
Notes on some cercosporoid hyphomycetes from Argentina

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Cercospora verbesinicola sp. nov., *C. wedeliae-glaucae* sp. nov., *Pseudocercospora gomphrenae-pulchellae* sp. nov. and *P. grindeliae* sp. nov. are described and illustrated. The new combinations *Passalora aratai* (Speg.) comb. nov., *P. hydrocotyles* (Ellis and Everh.) comb. nov. and *Pseudocercospora phaeochlora* (Speg.) comb. nov. are introduced. Furthermore, new collections of various other cercosporoid hyphomycetes are recorded from the Province of Buenos Aires, Argentina.

Key words: Argentina, cercosporoid hyphomycetes, mitosporic fungi, new species, new combinations, pathogenic fungi, taxonomy.

Introduction

Little is known about the cercosporoid hyphomycetes that occur in Argentina. Between 1880 and 1926, Spegazzini (see Farr, 1973) published many papers including numerous descriptions of new *Cercospora* species, mainly from the Province of Buenos Aires. Later records of Marchionatto, Muntañola and others are to be found in Fernández Valiela (1979). Marchionatto (1946) introduced *Cercospora escalloniae* sp. nov. from Argentina and redescribed some of Spegazzini's species. A few *Cercospora* spp. are included in Guarrera *et al.* (1977) and some other scattered papers, e.g., Dal Bello (1988), Anderson and Delhey (1997), Kiehr *et al.* (1997) and Anderson *et al.* (1998).

Most specimens recorded in the present paper were collected in an expanded area, ranging from the central eastern part of the Province of Buenos Aires up to its southern border and adjacent parts of the Province of La Pampa (37-39° S, 58-64° W). Phytogeographically, most of this region belongs to the "Provincia Pampeana", a grassland now heavily disturbed by agriculture; but the area from Bahía Blanca to the south and west forms a part of the "Provincia Espinal" which is a xerophytic bushland (Cabrera, 1971). There is a marked

gradient of humidity in this area, with subhumid conditions in the Northeast and semi-arid conditions in the Southwest.

Most collections have been made by R. Delhey and M. Kiehr, a few by R. Delhey and U. Braun. They are deposited at BB (Universidad Nacional del Sur, Departamento de Biología, Bahía Blanca, Argentina) and HAL (Martin-Luther-Universität, FB. Biologie, Institut für Geobotanik und Botanischer Garten, Halle/Saale, Germany).

Cercospora apii Fresen., Beiträge zur Mykologie 3: 91, Frankfurt a. M. (1863) *s.l.*

1.1. *C. apii s.l.* on *Modiola caroliniana*

(Fig. 1)

= *Cercospora modiolae* Tharp, Mycologia 9: 111 (1917).

Material examined: ARGENTINA, Prov. Buenos Aires, Tornquist, Villa Ventana, on *Modiola caroliniana*, 19 March 2000, R. Delhey and U. Braun 1342 (BB, HAL).

Notes: This fungus has been recorded before in Argentina on the same host by F. Anderson (*in litt.*). Type material of *C. modiolae* has not been examined, but the present collection agrees very well with Chupp's (1954) description which was based on type material and some additional specimens. The material from Argentina is characterised as follows: Conidiophores solitary or in small fascicles, 20-100 × 3-5 µm, pluriseptate, pale brown, tips paler, scars thickened and darkened, 2-2.5(-3) µm diam. Conidia solitary, acicular, 40-120 × 2.5-5 µm, hyaline, pluriseptate, base truncate, hilum thickened and darkened, 2-2.5 µm diam. Chupp (1954) stressed that *C. modiolae* is hardly distinct from various other *Cercospora* spp. on hosts belonging to the *Malvaceae* with acicular, hyaline conidia. *C. modiolae* is morphologically indistinguishable from *C. apii s.l.* and has to be reduced to synonymy with the latter species. Inoculation experiments, recently carried out by F. Anderson, showed that *C. modiolae* is biologically not distinct from *C. apii* (F. Anderson, *in litt.*).

