

New species of *Cercospora* and allied genera of Taiwan

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Abstract. Two new species of *Cercospora*, one new species of *Cercosporidium*, three new species of *Mycovellosiella* and twelve new species of *Pseudocercospora*, namely *Cercospora apios* sp. nov., *C. houttuyniicola* sp. nov., *Cercosporidium litseae* sp. nov., *Mycovellosiella broussonetiae* sp. nov., *M. curvispora* sp. nov., *M. gonostegiae* sp. nov., *Pseudocercospora actinidicola* sp. nov., *P. alstoniae* sp. nov., *P. baphicacanthi* sp. nov., *P. basellae* sp. nov., *P. caesalpiniae* sp. nov., *P. milletiae* sp. nov., *P. oxalidis* sp. nov., *P. platycaryae* sp. nov., *P. salviae* sp. nov., *P. stachyurina* sp. nov., *P. symphyti* sp. nov. and *P. tagetis-erectae* sp. nov. are described and illustrated. They are compared with other closely related species in the genus and allied genera.

Key words: Allied genera; *Cercospora*; New species; Taiwan.

Introduction

During our continuing survey of *Cercospora* and allied genera in Taiwan (Goh and Hsieh, 1987; Hsieh and Goh, 1987), we found eighteen species of *Cercospora* sensu lato which had not been described hitherto (Chupp, 1954; C.M.I., 1940-1987; Ellis, 1976). In this paper their morphology is described and illustrated according to the Deighton's system (Deighton, 1967, 1973, 1974, 1976, 1979, 1983, 1987). Notes are given for the respective species where the closely related species in the genus and allied genera are compared (Boedijn, 1962; Chupp, 1954; Chupp and Linder, 1937; Liu and Guo, 1984; Tharp, 1917; Yen, Kar and Das, 1982; Young, 1916), and all of them are described here as new species.

Materials and Methods

The specimens of *Cercospora* leaf spots of various plants were collected from several places in Taiwan. Thin microtome sections of each specimen were made and mounted on slides for light microscope observa-

tion. The morphology of the fungus of each specimen was studied and illustrated with the aid of a drawing tube. The characteristics of the leaf spots of each specimen were also drawn for reference.

Cercospora apios Goh et Hsieh, sp. nov. (Fig. 1.)

Maculae amphigenae, irregulariter angulares, per venas limitatae, 1-4 mm latae, saepe confluentes, primo atrobrunneae, demum centro albido cum margine brunneo angusto cinctae. Caespituli amphigeni. Mycelium secundarium absens. Stromata nulla vel usque 40 μ m lata, atro-brunnea. Conidiophora 2-35 in fasciculo, per stomata emergentia, flavido-brunnea vel pallide subroseo-brunnea, apicem versus pallidiora, uniformia in latitudine vel leniter attenuata, recta vel geniculata, 1-4 septata, raro ramosa, 40-120 \times 4-5 μ m; cicatrices conidiales 2-3 μ m latae, conspicue incrassatae. Conidia hyalina, acicularia, subrecta vel curvata, multiseptata, acuta vel subobtusa ad apicem, truncata ad basim cum hilo incrassato, 50-120 \times 3-5 μ m.

Habitat: In foliis vivis *Apios taiwaniani* Hosok. (Leguminosae), July 31, 1987, Lishan, Taichung Hsien, Taiwan, R.O.C. leg. T.K.Goh, NCHUPP-

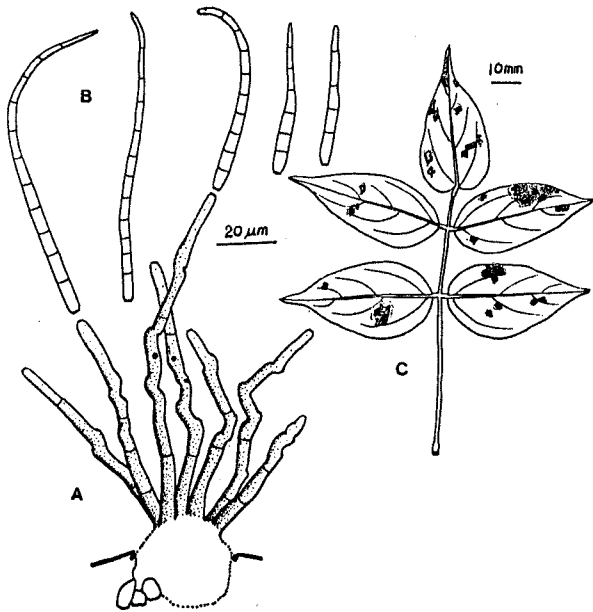


Fig. 1. *Cercospora apios*: A, Fascicle of conidiophores. B, Conidia. C, Leaf spots.

224, holotypus.

Leaf spots amphigenous, irregularly angular, vein-limited, 1-4 mm wide, often confluent, dark brown at first, later become whitish at center with a narrow brown margin. Fruiting amphigenous. Secondary mycelium absent. Stromata none or up to 40 μm wide, dark brown. Conidiophores 2-35 in a fascicle, emerging from the stomata, yellowish brown to pale pinkish brown, paler towards the apex, uniform in width or slightly attenuated, straight or geniculate, 1-4 septate, rarely branched, 40-120 \times 4-5 μm ; conidial scars medium size (2-3 μm wide), conspicuously thickened, conidia hyaline, acicular, substraight to curved, multiseptate, acute to subobtuse at the apex, truncate at the base with a thickened hilum, 50-120 \times 3-5 μm .

Habitat: On leaves of *Apios taiwanianus* Hosok. (Leguminosae).

Specimen examined: NCHUPP-224, July 31, 1987, Lishan, Taichung Hsien, leg. T.K. Goh, holotype.

Distribution: Taiwan.

Note: This fungus differs from *Cercospora canescens* Ellis et Martin and *Cercospora apii* Fres. by its comparatively narrower and paler conidiophores. No other *Cercospora* or other *Cercospora*-like fungi reported on *Apios*.

***Cercospora houttuynicola* Goh et Hsieh, sp. nov.** (Fig. 2.)

Maculae orbiculares vel irregulariter suborbiculares, 1-8 mm (plerumque 2-4 mm) in diametro, centro griseo-brunneo, margine atrorubello-brunneo cinctae, textura decido guttulosasentes demum cavernae formatae. Caespituli amphigeni. Mycelium secundarium absens. Stromata nulla vel pauci cellulis brunneis composita. Conidiophora singulatim oriunda vel 2-4 (raro usque 10) in fasciculo, atro-olivaceo brunnea, pallidiora versus apicem, irregulariter in latitudine, curvata, vel distorta, non geniculata, non ramosa, multiseptata, interdum leniter constricta ad septa, subtruncata ad apicem, 60-180 \times 4-7 μm ; cicatrices conidiales conspicue incrassatae. Conidia acicularia, hyalina, curvata vel undulata, obscure multiseptata, subacuta ad apicem, truncata ad basim cum hilo incrassato, 100-300 \times 3-4 μm .

Habitat: In follis vivis *Houttuyniae cordatae* Thunb. (Saururaceae), Aug. 29, 1986, Kwansi, Hsinchu Hsien, Taiwan, R.O.C., leg T.K. Goh, NCHUPP-230, holotypus.

Leaf spots circular or irregularly suborbicular, 1-8 mm (mostly 2-4 mm) in diameter, grey brown in the

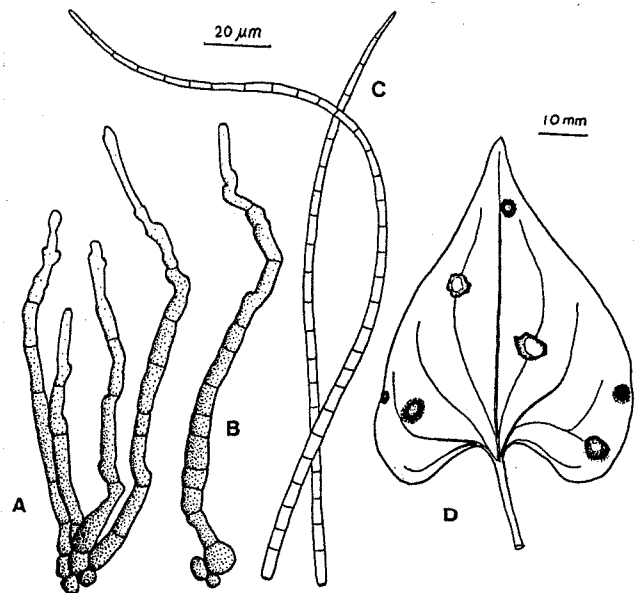


Fig. 2. *Cercospora houttuynicola*: A, Fascicle of conidiophores. B, A conidiophore that arises singly. C, Conidia. D, Leaf spots.

center with a dark reddish brown margin, dead tissues may drop out leaving the leaf with holes. Fruiting amphigenous. Secondary mycelium absent. Stromata absent or a few brown cells. Conidiophores arise singly or 2-4 (rarely up to 10) in a fascicle, deep olivaceous brown to pale brown, paler towards the apex, irregular in width, curved or crooked, not geniculate, not branched, multiseptate, sometimes slightly constricted at the septa, subtruncate at the apex, $60-180 \times 4-7 \mu\text{m}$; conidial scars conspicuously thickened. Conidia acicular, hyaline, curved or undulate, indistinctly multiseptate, subacute at the apex, truncate at the base with a thickened hilum, $100-300 \times 3-4 \mu\text{m}$.

Habitat: On leaves of *Houttuynia cordata* Thunb. (Saururaceae).

Specimen examined: NCHUPP-230, Aug. 29, 1986, Kwansi, Hsinchu Hsien, leg. T.K. Goh, holotype.

Distribution: Taiwan.

Note: *Cercospora houttuyniae* Togashi et Katsuki (Bot. Magazine Tokyo 65: 21, 1952) differs from this fungus by its densely fasciculate conidiophores ($10-55 \times 3-4.5 \mu\text{m}$) which are uniform in colour and by its obclavate conidia which are pale olivaceous brown in colour.

