4–18 × 3–7 µm, 0–1-septate, pale olivaceous to olivaceous-brown, thin-walled, almost smooth to usually distinctly, but minutely verruculose, ends rounded to somewhat attenuated; occasionally with ramoconidia (base truncate, 2–2.5(–3) µm wide, without coronate hilum); small terminal conidia pale, 4–8 × 3–4 µm; septate conidia and secondary ramoconidia 10–18 × 4–7 µm; hila somewhat protuberant, distinctly coronate, 1–2 µm diam., refractive; microcyclic conidiogenesis not observed.

Notes: This species is morphologically close to *Cladosporium chamaeropis* (Unamuno) K. Schub. (SCHUBERT 2005), but the latter species differs from *C. yuccae* in having usually unbranched conidiophores without distinct constrictions and longer conidiogenous cells, up to 35 µm in length. Furthermore, ramoconidia have not been observed in *C. chamaeropis*. The ecology of *C. yuccae* is unclear and cannot be verified on the base on the old herbarium material. The colonies of *C. yuccae* occur on large necrotic lesions, but it is unclear if they have been caused by the latter fungus. New fresh collections are needed to elucidate the true biology of this species.

(3) ***Fusicladium variabile*** U. Braun, **sp. nov.** MycoBank, MB 512709 **Fig. 3**

Differt ab omnibus speciebus Fusicladii cum conidiis catenatis conidiophoris longioribus et latioribus, conidiis usque ad 40 × 9 µm et 4-septata.

Holotype: On dead leaves of *Eryngium maritimum* (Apiaceae), Greece, Island Kos, between Marmari and Mastichari, north of the chapel Agrios Georgios, shore west of the hotel 'Neptun Village', 18 Aug. 1998, D. & H. Wittmann (M-0057763).

Conidiophores on dry, dead leaves, amphigenous, punctiform, scattered to loosely aggregated, dark brown to black, 0.1–0.8 mm diam., occasionally confluent and larger. Mycelium internal. Stromata large, up to 800 µm diam., rarely larger, brown, composed of thick-walled cells, 2–14 µm diam., walls up to 2.5 µm thick. Conidiophores solitary, caespitose to fasciculate, arising from stromata, erect, straight, subcylindrical to somewhat attenuated towards the apex, usually distinctly geniculate, unbranched or occasionally branched, sometimes branched at the base, 10–70 × 3–8(–10) µm, 0–3(–4)-septate, olivaceous-brown to medium brown, thick-walled, wall up to 1.5(–2) µm thick, smooth or almost so. Conidiogenous cells integrated, terminal, intercalary or conidiophores reduced to conidiogenous cells, 5–25 µm long; conidiogenous loci denticle-like, 1–3 µm diam., wall of the loci unthickened, but often somewhat darkened-refractive. Conidia catenate, in simple or branched chains, shape and size variable, ellipsoid-ovoid, obovoid, subcylindrical-fusiform, 6–40 × 3–9 µm, 0–4-euseptate, rarely eusepta mixed with few distosepta, pale to usually medium brown or olivaceous-brown, occasionally dark brown, smooth or almost so to faintly rough-walled or somewhat rugose, wall thick, up to 1.5 µm, sometimes distinctly two-

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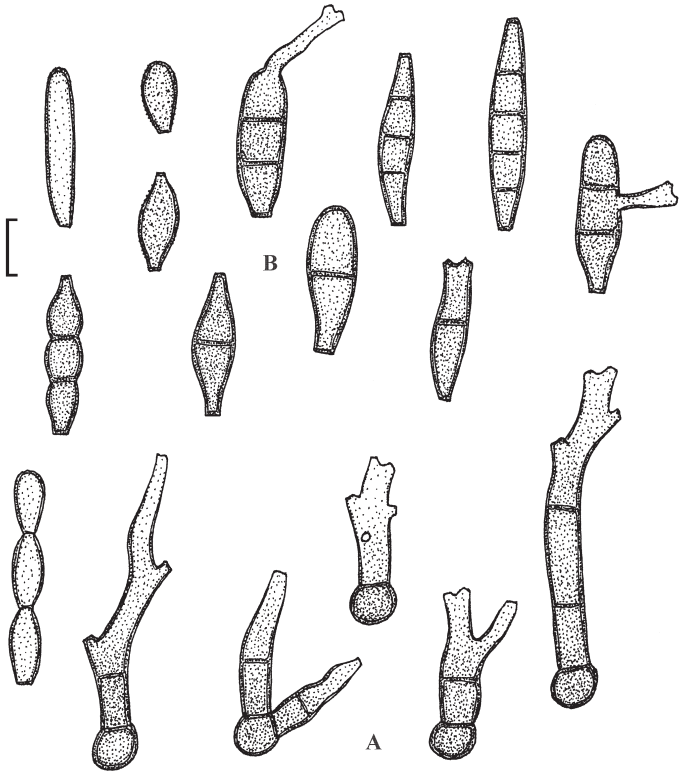