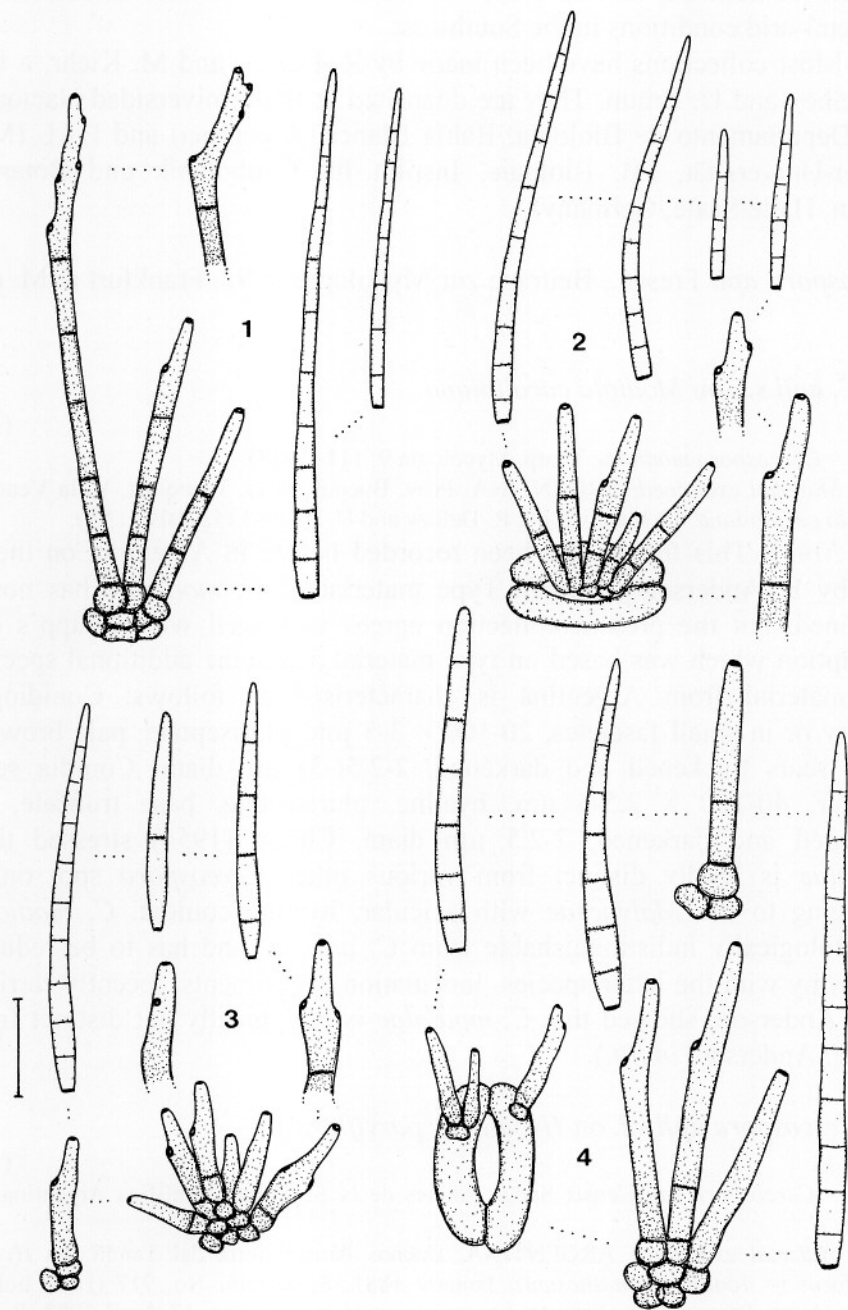
1.2. *Cercospora apii s.l.* on *Hybanthus parviflorus*

(Fig. 2)

= *Cercospora tandilensis* Speg., Anales de la Sociedad Científica Argentina 13: 30 (1882).

Material examined: ARGENTINA, Buenos Aires, Sierra del Tandil, on *Hybanthus parviflorus* (= *Ionidium glutinosum*), January 1881, Spegazzini No. 917 (LPS, **holotype**); Buenos Aires, Parque Prov. Ernesto Tornquist, on *H. parviflorus*, 17 April 1988, R. Delhey 379 (BB, HAL).

Leaf spots subcircular, 1-3 mm diam., greyish white, border purple to dark brown or blackish. *Stromata* small, substomatal. *Conidiophores* in small



Figs. 1-4. Conidiophore fascicles, conidiophores, conidia. **1.** *Cercospora apii* (= *C. modiolae*) on *Modiola caroliniana*. **2.** *C. apii* (= *C. tandilensis*) on *Hybanthus parviflorus*. **3.** *C. ipomoeae-pes-caprae* on *Ipomoea purpurea*. **4.** *C. verbesinicola* sp. nov. Bar = 20 μ m.

to moderately large fascicles, 20-70 × 3-5 µm, pluriseptate, olivaceous to pale brown throughout or tips paler; conidial scars thickened and darkened, 2-2.5 µm diam. *Conidia* formed singly, acicular, only short conidia occasionally somewhat obclavate, 30-80 × 2-5 µm, hyaline, pluriseptate, hilum truncate, thickened and darkened, 1.5-2.5 µm diam.

Notes: *C. tandilensis* is indistinguishable from *C. apii s.l.* and must be reduced to synonymy with the latter species.

1.3. *Cercospora apii s.l.* on *Apodanthera sagittifolia* and *Cucumis melo*

= *Cercospora citrullina* Cooke, Grevillea 12: 31 (1883).

Material examined: ARGENTINA, Prov. Buenos Aires, Bahía Blanca, on *Apodanthera sagittifolia*, 25 March 2000, R. Delhey and M. Kiehr 1380 (BB, HAL); Prov. Buenos Aires, Bahía Blanca, on *Cucumis melo*, 5 April 2000, J. Lusto 1390 (BB, HAL).

Notes: *Apodanthera sagittifolia* is a new host for *C. apii* (including *C. citrullina*).

2. *Cercospora ipomoeae-pes-caprae* J.-M. Yen and Lim, Bulletin Société Mycologique de France 86: 747 (1970)

(Fig. 3)

Material examined: ARGENTINA, Prov. Buenos Aires, Bahía Blanca, on *Ipomoea purpurea*, 19 March 2000, R. Delhey and U. Braun 1338, 1339 (BB, HAL).

Leaf spots amphigenous, subcircular to angular-irregular, 3-20 mm diam., at first greenish, greyish green, later brown, finally pale brown, greyish brown. *Caespituli* amphigenous, punctiform, dark brown. *Mycelium* internal; stromata almost absent or small, 10-30 µm diam., intraepidermal, occasionally substomatal. *Conidiophores* solitary or in small to moderately large fascicles, arising from stromata, erumpent or emerging through stomata, erect, straight, subcylindric to geniculate-sinuuous, unbranched, 10-40 × (3-)4-5 µm, 0-1-septate, subhyaline to pale olivaceous brown, conidiophores reduced to conidiogenous cells or conidiogenous cells integrated, terminal, 10-30 µm long, scars thickened and darkened, 2-3 µm diam. *Conidia* solitary, obclavate (-subcylindric, -subfusiform), 30-80 × 3-5.5 µm, 1- to pluriseptate, hyaline, smooth, apex obtuse to subacute, base obconically truncate, hila thickened and darkened, 2-2.5 µm diam.