Cercosporidium litseae Goh et Hsieh, sp. nov. (Fig. 3.)

Maculae epiphyllae nullae. Caespituli hypophylli, atropunctiformi, 0.2-1 mm lati, disseminati. Stromata valde bene evoluta, usque $650 \mu\text{m}$ lata, atrobrunnea. Mycelium secundarium absens. Conidiophora valde numerosa (supra 500) in fasciculo denso, atrobrunnea, pallidiora ad apicem, non ramosa, multiseptata, uniformia in latitudine, manifeste geniculata, $200-900 \times 4-5 \mu\text{m}$; cicatrices conidiales conspicue incrassatae. Conidia pallidissime olivacea vel pallide brunnea, late obclavata vel sigmoidea, curvata vel undulata, obtusa vel late rotundata ad apicem, obconica vel rotundata ad basim cum hilo subtruncato conspicue incrassato, obscure 0-5 septata, $20-55 \times 5.5-8.5 \mu\text{m}$.

Habitat: In foliis vivis *Litsea krukovii* Kosterm. (Lauraceae), Jan. 18, 1988, Kukuan, Taichung Hsien, Taiwan, R.O.C., leg. T.K. Goh, NCHUPP-249, holotypus.

Epiphyllous leaf spots none. Fruiting hypophyllous, black punctiform (consisting of dense turfs of conidiophores), 0.2-1 mm wide, scattered over the leaf surface. Stromata very well developed, up to $650 \mu\text{m}$ wide, dark brown. Secondary mycelium absent.

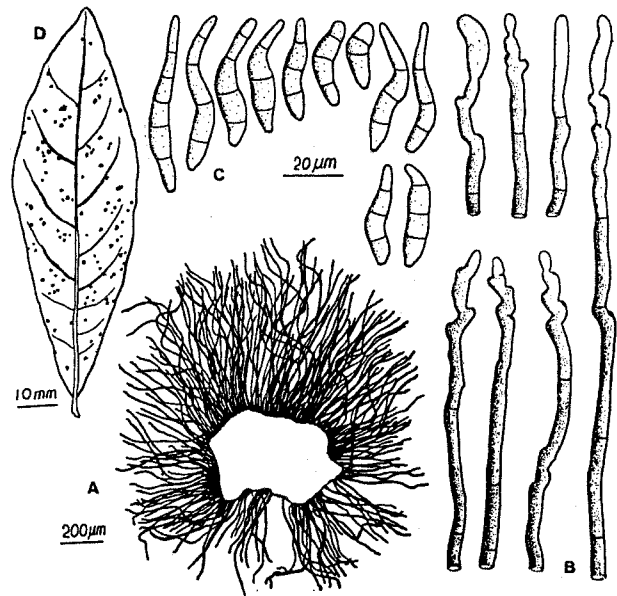


Fig. 3. *Cercosporidium litseae*: A, Dense fascicle of conidiophores on a big stroma. B, conidiophores showing geniculations at the apices. C, Conidia. D, Hypophyllous punctiform leaf spots (consisting of dense turfs of conidiophores).

Conidiophores very numerous (over 500) per fascicle, deep brown, paler at the apex not branched, multiseptate, uniform in width, plainly geniculate with thickened conidial scars on the rounded shoulders, $200-900 \times 4-5 \mu\text{m}$. Conidia very pale olivaceous to light brown, broadly obclavate or sigmoid, curved or undulate, indistinctly 0-5 septate, obtuse or broadly rounded at the apex, obconic or rounded at the base towards the subtruncate, conspicuously thickened hilum, $20-55 \times 5.5-8.5 \mu\text{m}$.

Habitat: On leaves of *Litsea krukovii* Kosterm. (Lauraceae).

Specimen examined: NCHUPP-249, Jan. 18, 1988, Kukuan, Taichung Hsien, leg. T.K. Goh, holotype.

Distribution: Taiwan.

Note: *Cercospora litseicola* Boedijn (1962) differs from this fungus by its very pale-coloured, narrowly obclavate conidia ($49-128 \times 2.5-3.5 \mu\text{m}$).

Mycovellosiella broussonetiae Goh et Hsieh, sp. nov. (Fig. 4.)

Maculae irregulares, absque margine distincto, disseminatae, atrobrunneae in epiphyllis sed rufulo-brunneae hypophyllis, 0.5-5 mm latae. Caespituli

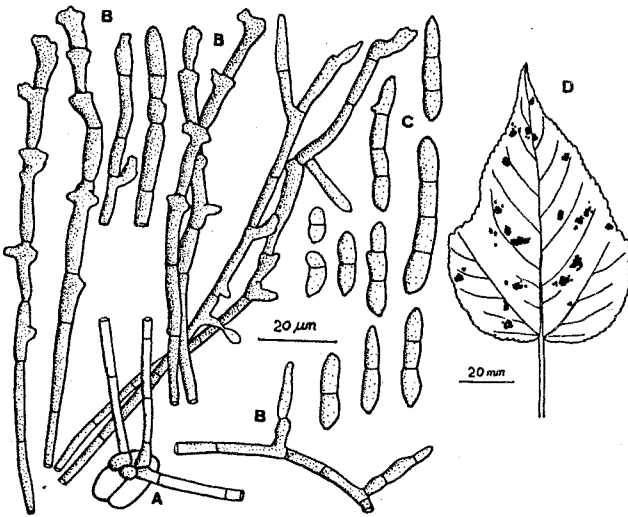


Fig. 4. *Mycovellolesiella broussonetiae*: A, External hyphae arising from a stoma. B, Short conidiophores borne terminally and laterally on external hyphae. C, Conidia with small black cicatrices at both ends as a sign of catenulation. D, Leaf spots.

hypophylli. Stroma nullum. Mycelium secundarium superficiale, ex hyphis paucis per stoma emergentibus oriundum: hyphae fere incolores ad basim circa $1.5-3 \mu\text{m}$ latae, deorsum conidiophorum pallide brunneae et dilatantes (usque $5 \mu\text{m}$ latae), parce ramosae, laeves, interdum laxe implexae. Conidiophora ex hyphis superficialibus terminaliter et quasi processis brevis lateraliter oriunda, simplicia, continuata vel 1-2 septata, $3-15 \times 2-7 \mu\text{m}$; cicatrices conidiales in-crassatae. Conidia fere incoloria vel pallide olivaceo-brunnea, subcylindrica vel ellipsoidea, recta, catenulata, plerumque 1-2 septata, raro 3-septata, leniter constricta ad septa, $10-45 \times 4-6 \mu\text{m}$, hilo in-crassato.

Habitat: In foliis vivis *Broussonetiae papyriferae* (L.) L'Herif. ex Vent. (Moraceae), Jan. 3, 1985, Hsitou, Nantou Hsien, Taiwan, R.O.C., leg. T.K. Goh, NCHUPP-139, holotypus (IMI 312071, isotypus).

Leaf spots irregular, without distinct border, scattered, dark brown on the upper surface but reddish brown at lower surface, 0.5-5 mm wide. Fruiting hypophyllous. Stromata absent. Secondary mycelium external, arising from a few hyphae which penetrate the stomata: hyphae almost colourless at the base where they are $1.5-3 \mu\text{m}$ wide, becoming pale brown (never very deep in colour) and wider (up to $5 \mu\text{m}$) below the conidiophores, sparingly branched, smooth,

sometimes tangled and forming loose ropes. Conidiophores borne terminally on and as lateral branches or as mere short projections of the secondary mycelial hyphae, bearing thickened conidial scars, simple, continuous or (when longer) 1-2 septate, $3-25 \times 2-7 \mu\text{m}$. Conidia varying from almost colourless to moderately pale olivaceous brown, subcylindric to ellipsoid, straight, catenulate (sometimes in branched chains), mostly 1-2 septate, rarely 3-septate, slightly constricted at the septa, $10-45 \times 4-6 \mu\text{m}$, hilum thickened.

Habitat: On leaves of *Broussonetia papyrifera* (L.) L'Herif. ex vent. (Moraceae).

Specimen examined: NCHUPP-139, Jan. 3, 1985, Hsitou, Nantou Hsien; leg. T.K. Goh, holotype (isotype also deposited in IMI Herbarium No: 312071).

Distribution: Taiwan.

Note: *Cercospora broussonetiae* Chupp et Linder (Mycologia 29:27, 1937) differs from this fungus by its epiphyllous fruiting, the presence of well developed stromata which give rise to dense fascicles of conidiophores and most importantly differs by the unthickened conidial scars. No other *Mycovellolesiella* has been reported on *Broussonetia*.

Mycovellolesiella curvispora Goh et Hsieh, sp. nov. (Fig. 5.)

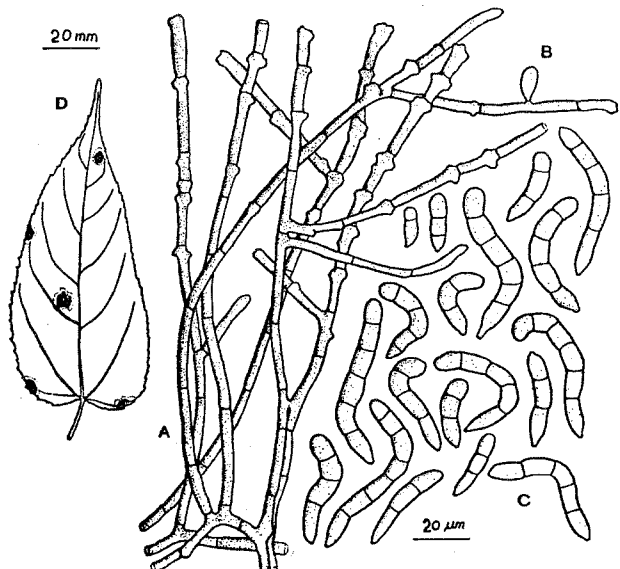


Fig. 5. *Mycovellolesiella curvispora*: A, External hyphae branched and intertwining. B, A developing conidium. C, Conidia. D, Leaf spots.