Fig. 3: *Fusicladium variabile*. **A** – conidiophores, **B** – conidia. Bar = 10 µm (U. Braun del).

layered and up to 2 µm wide, with a single basal and up to three terminal hila, truncate to peg-like, 1–3 µm diam., wall of the hila unthickened, but often somewhat darkened-refractive; microcyclic conidiogensis observed.

Notes: *Fusicladium variabile* differs from all other *Fusicladium* species with catenate conidia in having much larger conidia, up to 40 × 9 µm, with up to 4 septa (Schubert et al. 2003, Crous et al. 2007). The conidial wall is sometimes distinctly two-layered and up to 2 µm wide.

(4) *Passalora angelicae* (Ellis & Everh.) U. Braun

= *Cercospora heraclei* N.P. Golovina, Novosti Sist. Nizsh. Rast. 1964: 211, 1964, **syn. nov.**

Material examined: On *Angelica* sp. (as '*Heracleum* sp.'), Kirghizia, Issyk-Kulsk. Oblast, 18 Aug. 1948, A.A. Domashova (LE 73856), topotype material of *C. heraclei*; on *Angelica* sp. (as '*Heracleum* sp.'), USA, Newton, ex herb. Farlow, in herb. Magnus (HBG).

Notes: Records of *P. angelicae* on *Heracleum* spp. from North America (e.g., Farr et al. 1989) are very doubtful and probably based on misidentifications of the host plants, as shown in the collec-

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tion on '*Heracleum* sp.' from HBG that proved to be *Angelica* sp. Crous & Braun (2003) cited *Cercospora heraclei* as synonym of *Passalora bupleuri* (Pass.) U. Braun, which is, however, incorrect. Topotype material of *C. heraclei* (holotype material at FRU, but not available) has been examined and proved to be *P. angelicae* (conidiophores in large, dense fascicles, conidia 20–50(–60) × (3.5–)5–8(–10) µm). *P. bupleuri* is distinguished by forming small fascicles of conidiophores and narrower conidia, 3–5 µm wide.

(5) *Passalora milii* (Syd.) G.A. de Vries

Material examined: On *Milium effusum*, France, Lothringen, Forbach, Oetinger Tälchen, 22 June 1913, A. Ludwig, Syd., Mycoth. Germ. 1295 (HBG), syntype material of *P. milii*, Lothringen, Forbach, Melpoule, 22 Jul. 1912 and 28 Aug. 1912, A. Ludwig (B 700006498, 700006500); Germany, Hessen, Dillkreis, Haiger, 14 Jul. 1935, A. Ludwig (B 700006636), Mecklenburg-Vorpommern, Garz, 1903, Winkelmann (B 700006482), Nordrhein-Westfalen, Kreis Meschede, Deutmeke, 7 Aug. 1932, A. Ludwig (B 700006633), Rheinland-Pfalz, Kreis Altenkirchen, Stegskopf, 29 Aug. 1928, A. Ludwig (B 700006628); Latvia, Prov. Vidzeme, Vestiena, 28 Aug. 1935, K. Starcs (B 700006627, 700006629).

Notes: Crous & Braun (2003) listed this species from France and Russia. It is, however, more common than suggested by published records. *P. milii* has also been found in various parts of Germany and in Latvia.

(6) ***Pseudocercospora colebrookiae-oppositifoliae*** U. Braun, **nom. nov.** MycoBank, MB 512710

Bas.: *Mycovellosiella colebrookiae* K. Bhalla, N. Srivast. & Kamal, Mycol. Res. 100(11): 1334, 1996, non *Pseudocercospora colebrookiae* H.S.G. Rao et al. 1996.

≡ *Pseudocercospora colebrookiicola* U. Braun, Schlechtendalia 5: 49, 2000, non *Pseudocercospora colebrookiicola* P.N. Singh et al. 1998 ['1997'].