Notes: Bagyanarayana *et al.* (1995) recorded a collection of *C. ipomoeae-pes-caprae* on *Ipomoea quamoclit* from India, but treated the latter species as a synonym of *C. ipomoeae* G. Winter since the length of the conidiophores and conidia in the latter species is variable. *C. ipomoeae-pes-caprae* was considered an "extreme form" of *C. ipomoeae*. However, the conidial shape in *C. ipomoeae-pes-caprae* was not taken into consideration. *C. apii s.l.* (incl. *C. ipomoeae*) is characterised by acicular conidia and *C. ipomoeae-pes-caprae*

differs in having obclavate conidia and consistently short conidiophores. García *et al.* (1996) studied cercosporoid hyphomycetes on *Ipomoea* spp. in detail. They examined type material of *C. ipomoeae-pes-caprae* and published a description and illustrations of this species. *Cercospora viridula* Ellis and Everh. is very close to and maybe identical with *C. ipomoeae-pes-caprae*. This species is, however, only known from the type collection. According to the description of García *et al.* (1996), *C. viridula*, which was reduced to synonymy with *C. ipomoeae* by Chupp (1954), differs from *C. ipomoeae-pes-caprae* in having pale olivaceous conidia with obtuse apex.

3. *Cercospora verbesinicola* U. Braun, R. Delhey and M. Kiehr, **sp. nov.**

(Fig. 4)

Maculae amphigenae, suborbiculares vel angulares-irregulares, 1-8 mm diam. vel confluentes, primo pallide vel modice atro-brunneae, deinde griseo-brunneae, margine tenui atro-brunneo saepe leviter elevato cinctae. *Caespituli* epiphylli, brunnei, tenui, dispersi vel subdensi. Mycelium immersum. Stromata nulla vel parva, 10-40 μm diam., intraepidermalia, interdum substomatata, brunnea. *Conidiophora* solitaria vel laxe fasciculata (2-6), ex cellulis immersibus vel cellulis stromatibus oriunda, erumpentia, raro per stoma emergentia, erecta, recta, subcylindrica vel leniter geniculata-sinuosa, non-ramosa, 10-60 \times 3,5-7 μm , 0-1-septate, primo subhyalina, deinde pallide olivacea, levia, tenuitunicata; cellulae conidiogenae separatae vel integratae, terminales, 10-30 μm longae; cicatrices conidiales incrassatae, fuscatae, 2-2.5 μm diam. *Conidia* solitaria, obclavata-subcylindrica (-subacicularia), 50-150 \times 4-6 μm , hyalina, pluriseptata, distantia inter septa 8-15(-20) μm , apice obtusa vel subacuta, basi breve obconice truncata, hila incrassata, fuscata, 2-2.5 μm diam.

Holotype: ARGENTINA, Prov. Buenos Aires, Bahía Blanca, on leaves of *Verbesina encelioides* (Asteraceae), 17 March 2000, R. Delhey 1341 (BB). **Isotype** in HAL.

Leaf spots amphigenous, subcircular to angular-irregular, 1-8 mm diam. or confluent and larger, at first pale to medium dark brown, later greyish brown, with a narrow darker border, often somewhat raised. *Caespituli* epiphyllous, brown, fine, scattered to almost dense. *Mycelium* internal; stromata absent or small, 10-40 μm diam., intraepidermal, occasionally substomatal, brown. *Conidiophores* solitary or in fascicles (2-6), arising from internal hyphae or stromata, erumpent, rarely emerging through stomata, erect, straight, subcylindric to somewhat geniculate-sinuuous, unbranched, 10-60 \times 3.5-7 μm , 0-1-septate, at first subhyaline, later pale olivaceous throughout, smooth, thin-walled; conidiophores reduced to conidiogenous cells or conidiogenous cells integrated, terminal, 10-30 μm long, scars conspicuous, thickened and darkened, 2-2.5 μm diam. *Conidia* solitary, obclavate-subcylindric (-subacicular), 50-150 \times 4-6 μm , hyaline, pluriseptate throughout, distance between septa 8-15(-20) μm , apex obtuse to subacute, base short obconically truncate, hilum thickened, darkened, 2-2.5 μm diam.

Notes: *Cercospora fulvella* Heald and F.A. Wolf (see Chupp, 1954: 137) is the only cercosporoid fungus recorded on *Verbesina* spp., which differs,

however, from *C. verbesinicola* sp. nov. in having very long conidiophores with inconspicuous conidiogenous loci and shorter, olivaceous conidia. *C. verbesinicola* sp. nov. does not belong to *C. apii* s.l. since it is well-distinguished by having short, 0-1-septate, pale conidiophores and obclavate, fairly broad conidia. *Cercosporella tubercularioides* Speg. does not belong to the complex of cercosporoid hyphomycetes since it is an acervular coelomycete which has been reallocated to *Phloeosporina* (see Braun, 1995).

4. *Cercospora wedeliae-glaucæ* U. Braun, R. Delhey and M. Kiehr, sp. nov.