Maculae angulares vel irregulares, ferrugineae, zona flavescenti cinctae, 1–10 mm latae. Caespituli hypophylli. Stroma nullum. Mycelium secundarium superficiale: hyphae per stoma emergentes et ramosae de pilos foliorum, fere incolores in pallidas olivaceo-brunneas desinens, septatae, ramosae, aliquanto rectae vel arcuatae, 3–5 μm latae. Conidiophora ex hyphis superficialibus terminaliter et quasi processis brevis lateraliter oriunda, cum cicatricibus atratis circa 1 μm latis. Conidia clavata vel subcylindrica, curvata vel undulata, pallide olivacea, late rotundata ad apicem, obconica vel obtusa ad basim cum leniter incrassato hilo, 1–6 septata, leniter constricta ad septa, 15–70 \times 5–9 μm .

Habitat: In foliis vivis *Broussonetiae kazinokii* Sieb. (Moraceae), Nov. 23, 1985, Hueisun, Nantou Hsien, leg. T.K. Goh, NCHUPP-33, holotypus.

Leaf spots angular to irregular, ferruginous with a yellow halo, 1–10 mm wide. Fruiting hypophyllous. Stromata absent. Secondary mycelium external: hyphae emerging from the stomata and ramifying amongst the leaf hairs, varies from almost colourless to pale olivaceous brown, septate, branched, rather straight or arcuate, 3–5 μm wide. Conidiophores borne terminally and as mere short lateral projections bearing dark cicatrices of about 1 μm wide on the external hyphae. Conidia clavate or subcylindric, curved to undulate, pale olivaceous, broadly rounded at the apex, obconic or obtuse at the base with a slightly thickened hilum, 1–6 septate with slight constrictions at the septa, 15–70 \times 5–9 μm .

Habitat: On leaves of *Broussonetia kazinoki* Sieb. (Moraceae).

Specimen examined: NCHUPP-33, Nov. 23, 1985, Hueisun, Nantou Hsien, leg. T.K. Goh, holotype.

Distribution: Taiwan.

Note: This fungus differs from *Mycovellosiella broussonetiae* Goh et Hsieh by its variously curved, clavate and relatively wider conidia.

Mycovellosiella gonostegiae Goh et Hsieh, sp. nov. (Fig. 6.)

Maculae suborbiculares vel irregulares, atrobrunneae, absque margine distincto sed zona flavescenti cinctae, 1–9 mm latae. Caespituli hypophylli. Stroma nullum. Mycelium secundarium superficiale: hyphae sparse ramosae, implexae, fere incolores, 1–2 μm latae, basibus conidiophorum pallide olivaceae et

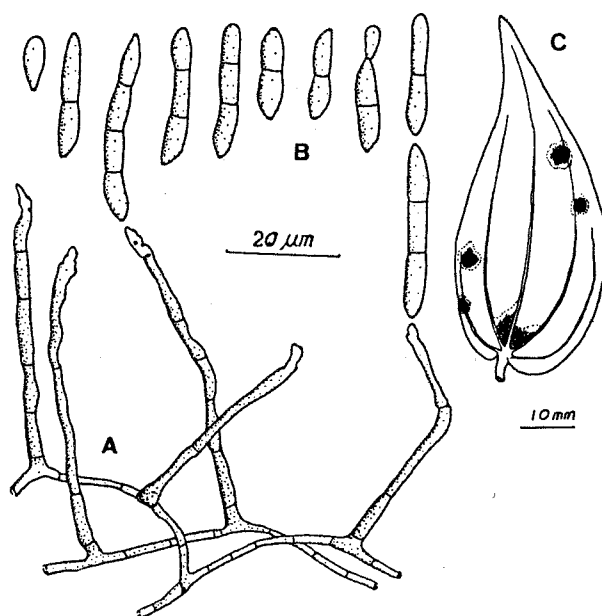


Fig. 6. *Mycovellosiella gonostegiae*: A, External hyphae bearing conidiophores. B, Conidia. C, Leaf spots.

dilatescentes. Conidiophora ex hyphis externalibus terminaliter et lateraliter oriunda, pallide olivaceo-brunnea, pallidiora vel fere incoloria ad apicem, latitudine variantia, 1–5 septata, leniter constricta ad septa, geniculata ad apicem, cicatrices conidiales incrassatae, 40–65 \times 2–3 μm . Conidia subcylindrica, plerumque recta, pallidissime olivaceo-brunnea, 0–3 septata, constricta ad septa, catenulata, hilis incrassatis ad quoque extremo gerentia, 10–35 \times 3–4 μm .

Habitat: In foliis vivis *Gonostegiae hirtae* (Blume) Miq. (Urticaceae), Jan. 3, 1985, Hsitou, Nantou Hsien, Taiwan, R.O.C., leg. T.K. Goh, NCHUPP-143, holotypus.

Leaf spots suborbicular to irregular, dark brown, without distinct margin but surrounded by an indefinite yellowish halo, 1–9 mm wide. Fruiting hypophyllous. Stroma none. Secondary mycelium external: hyphae sparsely branched, intertwining to form ropes, almost colourless, 1–2 μm wide, becoming pale olivaceous and wider near the bases where the conidiophores are borne. Conidiophores arise laterally and terminally from the external hyphae, very pale olivaceous brown, tip paler or almost colourless, irregular in width, 1–5 septate, slightly constricted at the septa, geniculate at the apex, conidial scars thickened, 40–65 \times 2–3 μm . Conidia subcylindric, mostly straight, very pale

olivaceous brown, 0-3 septate, constricted at the septa, catenulate, bearing thickened scars at each end, $10-35 \times 3-4 \mu\text{m}$.

Habitat: On leaves of *Gonostegia hirta* (Blume) Miq. (Urticaceae).

Specimen examined: NCHUPP-143, Jan. 3, 1985, Hsitou, Nantou Hsien, leg. T.K. Goh, holotype.

Distribution: Taiwan.

Note: No other *Mycovellosiella* or *Cercospora*-like fungi have been reported on *Gonostegia*.

Pseudocercospora actinidicola Goh et Hsieh, sp. nov. (Fig. 7.)

Maculae irregulares, per venas limitatae, 1-5 mm latae, saepe confluentes, brunneae, in hypophyllo pallide flavido-brunneae, margine indistincto. Caespituli amphigeni. Mycelium secundarium superficiale, hypophyllum: hyphae incolores vel pallide viridulae, 1-2 μm latae, ramosae, septatae, conidiophora secundaria lateraliter singulatim gerentes. Stromata brunnea, plerumque epiphylla, subglobosa vel elongata, usque 35 μm lata. Conidiophora subhyalina vel pallide viridula, dense fasciculata vel in hyphis superficialibus

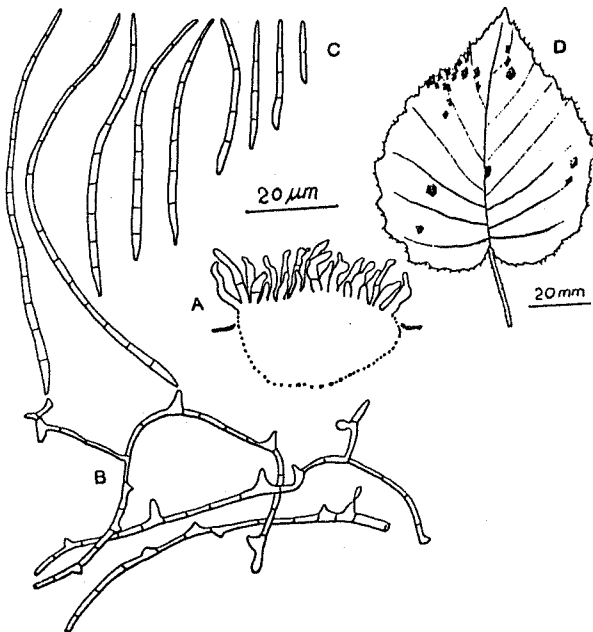


Fig. 7. *Pseudocercospora actinidicola*: A, Fascicle of conidiophores. B, External secondary mycelial hyphae bearing secondary conidiophores as side branches. C, Conidia. D, Leaf spots.

oriunda, raro septata, non ramosa, non geniculata, rotundata vel conica ad apicem, $2-15 \times 1-2.5 \mu\text{m}$; cicatrices conidiales inconspicuae. Conidia recta vel curvata et undulata, hyalina, filiformia vel anguste obclavata, obscure multiseptata, apice acuta, basi obconica, hilo non incrassato, $15-110 \times 1-2 \mu\text{m}$.

Habitat: In foliis vivis *Actinidiae chinensis* Planch. var. *setosae* Li (Actinidiaceae), Aug. 14, 1984, NCHU Campus, Taichung, Taiwan, R.O.C., leg. T.K. Goh, NCHUPP-49, holotypus (IMI 312075, isotypus).

Leaf spots irregular, vein-limited, 1-5 mm in wide, often confluent, brown, pale yellowish brown at lower leaf surface, without distinct margin. Caespituli amphigenous. Secondary mycelium external, hypophyllum: hyphae hyaline to pale greenish, 1-2 μm wide, branched, septate, bearing secondary conidiophores laterally, tangled between leaf hairs. Stromata brown, mostly epiphyllous, subglobose to elongated, up to 35 μm in width. Conidiophores subhyaline to pale greenish, densely fasciculate or borne on external hyphae, rarely septate, branching and geniculation absent, rounded or conic at the apex, scars invisible, $2-15 \times 1-2.5 \mu\text{m}$. Conidia straight to curved or undulate, hyaline, filiform or narrowly obclavate, indistinctly multiseptate, tip acute, base obconic, hilum unthickened, $15-110 \times 1-2 \mu\text{m}$.