Notes: Braun (2000) examined type material of *Mycovellosiella colebrookiae*, showed that this species has to be transferred to *Pseudocercospora* Speg., and introduced the new name *P. colebroockiicola* due to the already existing *P. colebrookiae* (Bhalla et al. 1996). Later it turned out that the name *P. colebrookiicola* is also preoccupied (Singh et al. 1998). Hence, a new name is necessary for *Mycovellosiella colebrookiae* within *Pseudocercospora*. *P. colebrookiicola* P.N. Singh et al. is easily distinguishable from *P. colebrookiae-oppositifoliae* by having well-developed stromata, fasciculate conidiophores and solitary conidia (versus lacking stromata, solitary conidiophores and catenate conidia in the latter species).

(7) ***Pseudocercospora malloti*** (Kharwar, P.N. Singh & R.K. Chaudhary) U. Braun, **comb. nov.** MycoBank, MB 512711

Bas.: *Mycovellosiella malloti* Kharwar, P.N. Singh & R.K. Chaudhary, Mycol. Res. 100(6): 689, 1996.

Material examined: On *Mallotus philippinensis* (Euphorbiaceae), Nepal, Chitwan, Narayangard, Jan. 1995, Kamal (IMI 366204), holotype of *M. malloti*.

Illustration: Kharwar et al. (1996: 690, Figs 1–3).

Notes: The re-examination of type material of this species showed that it has to be assigned to *Pseudocercospora*, although the conidia may be formed in short chains, since the conidiogenous loci and conidial hila are neither thickened nor darkened. *Pseudocercospora malloti* is morphologically

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close to *P. malloti-repandi* (Bhalla et al.) U. Braun (Braun 2000: 52), but the latter species differs in having angular leaf spots, much longer conidiophores, up to 65 µm, and solitary conidia, 3 – 6.5 µm wide.

(8) *Pseudocercospora mucunae-ferrugineae* (W. Yamam.) Deighton

= *Mycovellosiella mucunae* Kharwar, P.N. Singh & R.K. Chaudhary, Mycol. Res. 100(6): 690, 1996, **syn. nov.**

Material examined: On *Mucuna purpurea* (Fabaceae), Nepal, Chitwan, Narayangarh, Dec. 1994, Kamal (IMI 366205)), holotype of *M. mucunae*.

Notes: Based on a re-examination of type material of *M. mucunae*, it could be demonstrated that this hyphomycete is a species of *Pseudocercospora* indistinguishable from *P. mucunae-ferrugineae*.

(9) ***Pseudocercospora physostegiae*** (W.A. Jenkins ex Chupp) U. Braun & Crous, **comb. nov.** MycoBank, MB 510448

Bas.: *Cercospora physostegiae* W.A. Jenkins ex Chupp, A monograph of the fungus genus *Cercospora*: 270, 1954.

≡ *Cercospora physostegiae* W.A. Jenkins, Phytopathology 35(5): 329, 1945, nom. inval. [ICBN, Art. 34.1 (c)].

≡ *Pseudocercospora physostegiae* U. Braun & Crous [as '(W.A. Jenkins) U. Braun & Crous'], Fungal Diversity 26: 64, 2007, nom. inval. (ICBN, Art. 37.6).

Notes: Material examined: On *Physostegia virginiana* (Rosaceae), USA, Virginia, Chatham [in Jenkin´s flower garden], 31 Aug. 1943, W.A. Jenkins (CUP 40556), holotype material, and 15 Jul. 1944 (BPI 608496), topotype material.

Descriptions: Chupp (1954: 270), Braun & Crous (2007: 64).

Illustration: Braun & Crous (2007: 63, Fig. 7).

Notes: Jenkins (1945) introduced the name *Cercospora physocarpi* in connection with *Mycosphaerella physocarpi* W.A. Jenkins, but cited it only as synonym, which renders this name invalid [ICBN, Art. 34.1 (c)]. Based on the invalid *Cercospora physostegiae*, Braun & Crous (2007) proposed the combination *Pseudocercospora physostegiae*, which is invalid as well. Chupp (1954) validated the name *C. physostegiae* by recognizing this name as separate species with reference to the Latin description of the anamorphic state published by Jenkins (1945).

(10) *Pseudocercospora viticicola* (J.M. Yen & Lim) J.M. Yen

= *Mycovellosiella viticis* Kharwar, P.N. Singh & R.K. Chaudhary, Mycol. Res. 100(6): 691, 1996, **syn. nov.**

Material examined: On *Vitex negundo* (Verbenaceae), Nepal, Narayangarh, Chitwan, Dec. 1993, Kamal (IMI 366206), holotype of *M. viticis*.

The conidiogenous loci and conidial hila of *M. viticis* are neither thickened nor darkened. Hence, this species pertains to the genus *Pseudocercospora*. It is, however, morphologically indistinguishable from *P. viticicola* as circumscribed by Braun (1998: 405).

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