(Fig. 5)

Maculae amphigenae, irregulares, 2-20 mm diam., interdum confluentes, griseo-brunneae, modice atro-brunneae, margine indistincto. *Caespituli* amphigeni, punctiformes vel subeffusi, griseo-albidi. Mycelium immersum. *Stromata* nulla vel parva, substomatalia, 10-30 µm diam., subhyalina vel pallide olivacea. *Conidiophora* fasciculata, pauca vel modice numerosa, laxe vel dense aggregata, raro solitaria, ex cellulis immersibus vel cellulis stromatibus oriunda, erecta, subcylindrica vel modice geniculata-sinuosa, non-ramosa, saepe sursum attenuata, deinde deorsum attenuata, 10-70 × 3-6(-7) µm, 0-4-septata, subhyalina, pallide olivacea vel pallidissime olivaceo-brunnea in fasciculis densis, levia; cellulae conidiogenae integrae, terminales vel separatae, 10-40 µm longae; cicatrices conidiales conspicuae, leviter incrassatae, fuscatae, 1,5-2 µm diam. *Conidia* solitaria, acicularia vel obclavata, 30-300 × 3-6 µm, sursum attenuata, obscure et remote (10-30 µm) 1-8-septata, hyalina vel subhyalina, levia, apice subacuta, basi leviter vel conspicue attenuata, obconice truncata vel rotundata, hila 1,5-2 µm lata, leviter incrassata et fuscata.

Holotype: ARGENTINA, Prov. Buenos Aires, Bahía Blanca, on leaves of *Wedelia glauca* (Asteraceae), 9 April 2000, R. Delhey and M. Kiehr 1391 (BB). *Isotype* in HAL.

Leaf spots amphigenous, irregular, 2-20 mm diam., sometimes confluent, greyish brown, medium dark brown, margin indefinite. *Caespituli* amphigenous, punctiform to subeffuse, greyish white. *Mycelium* internal. *Stromata* absent or small, substomatal, 10-30 µm diam., subhyaline to pale olivaceous. *Conidiophores* in small to moderately large fascicles, loose to dense, rarely solitary, arising from internal hyphae or stromata, through stomata, erect, straight, subcylindric to somewhat geniculate-sinuuous, unbranched, but mostly somewhat attenuated towards the apex, sometimes also attenuated towards the base, 10-70 × 3-6(-7) µm, 0-4-septate, subhyaline to pale olivaceous or very pale olivaceous brown in mass, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells (separate), 10-40 µm long, conidiogenous loci conspicuous, scars somewhat thickened and darkened, 1.5-2 µm diam. *Conidia* solitary, acicular to obclavate, 30-300 × 3-6 µm, gradually attenuated towards the apex, loosely 1-8-septate, distance between the septa 10-30 µm, hyaline or subhyaline, smooth,

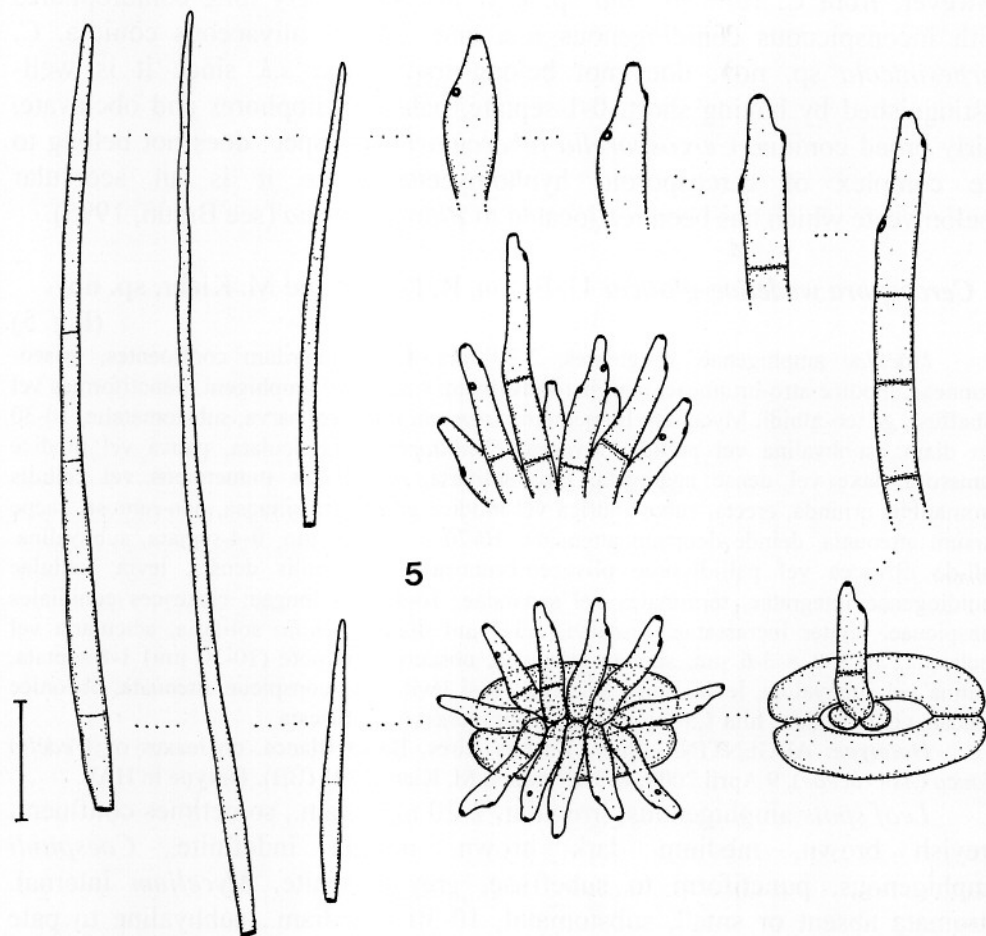


Fig. 5. *Cercospora wedeliae-glaucæ* sp. nov., conidiophore fascicles, conidiophores, conidia. Bar = 20 μ m.

apex subacute, base slightly to conspicuously attenuated, obconically truncate to rounded, hila 1.5-2 μ m diam., slightly thickened and darkened.