Habitat: On leaves of *Actinidia chinensis* Planch. var. *setosa* Li (Actinidiaceae)

Specimen examined: NCHUPP-49, Aug. 14, 1984, NCHU Campus, Taichung, leg. T.K. Goh, holotype (isotype also deposited in IMI Herbarium No: 312075).

Distribution: Taiwan.

Note: The only other species of *Pseudocercospora* described on this host genus and family is *P. actinidiae* Deighton (1976) which differs from this fungus by its dark floccose fruiting and dark-coloured, broad (5-8 μm) cylindrical conidia.

Pseudocercospora alstoniae Goh et Hsieh, sp. nov. (Fig. 8.)

Maculae in epiphyllis indefinitae, modo decolorationes flavidae irregulares, in hypophyllo punctiforme, zona flavescenti cinctae, usque 10 mm latae. Caespituli amphigeni, sed in hypophyllo magis abundi. Stromata in hypophyllo nulla vel parva sed in epiphyllis usque 40 μm lata, erumpentia, atrobrunnea. Conidiophora usque 20 in fasciculo, in hypophyllo subfasciculata vel ex hyphis intertextis later-

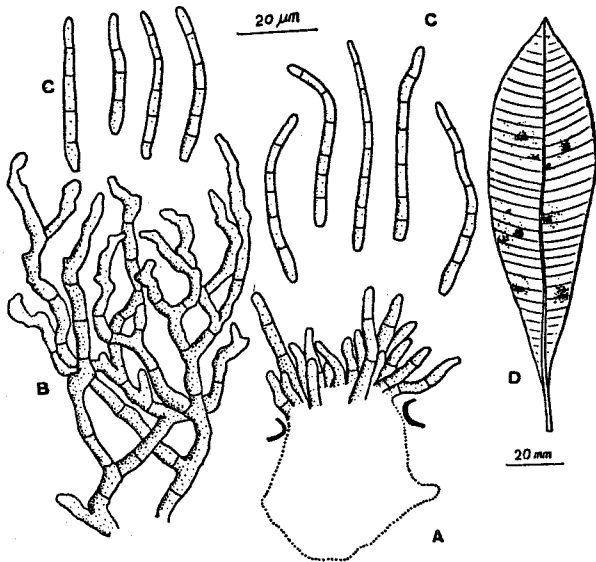


Fig. 8. *Pseudocercospora alstoniae*: A, Fascicle of conidiophores on a stroma. B, External hyphae interlacing and bearing secondary conidiophores. C, Conidia. D, Hypophyllous leaf spots.

aliter oriunda, evidenter ramosa, pallide brunnea, apicem versus pallidiora, geniculata, 0-4 septata, $10-80 \times 3-5 \mu\text{m}$; cicatrices conidiales non incrassatae. Conidia cylindrica vel obclavato-cylindrica, pallide olivaceo-brunnea, recta vel leniter curvata, obscure 3-7 septata, interdum constricta, obtusa vel rotundata ad apicem, breviter obconico-truncata ad basim, $30-60 \times 2.5-4 \mu\text{m}$, hilo non incrassato.

Habitat: In foliis vivis *Alstoniae scholaris* (L.) R. Br. (Apocynaceae), Jan. 14, 1988, Lien Hua Chih, Nantou Hsien, Taiwan, R.O.C. leg. T.K. Goh, NCHUPP-248, holotypus.

Leaf spots indefinite on the upper surface, merely irregular yellowish discoloration, but on the corresponding the lower surface consisting of brown punctation with indefinite yellowish zone, up to 10 mm wide. Fruiting amphigenous, but more abundant on the lower surface. Stromata none or poor on the lower surface but up to $40 \mu\text{m}$ wide on the upper surface, erumpent, irregular, dark brown, bearing fascicle of conidiophores. Conidiophores up to 20 in a fascicle, on the lower surface subfasciculate or arise as lateral branches from interlacing hyphae, plainly branched, pale brown, paler towards the apex, geniculate, 0-4 septate, $10-80 \times 3-5 \mu\text{m}$; conidial scars unthickened.

Conidia cylindric to obclavato-cylindric, pale olivaceous brown, straight to mildly curved, indistinctly 3-7 septate, sometimes constricted, obtuse or rounded at the apex, short obconically truncate at the base, $30-60 \times 2.5-4 \mu\text{m}$; hilum unthickened.

Habitat: On leaves of *Alstonia scholaris* (L.) R. Br. (Apocynaceae).

Specimen examined: NCHUPP-248, Jan. 14, 1988, Lien Hua Chih, Nantou Hsien, leg. T.K. Goh, holotype.

Distribution: Taiwan.

Note: There are no other *Pseudocercospora* or *Cercospora*-like fungi reported on *Alstonia*. This fungus differs from other *Pseudocercospora* and *Cercospora*-like fungi in the host family Apocynaceae chiefly by its plainly branched conidiophores and by its coloured cylindric conidia. *Cercospora plumeriae* Chupp (1954) differs from this fungus by its distinct leaf spots, epiphyllous fruiting and unbranched conidiophores.

***Pseudocercospora baphicacanthi* Hsieh et Goh, sp. nov.** (Fig. 9.)

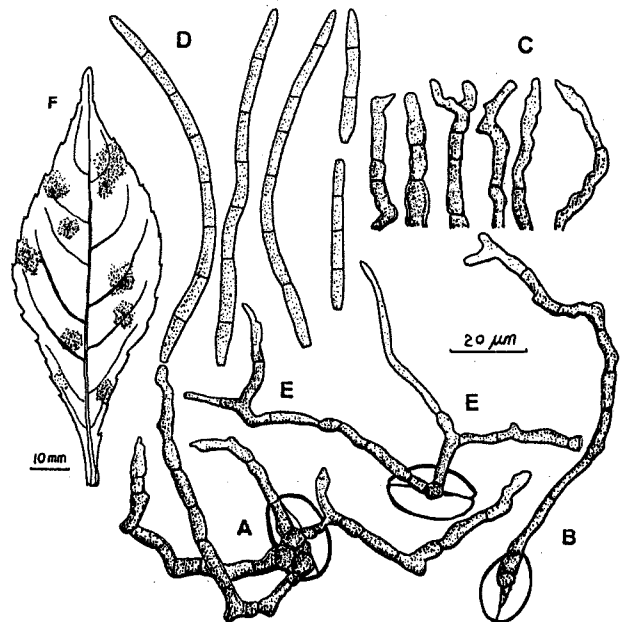


Fig. 9. *Pseudocercospora baphicacanthi*: A, Loose fascicle of conidiophores arising from a stoma. B, Conidiophore that arises singly from a stoma. C, Variation of conidiophore apices. D, Conidia. E, External hyphae bearing conidiophores as side branches. F, Hypophyllous leaf spots.

Maculae irregulares, absque margine distincto, apparere quasi fragmenta flavida in epiphylllo sed pallide flavido-brunneae in hypophyllo. 2-12 mm latae vel coalexcentes hypophylli. Stroma nullum. Conidiophora per stoma emergentia vel ex hyphis superficialibus lateraliter oriunda, pallide brunnea, aliquando uniformia in coloratione vel pallidiora ad apicem, subrecta vel varie curvata, septata, ramosa et geniculata, subtruncata vel rotundata ad apicem, $20-120 \times 3-6 \mu\text{m}$; cicatrices conidiales circa $2 \mu\text{m}$ latae, non incrassatae. Conidia recta vel leniter curvata, chlorina vel pallide olivacea, cylindrica, 2-7 septata, subobtusa ad apicem, truncata ad basim cum non incrassato hilo, $30-100 \times 3-4 \mu\text{m}$.

Habitat: In foliis vivis *Baphicacanthi cusiae* (Ness) Bremek. (Acanthaceae), March 28, 1985, Hsitou, Nantou Hsien, Taiwan, R.O.C., leg. W.H. Hsieh, NCHUPP-162, holotypus (IMI 312069, isotypus).

Leaf spots irregular, without distinct margin, appearing as yellowish patches on upper leaf surface but yellowish brown on corresponding lower surface, 2-12 mm in width or coalesce to form larger spots. Fruiting hypophyllous. Stromata lacking. Conidiophores emerging through stomata or as lateral branches on procumbent hyphae, pale brown, rather uniform in color or paler at the apex, substraight or variously curved, septate, branched and geniculate, subtruncate or rounded at the apex, $20-120 \times 3-6 \mu\text{m}$, conidial scars about $2 \mu\text{m}$ wide, unthickened. Conidia straight to mildly curved, chlorinous to pale olivaceous, cylindric, 2-7 septate, subobtuse at the apex, truncate at the base with an unthickened hilum, $30-100 \times 3-4 \mu\text{m}$.

Habitat: On leaves of *Baphicacanthus cusia* (Ness) Bremek. (Acanthaceae).

Specimen examined: NCHUPP-162, March 28, 1985, Hsitou, Nantou Hsien, leg. T.K. Goh, holotype (isotype also deposited in IMI Herbarium No: 312069).

Distribution: Taiwan.

Note: There are no other *Pseudocercospora* or *Cercospora*-like fungi reported on the host genus *Baphicacanthus*.

Pseudocercospora basellae Goh et Hsieh, sp. nov. (Fig. 10.)

Maculae orbiculares, 1-5 mm in diametro, centro griseo vel albido, margine atropurpureo-rubro cinctae, plerumque in margine folii. Caespituli am-

phigeni, perspicui in atropustulas minutas. Mycelium secundarium externale: hyphae pallidissime olivaceae, usque $2.5 \mu\text{m}$, ex conidiophoris fasciculatis oriundae, conidiophora secundaria lateraliter gerentes. Stromata bene evoluta, $50-120 \mu\text{m}$ lata, atro-olivaceo brunnea, conidiophora numerose oriunda. Conidiophora dense fasciculata, pallidissime olivacea vel pallide olivaceo-brunnea, 0-3 septata, leniter constricta ad septa, interdum ramosa, latitudine variantia, recta vel sinuosa, leniter geniculata, rotundata ad apicem, $10-50 \times 2-5 \mu\text{m}$; cicatrices conidiales non incrassatae et inconspicuae. Conidia anguste obclavata vel filiformia, pallidissime olivacea, recta vel leniter curvata, obscure 3-9 septata, interdum conidia secundaria ex cellulis conidiorum partim oriunda, subacuta ad apicem, obconica vel obconico-truncata ad basim, $30-120 \times 1.8-3 \mu\text{m}$, hilo non incrassato.