Notes: There are two cercosporoid hyphomycetes on *Wedelia* spp. described from India by Kar and Mandal (1970). Deighton (1976) re-examined type material of *Cercospora wedeliae* and reallocated this species to *Pseudocercospora*. *Cercospora wedeliicola* is a true species of *Cercospora* s.s., but quite distinct from *C. wedeliae-glaucæ* by having long, olivaceous brown, pluriseptate conidiophores and narrower, densely pluriseptate conidia. *C. wedeliae-glaucæ* does not belong to *C. apii* s.l., which is also known on hosts of the *Asteraceae*. It differs from *C. apii* s.l. and all allied species on

hosts of the *Asteraceae* in having very pale conidiophores, smaller loci and hila, more or less obclavate, loosely septate conidia with attenuated bases. *Cercospora wulffiae* A.S. Mull. and Chupp, which was originally described on a *Wulffia* sp. from Brazil, was also recorded on *Wedelia* (Chupp, 1954). This species is, however, characterised by having narrower, olivaceous conidia.

Wedelia glauca is a widespread noxious weed in Argentina and other South American countries. In some of its populations in Bahía Blanca, heavy attacks by *C. wedeliae-glaucae* have been observed and studies on the potential of this fungus as a biocontrol agent have been initiated.

5. *Passalora aratai* (Speg.) U. Braun, R. Delhey and M. Kiehr, **comb. nov.**

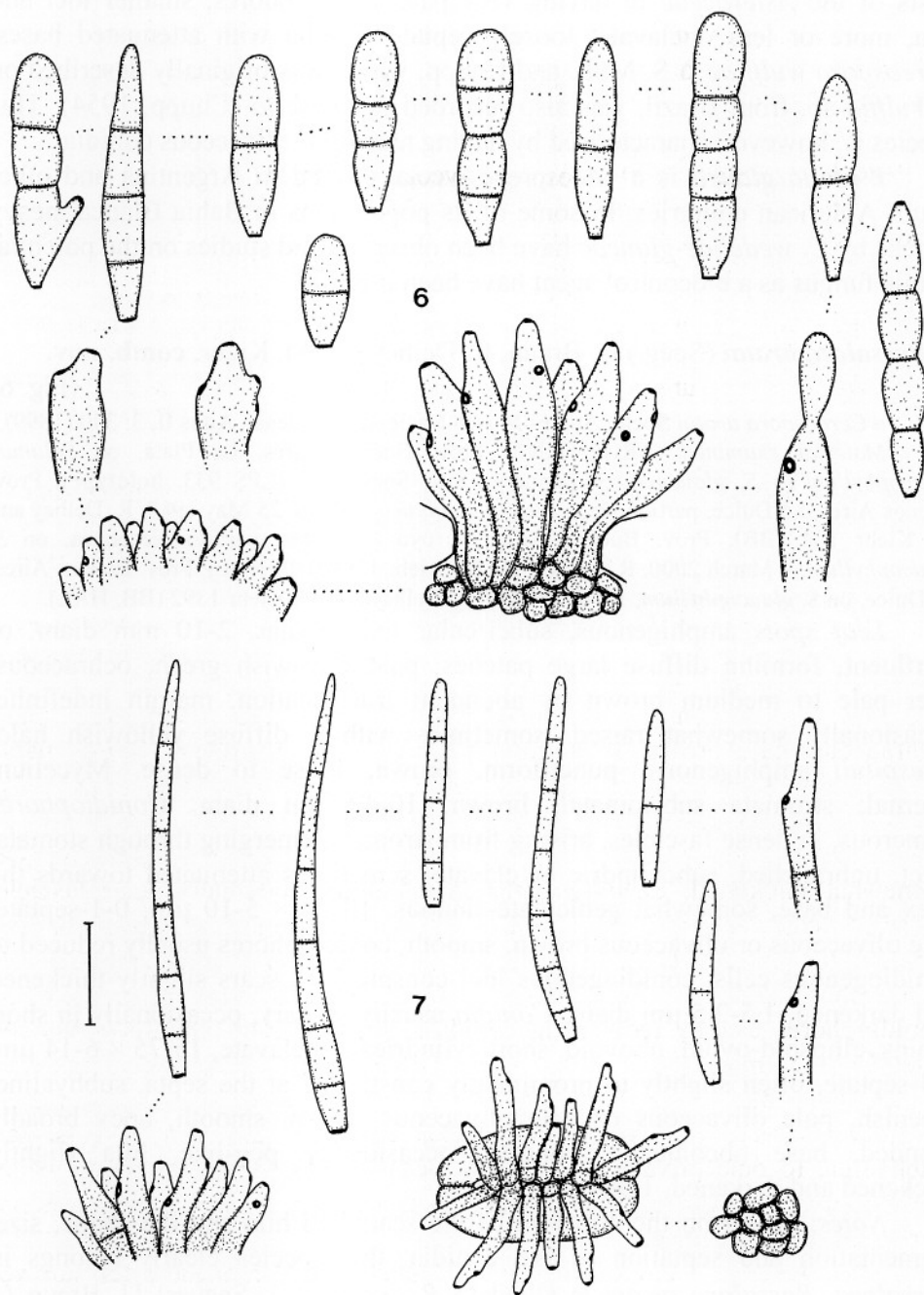
(Fig. 6)

≡ *Cercospora aratai* Speg., Anales Museo Nacional de Buenos Aires II, 3: 340 (1899).

Material examined: ARGENTINA, Prov. Buenos Aires, La Plata, on *Solanum glaucophyllum* (= *S. glaucum*), 30 January 1892, Spegazzini (LPS 933, **holotype**); Prov. Buenos Aires, La Dulce, partido Necochea, on *S. glaucophyllum*, 25 May 1987, R. Delhey and M. Kiehr 134 (BB); Prov. Buenos Aires, Arroyo Calaveras, partido Necochea, on *S. glaucophyllum*, 4 March 2000, R. Delhey and M. Kiehr 1298 (BB, HAL); Prov. Buenos Aires, La Dulce, on *S. glaucophyllum*, 16 April 2000, R. Delhey and M. Kiehr 1392 (BB, HAL).

Leaf spots amphigenous, subcircular to irregular, 2-10 mm diam. or confluent, forming diffuse large patches, pale yellowish green, ochraceous, later pale to medium brown by abundant fructification, margin indefinite, occasionally somewhat raised, sometimes with a diffuse yellowish halo. *Caespituli* amphigenous, punctiform, brown, loose to dense. Mycelium internal; stromata substomatal, brown, 10-40 µm diam. *Conidiophores* numerous, in dense fascicles, arising from stromata, emerging through stomata, erect, unbranched, subcylindric or clavate, sometimes attenuated towards the apex and base, somewhat geniculate-sinuous, 10-50 × 5-10 µm, 0-1-septate, pale olivaceous or olivaceous brown, smooth, conidiophores usually reduced to conidiogenous cells, conidiogenous loci conspicuous, scars slightly thickened and darkened, 1.5-2.5 µm diam. *Conidia* usually solitary, occasionally in short chains, ellipsoid-ovoid, obovoid, short cylindrical, obclavate, 15-75 × 6-14 µm, 0-4-septate, often slightly to prominently constricted at the septa, subhyaline, greenish, pale olivaceous or pale olivaceous brown, smooth, apex broadly rounded, base obconically truncate, occasionally peg-like, hila slightly thickened and darkened, 1.5-3 µm diam.

Notes: Based on the structure of the scars and hila and the shape, size, pigmentation and septation of the conidia, this species clearly belongs in *Passalora*. *Passalora aratai* is allied to *P. solani* (F.J. Seaver) U. Braun (≡ *Didymaria solani* F.J. Seaver, see Braun, 1992) which is, however, distinct by having much longer conidiophores and consistently 0-1-septate conidia.



Figs. 6-7. Conidiophore fascicles, conidiophores, conidia. 6. *Passalora aratai*. 7. *Passalora hydrocotyles* on *Hydrocotyle* cf. *bonariensis*. Bar = 20 μ m.

Solanum glaucophyllum is a widespread toxic weed in wetland pastures of the Pampean region; the aptitude of *P. aratai* as a biological control agent merits further study.

6. *Passalora dubia* (Riess) U. Braun, Mycotaxon 55: 231 (1995)

Material examined: ARGENTINA, Prov. Buenos Aires, Bahía Blanca, on *Atriplex hastata*, 25 March 1985, R. Delhey 73 (BB); Prov. Buenos Aires, Balneario José Werndl, Necochea, on *Atriplex hastata*, 4 March 2000, R. Delhey and M. Kiehr 1296 (BB); Prov. Buenos Aires, Bahía Blanca, on *Chenopodium album*, 14 March 2000, R. Delhey 1336 (BB); Prov. Buenos Aires, Tornquist, Villa Ventana, on *Chenopodium album*, 19 March 2000, R. Delhey and U. Braun 1337 (BB).

Notes: This fungus (as *Cercospora dubia* (Riess) Winter) has been recorded before in Argentina on *Chenopodium muralis* (Spegazzini, 1898).

7. *Passalora hydrocotyles* (Ellis and Everh.) U. Braun, R. Delhey and M. Kiehr, **comb. nov.**

(Fig. 7)

≡ *Cercospora hydrocotyles* Ellis and Everh., Journal of Mycology 3: 16 (1887).

Material examined: USA, Louisiana, on *Hydrocotyle interrupta*, 20 June 1886, Langlois 681 (NY, **holotype**); Prov. Buenos Aires, dunas marítimas, Necochea, on *Hydrocotyle* cf. *bonariensis*, 9 February 1990, R. Delhey and M. Kiehr 595 (BB, HAL).