Habitat: In foliis vivis *Basellae rubrae* L. (Basellaceae), Dec. 11, 1987, Tungshih, Taichung, Taiwan, R.O.C. leg. T.K. Goh, NCHUPP-242, holotypus.

Leaf spots orbicular, 1-5 mm in diameter, grey or bleached at the center with dark purplish red margin, mostly occur at the leaf margin. Fruiting amphigenous, visible as minute black pustules (i.e. the

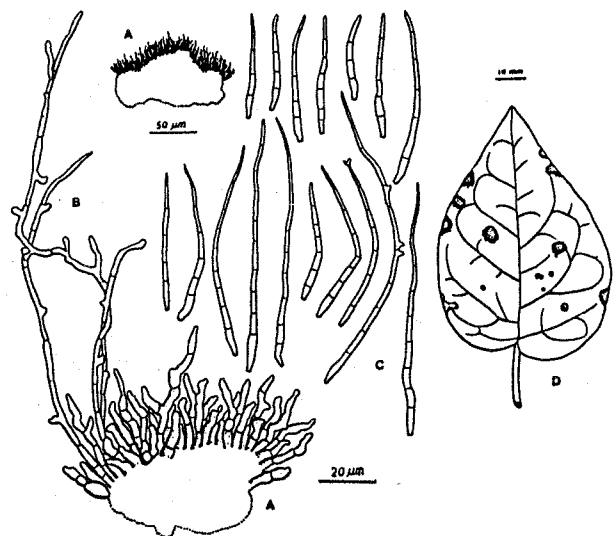


Fig. 10. *Pseudocercospora basellae*: A, Dense fascicles of conidiophores on stromata. B, Secondary mycelial hyphae arising from among the fascicle, bearing secondary conidiophores as lateral branches. C, Conidia. D, Leaf spots.

dense turfs of conidiophores) on the bleached center. Secondary mycelium external: hyphae very pale olivaceous, up to $2.5\ \mu\text{m}$ wide, arising from the fasciculate conidiophores, bearing secondary conidiophores laterally. Stromata well developed, $50\text{--}120\ \mu\text{m}$ wide, dark olivaceous brown, bearing numerous conidiophores. Conidiophores densely fasciculate, very pale olivaceous to pale olivaceous brown, 0-3 septate with slight constriction, sometimes branched, irregular in width, straight to sinuous, slightly geniculate, rounded at the apex, $10\text{--}50 \times 2\text{--}5\ \mu\text{m}$; conidial scars unthickened and inconspicuous. Conidia narrowly obclavate to filiform, very pale olivaceous, straight to mildly curved, indistinctly 3-9 septate, sometimes produce secondary conidia at some of the cells, subacute at the apex, obconic or obconically truncate at the base, $30\text{--}120 \times 1.8\text{--}3\ \mu\text{m}$, hilum unthickened.

Habitat: On leaves of *Basella rubra* L. (Basellaceae).

Specimen examined: NCHUPP-242, Dec. 11, 1987, Tungshih, Taichung Hsien, leg. T.K. Goh, NCHUPP-242, holotype.

Distribution: Taiwan.

Note: There are no other *Pseudocercospora* or *Cercospora*-like fungi reported on *Basella* and in the host family Basellaceae.

Pseudocercospora caesalpiniae Goh et Hsieh, sp. nov. (Fig. 11.)

Maculae angulares vel irregulares, per venas limitatae sed absque margine distincto, griseolae vel atroburneae, $0.5\text{--}3\ \text{mm}$ latae. Caespituli amphigeni, sed magis abundi in hypophyllo. Mycelium secundarium superficiale: hyphae pallide olivaceae, $1.5\text{--}2.5\ \mu\text{m}$ latae, conidiophora secundaria lateraliter gerentes. Stromata subglobosa, brunnea, usque $40\ \mu\text{m}$ lata. Conidiophora primaria dense fasciculata, subhyalina vel pallidissime olivacea, non ramosa, non geniculata, rarissime septata, rotundata ad apicem, $5\text{--}15 \times 1.5\text{--}3\ \mu\text{m}$, cicatrices conidiales inconspicuae. Conidiophora secundaria ex hyphis superficialibus singillatim gerenta. Conidia subhyalina, acicularia vel anguste obclavata, aliquando cylindrica, recta vel leniter curvata, obscure multiseptata, conica vel anguste rotundata ad apicem, truncata vel obconico-truncata ad basim, $20\text{--}80 \times 2\text{--}3\ \mu\text{m}$.

Habitat: In foliis vivis *Caesalpiniae pulcherrimae* Sw. (Leguminosae), Dec. 30, 1985, Takeng, Taichung,

Taiwan, R.O.C., leg. T.K. Goh, NCHUPP-207, holotypus.

Leaf spots angular to irregular, vein-limited but without a distinct border, greyish to dark brown, $0.5\text{--}3\ \text{mm}$ wide. Fruiting amphigenous, but more abundant on the lower surface. Secondary mycelium external: hyphae pale olivaceous, $1.5\text{--}2.5\ \mu\text{m}$ wide, bearing secondary conidiophores as side branches. Stromata subglobose, brown, up to $40\ \mu\text{m}$ wide. Primary conidiophores densely fasciculate, subhyaline to very pale olivaceous, branching and geniculation absent, very rarely septate, rounded at the apex, $5\text{--}15 \times 1.5\text{--}3\ \mu\text{m}$, conidial scars inconspicuous. Secondary conidiophores similar in respect to the primary conidiophores, borne singly on the procumbent hyphae. Conidia subhyaline, acicular to narrowly obclavate, some cylindrical, straight to slightly curved, indistinctly multiseptate, conic or narrowly rounded at the apex, truncate or obconically truncate at the base, $20\text{--}80 \times 2\text{--}3\ \mu\text{m}$.

Habitat: On leaves of *Caesalpinia pulcherrima* Sw. (Leguminosae).

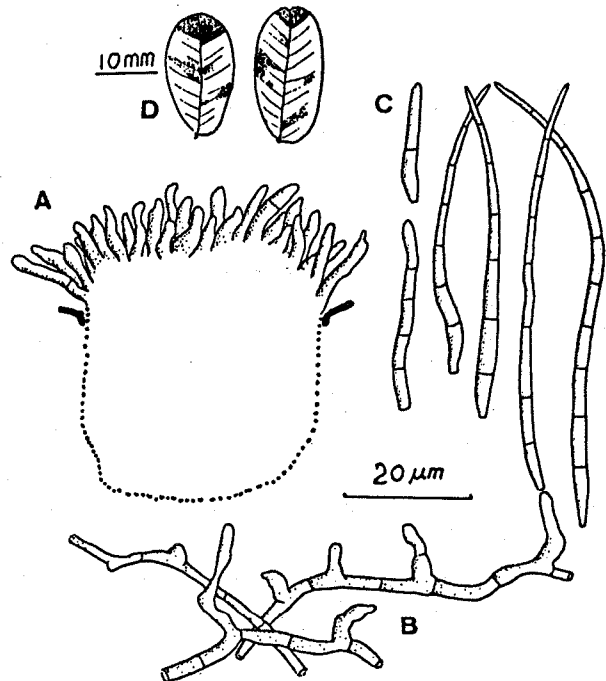


Fig. 11. *Pseudocercospora caesalpiniae*: A, Fascicle of conidiophores on a stroma. B, External secondary mycelial hyphae bearing secondary conidiophores as side branches. C, Conidia. D, Hypophyllous leaf spots.

Specimen examined: NCHUPP-207, Dec. 30, 1985, Takeng, Taichung, leg. T.K. Goh, holotype.

Distribution: Taiwan.

Note: This fungus differs from *Cercospora guanicensis* Young (1916) on *Caesalpinia crista* L. by the absence of thickened spore scars and the presence of secondary mycelium, as well as by its relatively narrower, very pale conidiophores. *Cercospora bakeriana* Saccardo (1914) differs from this fungus by its dark-coloured conidiophores with thickened conidial scars and by its hyaline, acicular conidia. *Cercoseptoria caesalpiniae* Yen *et al.* (1982) differs from this fungus by its cylindrical conidia.

Pseudocercospora millettiae Goh et Hsieh, sp. nov. (Fig. 12.)

Maculae parvae, usque 1 mm latae, disseminatae, irregulares, atrobrunneae, zona flavescenti cinctae, utrinque foliorum eadem. Caespituli hypophylli. Mycelium secundarium absens. Stromata nulla vel admodum paucicellulis brunneis composita. Conidiophora usque 15 in fasciculo, cylindrica, pallide brunnea, uniformia in coloratione, recta, raro ramosa, 0-1 geniculata, 0-4 septata, interdum leniter constricta ad septa, $55-100 \times 3.5-5 \mu\text{m}$, truncata vel rotundata ad apicem cum pseudo-annellatione. Conidia (annellospora) olivacea vel pallide olivaceo-brunnea, cylindrica, raro obclavato-cylindrica, recta vel leniter curvata, obscure 2-7 septata, interdum leniter constricta ad septa, ad apicem obtusa, conidium secundarium (etiam annellosporium) interdum ex apice conidii gerentia, truncata vel breviter obconico-truncata ad basim, $28-90 \times 3-4.5 \mu\text{m}$.

Habitat: In foliis vivis *Millettia reticulatae* Benth. (Leguminosae), Jan, 18, 1988, Kukuan, Taichung Hsien, Taiwan, R.O.C. leg. T.K. Goh, NCHUPP-107a, holotypus.

Leaf spots small, up to 1 mm wide, scattered, irregular in shape, dark brown with a yellow halo, identical on both surfaces. Fruiting hypophyllous. Secondary mycelium absent. Stromata none or just a few brown cells. Conidiophores up to 15 in a fascicle, cylindrical, pale brown, uniform in colour, straight, rarely branched, 0-1 geniculate, 0-4 septate, sometimes slightly constricted at the septa, $55-100 \times 3.5-5 \mu\text{m}$, the apex usually rounded towards the truncate conidial scar (1-3 μm wide). proliferation is normally percurrent, the conidiophores growing through the old thin

apical scar (sometimes slightly to one side of it) and leaving the torn margin of the scar visible as a pseudo-annellation. Conidia (annellospores) olivaceous to pale olivaceous brown, cylindrical, rarely obclavato-cylindrical, straight to mildly curved, indistinctly 2-7 septate, sometimes slightly constricted at the septa, obtuse at the apex, sometimes some of the conidia may produce secondary conidia (also annellospores) at the apex, truncate or short obconically truncate at the base, $28-90 \times 3-4.5 \mu\text{m}$.

Habitat: On leaves of *Millettia reticulata* Benth. (Leguminosae).

Specimen examined: NCHUPP-107a, Jan. 18, 1988,

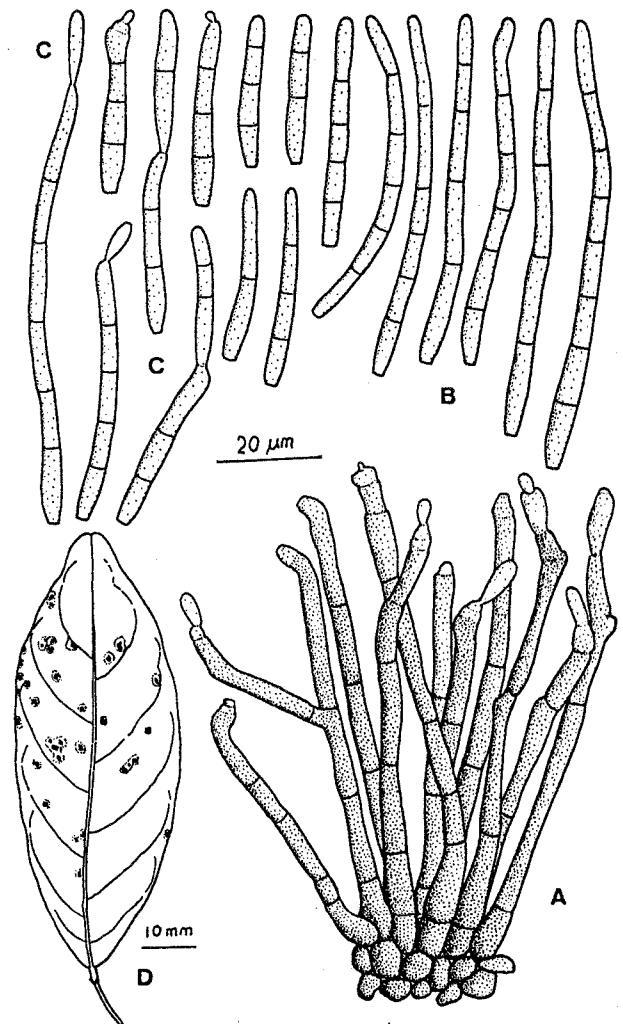


Fig. 12. *Pseudocercospora millettiae*: A, Fascicle of conidiophores. B, Conidia. C, Conidia that catenulate. D, Leaf spots.

Kukuan, Taichung Hsien, leg. T.K. Goh, holotype.

Distribution: Taiwan.

Note: *Stigmina millettiae* M.B. Ellis (1972) differs from this fungus by its broad (15–36 μm), clavate, dark-coloured conidia. No other *Pseudocercospora* or *Cercospora*-like fungi have been reported on *Millettia*.

Pseudocercospora oxalidis Goh & Hsieh, sp. nov., (Fig. 13.)

Maculae suborbiculares, 1–7 mm in diametro, griseo-brunneae vel modice brunneae, aliquando margine atro cinctae. Caespituli amphigeni. Stromata nulla vel commode ex paucicellulis incoloribus basalaribus composita. Conidiophora brevissime, hyalina, tenuitunicata, simplicia, non septata, subcylindrica vel conica, 0–1 geniculata, anguste rotundata vel subtruncata ad apicem, 3–10 \times 2–3 μm ; cicatrices conidiales non visibiles. Conidia anguste obclavata, subrecta, subhyalina vel obscure viridula, laevia, tenuitunicata, 2–9 septata, conica ad apicem, obconico-truncata ad basim, 20–70 \times 1.5–2 μm ; hilum non incrassatum et inconspicuum.

Habitat: In foliis vivis *Oxalidis corymbosae* DC. (Oxalidaceae), June 18, 1986, Hsinchu, Taiwan, R. O.C., leg. T.K. Goh, NCHUPP-153a, holotypus

(IMI 312076, isotypus).

Leaf spots suborbicular, 1–7 mm in diameter, greyish or medium brown, occasionally with a dark margin. Fruiting amphigenous. Stromata absent or just a few hyaline basal cells. Conidiophores very short, colourless or almost so, thin-walled, simple, non-septate, subcylindric or conic, 0–1 geniculate, narrowly rounded or subtruncate at the apex, 3–10 \times 2–3 μm ; conidial scars invisible. Conidia narrowly obclavate, substraight, subhyaline or faintly greenish, smooth, thin-walled 2–9 septate, conic at the apex, long obconic or obconically truncate at the base, 20–70 \times 1.5–2 μm ; hilum unthickened and inconspicuous.

Habitat: On leaves of *Oxalis corymbosa* DC. (Oxalidaceae).

Specimen examined: NCHUPP-153a, June 18, 1986, Hsinchu, leg. T.K. Goh, holotype (isotype also deposited in IMI Herbarium No: 312076).

Distribution: Taiwan.

Note: The short colourless conidiophores, the narrowly obclavate conidia, and the unthickened conidial scars separate this species from others *Oxalis* spp. Since the conidia are narrowly obclavate, it is not a *Pseudocercospora*.

Pseudocercospora platycaryae Goh et Hsieh, sp. nov. (Fig. 14.)

Maculae irregulariter atropunctiformes, in sicco irregulariter brunneae absque margine distincto. Caespituli hypophylli. Stromata nulla. Mycelium secundarium superficiale, copiosum; hyphae per stoma emergentes, pallide flavido-olivaceae, 2–4 μm latae, repentes, septatae, ramosae, conidiophora erecta lateraliter gerentes. Conidiophora primaria solum 1–3 subfasciculata, per stoma emergentia, 0–1 septata, variantia in latitudine, pallide flavido-olivacea, 0–1 geniculata, non ramosa, 13–35 \times 2.5–4 μm ; cicatrices conidiales non perspicuae. Conidiophora secundaria ex hyphis superficialibus mycelii secundarii terminaliter et lateraliter oriunda, non septata, 0–3 abrupte geniculata, tortuosa, pallide flavido-olivacea vel pallide olivaceo-brunnea, 3–20 \times 2.5–5 μm ; cicatrices conidiales interdum visibiles sed non conspicue incrassatae, truncatae, 1.5–3 μm latae. Conidia cylindrica vel filiformia, pallide flavido-olivacea, leniter curvata vel undulata, 5–13 septata, interdum constricta, obtusa ad apicem, truncata da basim 55–150 \times 2.5–3.5

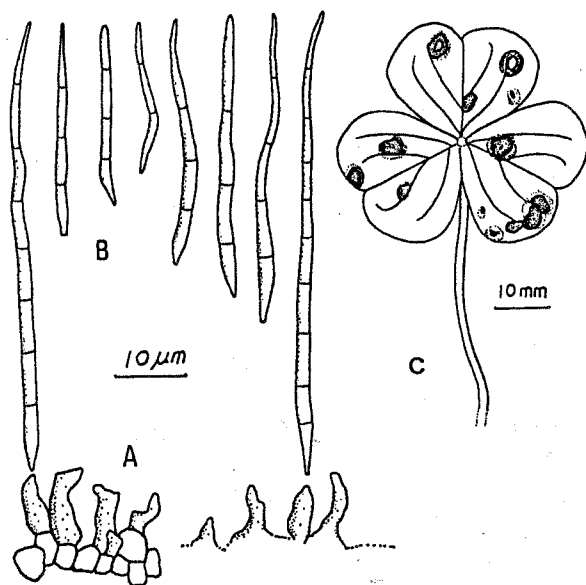


Fig. 13. *Pseudocercospora oxalidis*: A, Aggregation of very short conidiophores on a few hyaline basal cells. B, Conidia. C, Leaf spots.

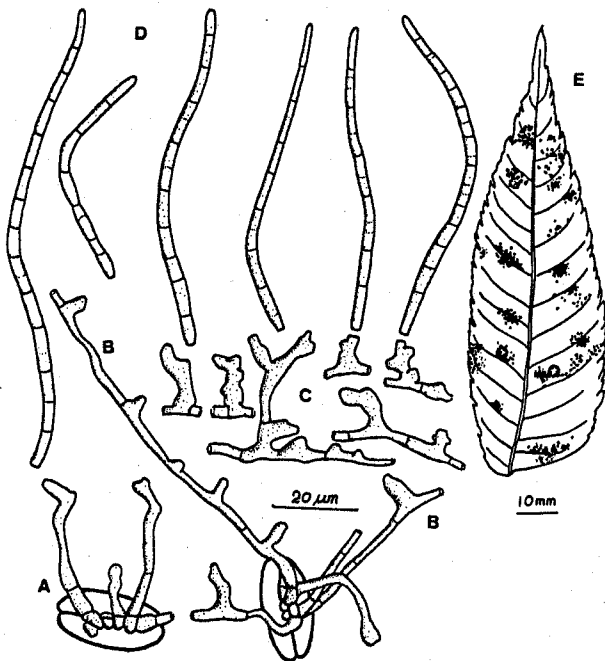


Fig. 14. *Pseudocercospora platycaryae*: A, Loose fascicle of primary conidiophores at the stomatal opening. B, Secondary mycelial hyphae emerging from the stoma, bearing secondary conidiophores as side branches. C, Various shapes of secondary conidiophores. D, Conidia. E, Hypophyllous leaf spots.