Leaf spots amphigenous, subcircular to irregular, 1-5 mm diam., ochraceous, pale brown, later greyish brown, finally greyish white, margin occasionally somewhat raised. *Caespituli* hypophyllous, punctiform, dark brown. *Mycelium* internal; stromata substomatal to intraepidermal, 10-60 µm diam., brown, composed of swollen hyphal cells, 2-10 µm diam., wall somewhat thickened. *Conidiophores* in small to moderately large fascicles, loose to dense, arising from stromata, emerging through stomata or erumpent through the cuticle, erect, subcylindric-conic to slightly geniculate-sinuous, unbranched, 5-40 × 3-5 µm, 0-1-septate, olivaceous brown, smooth, conidiophores usually reduced to conidiogenous cells or conidiogenous cells integrated, terminal, 5-30 µm long, conidiogenous loci often not very conspicuous, but scars slightly thickened and darkened, (1-)1.5-2 µm diam. *Conidia* solitary, obclavate-subcylindric, 25-80 × 2-5 µm, 1-10-septate, subhyaline to pale olivaceous, smooth, occasionally somewhat rough-walled, apex obtuse to subacute, base obconically truncate, hila slightly thickened and darkened, 1.5-2 µm diam.

Notes: On account of slightly thickened and darkened, often not very conspicuous scars and somewhat pigmented obclavate-subcylindric conidia, this species is excluded from *Cercospora* s.s. and placed in *Passalora*.

8. *Pseudocercospora gomphrenae-pulchellae* U. Braun, R. Delhey and M. Kiehr, sp. nov.

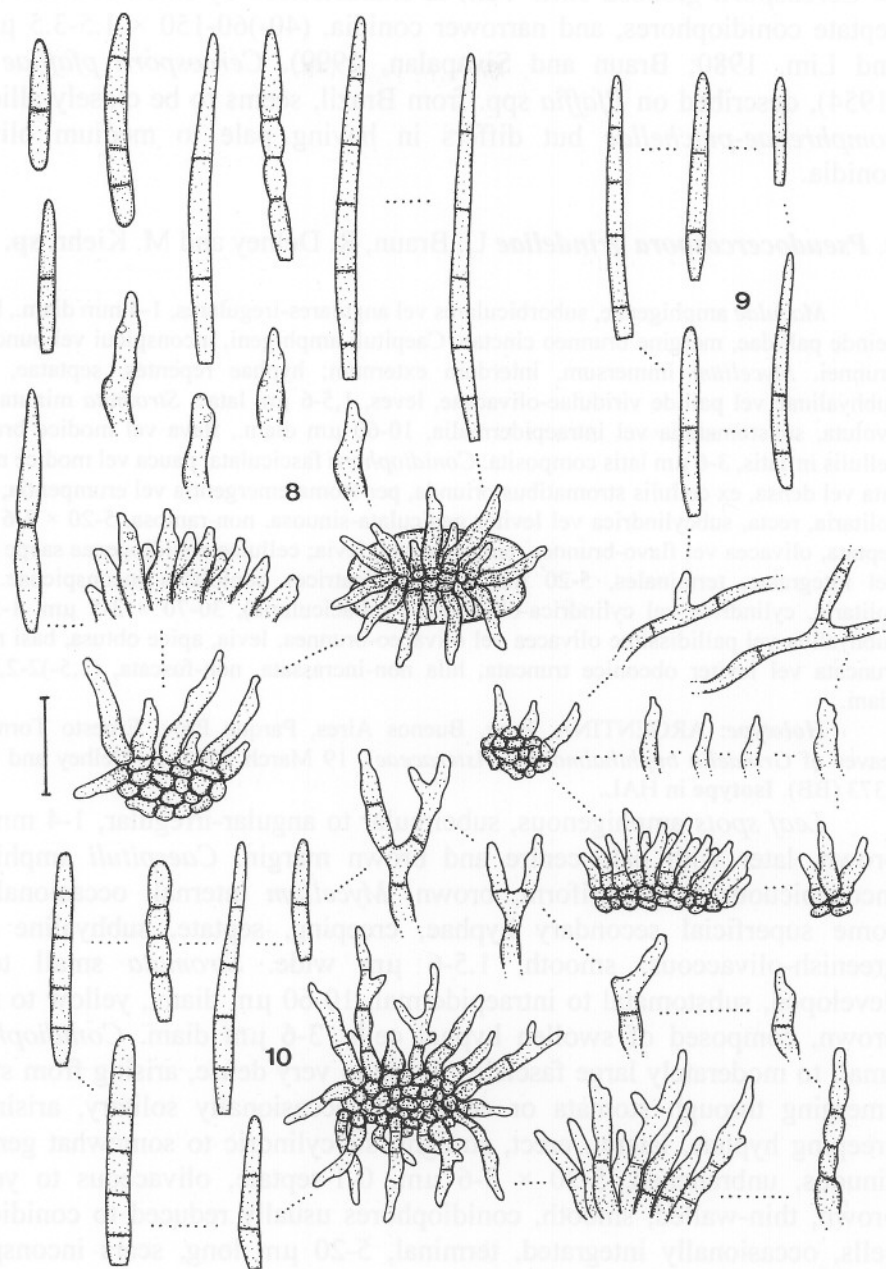
(Fig. 8)

Maculae amphigenae, suborbiculares vel irregulares, 1-5(-8) mm diam., pallidae, flavae-ochraceae, griseo-albidae, margine tenui, atro-rubro-brunno vel nigro-brunneo cinctae. *Caespituli* amphigeni punctiformes, laxi vel densi, nigri, deinde griseo-albidi. Mycelium immersum; hyphae septatae, ramosae, subhyalinae vel pallide brunneae, leves, 1,5-6 µm diam. *Stromata* substomatalia vel intraepidermalia, 10-100 µm diam., olivaceo-brunnea. *Conidiophora* fasciculata, parva vel numerosa, modice densa, ex cellulis stromatibus oriunda, per stoma emergentia vel erumpentia, erecta, recta, subcylindrica vel apicem versus attenuata, geniculata-sinuosa, non-ramosa, 10-30 × 2,5-6 µm, 0-1-septata, subhyalina vel pallide olivacea, levia; cellulae conidiogenae saepe separatae, interdum integratae, terminales, 10-25 µm longae; cicatrices conidiales inconspicuae vel subconspicuae. *Conidia* solitaria, obclavata-cylindrica, 20-90 × (2-)3-5(-6) µm, (0-)1-8-septata, subhyalina, levia, apice obtusa (-subacuta), basi rotundata vel obconice truncata, hila non-incrassata, non-fuscata, 1,5-3 µm diam.