μm ; hilum interdum visibile sed non conspicue incrassatum.

Habitat: In foliis vivis *Platycaryae strobilaceae* Sieb. & Zucc. (Juglandaceae), July 21, 1986, Lishan, Taichung Hsien, Taiwan, R.O.C. leg. T.K. Goh, NCHUPP-223, holotypus.

Leaf spots on fresh materials irregularly black punctiform, on dried material appearing as irregular brown blotches without definite border. Fruiting hypophyllous. Stomata none. Secondary mycelium external, copious: hyphae emerging through the stomata, pale yellowish olivaceous, $2-4 \mu\text{m}$ wide, repent, septate, branched, bearing conidiophores as erect side branches. Primary conidiophores only 1-3 subfasciculate, emergent from the stomata, 0-1 septate, irregular in width, pale yellowish olivaceous, 0-1 geniculate, not branched, $13-35 \mu\text{m} \times 2.5-4 \mu\text{m}$; conidial scars invisible. Secondary conidiophores borne terminally and laterally on the external secondary mycelial hyphae, not septate, 0-3 abruptly geniculate and tortuous in appearance pale yellowish

olivaceous to pale olivaceous brown, $3-20 \times 2.5-5 \mu\text{m}$; conidial scars sometimes visible but not conspicuously thickened, truncate, $1.5-3 \mu\text{m}$. Conidia cylindrical to filiform, pale yellowish olivaceous, slightly curved to undulate, 5-13 septate, sometimes constricted, obtuse at the apex, truncate at the base, $55-150 \times 2.5-3.5 \mu\text{m}$; hilum sometimes visible but not conspicuously thickened.

Habitat: On leaves of *Platycarya strobilaces* Sieb. & Zucc. (Juglandaceae).

Specimen examined: NCHUPP-223, July 21, 1986, Lishan, Taichung Hsien, leg. T.K. Goh, holotype.

Distribution: Taiwan.

Note: There are several other *Cercospora* or *Cercospora*-like fungi on the host family Juglandaceae. *Cercospora caryae* Chupp et Doidge (1948) and *Cercospora forsteriana* Chupp et Viegas (1945) differ from this fungus by their fasciculate conidiophores and hyaline acicular to obclavate conidia. *Sirosporium diffusum* (Heald & Wolf) Deighton (syn. *Cercospora fusca* Rands) and *Cercospora juglandis* Kellerman et Swingle (1889) differ from this fungus by their conspicuously thickened conidial scars.

***Pseudocercospora salviae* Goh et Hsieh, sp. nov.** (Fig. 15.)

Maculae angulares vel irregulares, sordido-

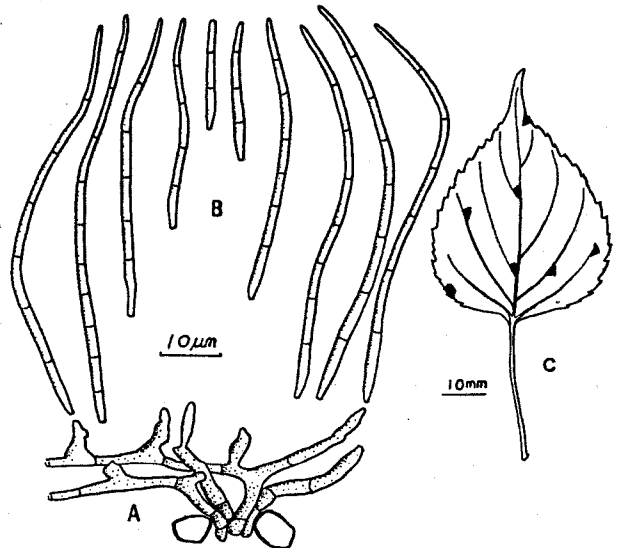


Fig. 15. *Pseudocercospora salviae*: A, External hyphae arising from a stoma, bearing conidiophores. B, Conidia. C, Leaf spots.

griseae vel fuliginosae, absque margine distincto, 0.5–2.5 mm latae. Caespituli praecipue hypophylli. Mycelium secundarium superficiale: hyphae 1–2 μm latae, subhyalinae vel pallide olivaceae, septatae, repentae, conidiophora secundaria lateraliter gerentes. Stroma nullum. Conidiophora non fasciculata vel 2–3 in fasciculo, absque ex hyphis superficialibus oriunda, pallide olivacea, cylindrica vel clavata, raro geniculata, 0–2 septata, subtruncata vel rotundata ad apicem, 5–25 \times 2–3.5 μm ; cicatrices conidiales inconspicuae. Conidia filiformia vel anguste obclavata, subhyalina, plerumque curvata vel undulata, 2–10 septata, subacuta vel subobtusa ad apicem, obconica vel obconico-truncata ad basim, 20–75 \times 1–2 μm ; hilum non incrassatum et inconspicuum.

Habitat: In foliis vivis *Salviae splendensis* Ker. Gawl. (Labiatae), June 18, 1986, Hsinchu, Taiwan, R.O.C., leg. T.K. Goh, NCHUPP-222, holotypus (IMI 312072, isotypus).

Leaf spots angular to irregular, dull grey to fuliginous brown, without definite margin, 0.5–2.5 mm wide. Fruiting chiefly hypophyllous. Secondary mycelium external: hyphae 1–2 μm wide, subhyaline to pale olivaceous, septate, repent, bearing secondary conidiophores as side branches. Stroma absent. Conidiophores not fasciculate or 2–3 in a fascicle, chiefly borne on external hyphae, pale olivaceous, cylindrical or clavate, rarely geniculate, 0–2 septate; subtruncate or rounded at the apex, 5–25 \times 2–3.5 μm ; conidial scars inconspicuous. Conidia filiform or narrowly obclavate, subhyaline, mostly curved or undulate, 2–10 septate, subacute or subobtuse at the apex, obconic or obconically truncate at the base, 20–75 \times 1–2 μm ; hilum unthickened and inconspicuous.

Habitat: On leaves of *Salvia splendens* Ker. Gawl. (Labiatae).

Specimen examined: NCHUPP-222, June 18, 1986, Hsinchu, leg. T.K. Goh, holotype (isotype also deposited in IMI Herbarium No: 312072).

Distribution: Taiwan.

Note: *Cercospora salviicola* Tharp (1917) on *Salvia* spp. differs from this fungus by its fasciculate conidiophores which bear thickened conidial scars and by its hyaline, acicular conidia. No other *Pseudocercospora* has been reported on *Salvia*.

Pseudocercospora stachyurina Goh et Hsieh, sp. nov. (Fig. 16.)

Maculae orbiculares vel angulares, 1–5 mm latae, griseo-brunneae, margine atrobrunneo cinctae. Caespituli hypophylli. Mycelium secundarium absens. Stromata nulla. Conidiophora 10–25 in fasciculo divergentia, pallide olivaceo-brunnea, plus minusve cylindrica, plerumque recta, non ramosa, 0–1 geniculata, 0–2 septata, interdum constricta ad septa, rotundata vel conico-truncata ad apicem, 15–40 \times 3–5 μm ; cicatrices conidiales non incrassatae. Conidia pallide olivacea vel pallide olivaceo-brunnea, acicularia vel aciculo-obclavata, subrecta vel leniter curvata, raro undulata, obscure 3–8 septata, leniter constricta ad septa, subacuta vel subobtusa ad apicem, truncata vel breviter obconico-truncata ad basim, 30–80 \times 3–4.5 μm , hilo non incrassato.

Habitat: In foliis vivis *Stachyuri himalaici* Hook. f. & Thomson ex Benth. (Stachyuraceae), Feb. 11, 1988, Lushan, Nantou Hsien, Taiwan, R.O.C. leg. T.K. Goh, NCHUPP-134b, holotypus.

Leaf spots orbicular to angular, 1–5 mm wide, greyish brown, with dark brown margin. Fruiting hypophyllous. Secondary mycelium absent. Stromata none. Conidiophores 10–25 in a divergent fascicle, pale olivaceous brown, more or less cylindrical, mostly straight, not branched, 0–1 geniculate, 0–2 septate,

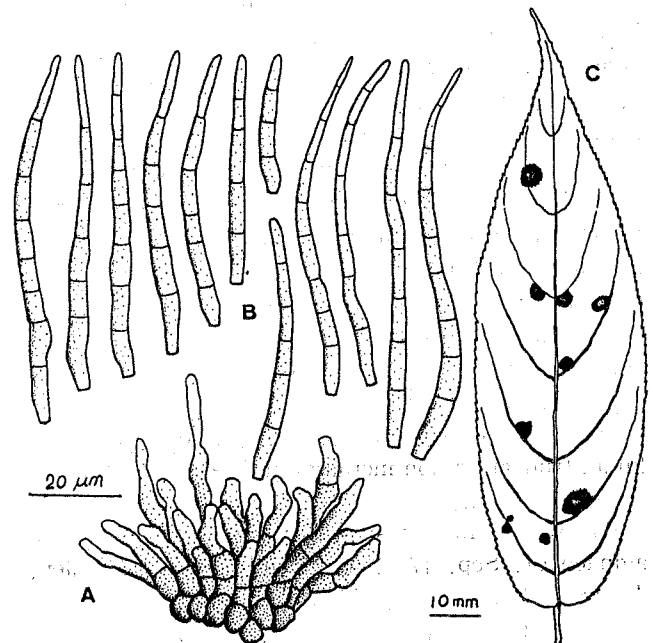


Fig. 16. *Pseudocercospora stachyurina*: A, Fascicle of conidiophores. B, Conidia. C, Leaf spots.

sometimes constricted at the septa, rounded or conically truncate at the apex, $15-40 \times 3-5 \mu\text{m}$, conidial scars unthickened. Conidia pale olivaceous to pale olivaceous brown, acicular to aciculo-obclavate, substraight to mildly curved, rarely undulate, indistinctly 3-8 septate, slightly constricted at the septa, subacute to subobtuse at the apex, truncate or short obconically truncate at the base, $30-80 \times 3-4.5 \mu\text{m}$, hilum unthickened.

Habitat: On leaves of *Stachyurus himalaicus* Hook. f. & Thomson ex Benth. (Stachyuraceae).

Specimen examined: NCHUPP-134b, Feb. 11, 1988, Lushan, Nantou Hsien, leg. T.K. Goh, holotype.

Distribution: Taiwan.

Note: *Cercospora stachyuricola* Liu et Guo (1984) differs from this fungus by its conidiophores which bear thickened conidial scars and by its hyaline acicular conidia. No other *Pseudocercospora* or *Cercospora*-like fungi reported in the host family Stachyuraceae.

Pseudocercospora symphyti Goh et Hsieh, sp. nov. (Fig. 17.)

Maculae irregulares vel angulares, per venas limitatae, absque margine distincto, 0.5-4 mm latae, in epiphylo brunneae, in hypophyllo griseo-brunneae, textura foliorum circa maculas decoloratae. Caespituli amphigeni. Mycelium secundarium superficiale: hyphae pallide olivaceae vel pallide olivaceo-brunneae, conidiophora secundaria lateraliter gerentes, $2.5-3.5 \mu\text{m}$ latae. Stromata paucicellulis brunneis composita vel usque $40 \mu\text{m}$ lata, substomatalia vel erumpentia. Conidiophora usque 17 in fasciculo vel ex hyphis superficialibus lateraliter singulatim oriunda, pallide olivacea vel pallide olivaceo-brunnea, uniformia in coloratione et latitudine, basi recta, leniter sinuosa versus apicem, apice truncata vel raro leniter geniculata, 1-3 septata, $25-90 \times 3-4 \mu\text{m}$; cicatrices conidiales inconspicuae. Conidia subcylindrica vel anguste obclavata, recta vel leniter curvata, concoloria cum conidiophoris, 2-10 septata, apice obtusa, basi in hilum truncatum non incrassatum breviter attenuata, $40-90 \times 4-5 \mu\text{m}$.

Habitat: In foliis vivis *Symphyti officinalis* L. (Boraginaceae), Sep. 17, 1985, Houli, Taichung Hsien, Taiwan, R.O.C., leg T.K. Goh, NCHUPP-172, holotypus (IMI 312077, isotypus).

Leaf spots angular to irregular, vein-limited, without distinct margin, 0.5-4 mm wide, brown on

upper surface, grey-brown on lower surface, leaf tissue around the spots discolored. Fruiting amphigenous. Secondary mycelium external: hyphae pale olivaceous to pale olivaceous brown, bearing secondary conidiophores laterally, $2.5-3.5 \mu\text{m}$ wide. Stromata a few brown cells or up to $40 \mu\text{m}$ wide, substomatal or erumpent. Conidiophores either up to 20 in a fascicle or arise singly as side branches from the external hyphae, pale olivaceous to pale olivaceous brown or in mass appearing darker, uniform in colour and width, sometimes branched, straight below and slightly sinuous towards the apex, tip subtruncate or rarely with slight geniculation, 1-3 septate, $25-90 \times 3-4 \mu\text{m}$; conidial scars inconspicuous. Conidia subcylindric or cylindro-obclavate, straight to mildly curved, concolorous with the conidiophores, 2-10 septate, tip obtuse, base shortly tapered to a truncate unthickened hilum, $40-90 \times 4-5 \mu\text{m}$.

Habitat: On leaves of *Symphytum officinale* L. (Boraginaceae.)

Specimen examined: NCHUPP-172, Sep. 17, 1985,

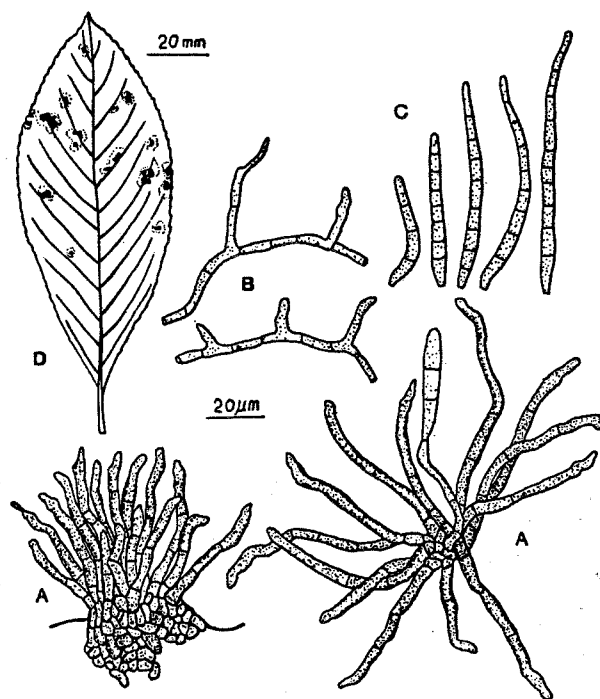


Fig. 17. *Pseudocercospora symphyti*: A, Fascicles of conidiophores. B, External secondary mycelial hyphae bearing secondary conidiophores. C, Conidia. D, Leaf spots.

Houli, Taichung Hsien, leg. T.K. Goh, holotype (isotype also deposited in IMI Herbarium No: 312077).

Distribution: Taiwan

Note: *Cercospora agnostoica* Spegazzini (1908) on *Symphytum* sp. differs from this fungus by its thickened conidial scars and by its hyaline, acicular conidia.

Pseudocercospora tagetis-erectae Goh et Hsieh, sp. nov. (Fig. 18.)

Maculae suborbiculares vel irregulares, atro-olivaceo brunneae, absque margine distincto, 0.5-5 mm latae, saepe confluente. Caespituli amphigeni, plerumque epiphylli. Mycelium secundarium praesens. Stromata globosa, substomatalia, brunnea, usque 45 μ m lata. Conidiophora dense fasciculata, pallidissime olivacea, cylindrica, erecta vel sinuosa, raro septata vel geniculata, truncata vel rotundata ad apicem, 10-25 \times 1.5-3 μ m; cicatrices conidiales inconspicuae. Conidia anguste obclavata vel filiformia, subrecta vel curvata, aliquando undulata, subhyalina, 3-12 septata, acuta ad apicem, longe obconico-truncata ad basim, 20-90 \times 1.5-2 μ m; hilum non incrassatum.

Habitat: In foliis vivis *Tagetes erectae* L. (Compositae), Aug. 11, 1984, Taichung, Taiwan, R. O.C., leg. T.K. Goh, NCHUPP-36, holotypus.

Leaf spots suborbicular to irregular, dark olivaceous brown, without definite margin, 0.5-5 mm wide, often confluent. Fruiting amphigenous, mostly epiphyllous. Secondary mycelium present. Stromata globular, substomatal, brown, up to 45 μ m wide. Conidiophores densely fasciculate, very pale olivaceous, cylindrical, erect or sinuous, rarely septate or geniculate, truncate or rounded at the apex, 10-25 \times 1.5-3 μ m. conidial scars inconspicuous. Conidia narrowly obclavate or filiform, substraight or curved, sometimes undulate, subhyaline, 3-12 septate, acute at the apex, long obconically truncate at the base, 20-90 \times 1.5-2 μ m; hilum unthickened.

Habitat: On leaves of *Tagetes erecta* L. (Compositae).

Specimen examined: NCHUPP-36, Aug. 11, 1984; Taichung, leg. T.K. Goh, holotype.

Distribution: Taiwan.

Note: *Cercospora tageticola* Ellis et Everhart (1902) differs from this fungus by its loosely fasciculate, dark-coloured conidiophores, and by the conspicuously thickened conidial scars.

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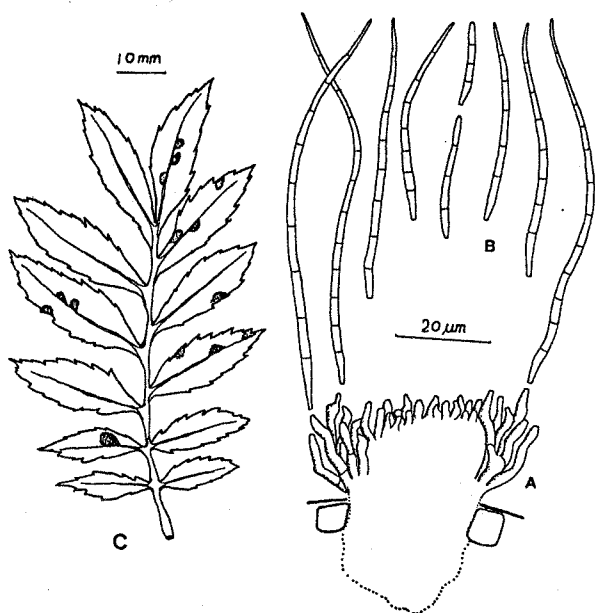


Fig. 18. *Pseudocercospora tagetis-erectae*: A, Fascicle of conidiophores. B, Conidia. C, Leaf spots.

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臺灣產尾子菌及相關屬之新種

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本文報告十八種臺灣產尾子菌及相關屬之新種，它們是 *Cercospora apios*, *C. houttuynicola*, *Cercosporidium lit-seae*, *Mycovellosiella broussonetiae*, *M. curvispora*, *M. gonostegiae*, *Pseudocercospora actinidicola*, *P. alstoniae*, *P. baphicacanthi*, *P. basellae*, *P. caesalpiniae*, *P. millettiae*, *P. oxalidis*, *P. platycaryae*, *P. salviae*, *P. stachyurina*, *P. symphyti*, 及 *P. tagetis-erectae*.