Holotype: ARGENTINA, Prov. Buenos Aires, Bahía Blanca, on leaves of *Gomphrena pulchella* (*Amaranthaceae*), 17 March 2000, R. Delhey 1340 (BB). **Isotype** in HAL.

Leaf spots amphigenous, subcircular to irregular, 1-5(-8) mm diam., centre pale, yellowish-ochraceous, greyish white, margin narrow, dark reddish brown to blackish brown. *Caespituli* amphigenous, punctiform, loose to dense, blackish, later greyish white by abundant fructification. *Mycelium* internal; hyphae septate, branched, subhyaline to pale brown, smooth, 1.5-6 µm wide. *Stromata* substomatal to intraepidermal, 10-100 µm diam., olivaceous brown. *Conidiophores* in small to large fascicles, moderately dense, arising from stromata, through stomata or erumpent, erect, straight, subcylindric or attenuated towards the apex, geniculate-sinuuous, unbranched, 10-30 × 2.5-6 µm, 0-1-septate, subhyaline to pale olivaceous, smooth, conidiophores usually reduced to conidiogenous cells, occasionally integrated, terminal, 10-25 µm long, scars inconspicuous, occasionally subconspicuous (*Paracercospora*-like, rim very slightly thickened and darkened). *Conidia* solitary, obclavate-cylindrical, 20-90 × (2-)3-5(-6) µm, (0-)1-8-septate, subhyaline (with a very pale greenish tinge), smooth, apex obtuse (-subacute), base rounded to obconically truncate, hila not thickened, not darkened, 1.5-3 µm diam.

Notes: There are various cercosporoid hyphomycetes on host species of *Gomphrena* and the allied genus *Pfaffia*. *Cercospora gomphrenae* Ray (Chupp, 1954) and *C. pretoriensis* Chupp and Doidge (Crous and Braun, 1996) are two true species of *Cercospora* s.s. with conspicuous scars and hyaline scolecosporous conidia. *Phaeoramularia gomphrenicola* (Speg.) Muntañola (= *Cercospora gomphrenicola* Speg.) differs in having thickened, darkened scars and catenate conidia. In *Pseudocercospora gomphrenae* Goh and W.H. Hsieh (= *Cercospora gomphrenae* Sawada, nom. illeg.), true stromata are lacking (Hsieh and Goh, 1990), and *Pseudocercospora globosa* (J.M. Yen) Deighton



Figs. 8-10. Conidiophore fascicles, conidiophores, secondary hyphae (in 9), conidia. **8.** *Pseudocercospora gomphrenae-pulchellae* sp. nov. **9.** *P. grindeliae* sp. nov. **10.** *P. phaeochlora* on *Lithraea molleoides*. Bar = 20 μ m.

(= *Cercospora globosa* J.M. Yen) is characterised by small stromata, longer, septate conidiophores, and narrower conidia, (40-)60-150 × 1.5-3.5 µm (Yen and Lim, 1980; Braun and Sivapalan, 1999). *Cercospora pfaffiae* Chupp (1954), described on *Pfaffia* spp. from Brazil, seems to be closely allied to *P. gomphrenae-pulchellae* but differs in having pale to medium olivaceous conidia.

9. *Pseudocercospora grindeliae* U. Braun, R. Delhey and M. Kiehr, **sp. nov.**

(Fig. 9)

Maculae amphigenae, suborbiculares vel angulares-irregulares, 1-4 mm diam., brunneae, deinde pallidae, margine brunneo cinctae. *Caespituli* amphigeni, inconspicui vel punctiformes, brunnei. *Mycelium* immersum, interdum externum; hyphae repentes, septatae, ramosae, subhyalinae vel pallide viridulae-olivaceae, leves, 1,5-6 µm latae. *Stromata* minuta vel bene evoluta, substomatalia vel intraepidermalia, 10-60 µm diam., flava vel modice brunnea, ex cellulis inflatis, 3-6 µm latis composita. *Conidiophora* fasciculata, pauca vel modice numerosa, lata vel densa, ex cellulis stromatibus oriunda, per stoma emergentia vel erumpentia, interdum solitaria, recta, subcylindrica vel leviter geniculata-sinuosa, non-ramosa, 5-20 × 3-6 µm, 0-1-septata, olivacea vel flavo-brunnea, tenuitunicata, levia; cellulae conidiogenae saepe separatae vel integratae, terminales, 5-20 µm longae; cicatrices conidiales inconspicuae. *Conidia* solitaria, cylindrica vel cylindrica-obclavata (-subacicularia), 30-70 × 3-5 µm, 1-5-septata, subhyalina vel pallidissime olivacea vel olivaceo-brunnea, levia, apice obtusa, basi rotundata, truncata vel leviter obconice truncata, hila non-incrassata, non-fuscata, (1,5-)2-2,5(-3) µm diam.

Holotype: ARGENTINA, Prov. Buenos Aires, Parque Prov. Ernesto Tornquist, on leaves of *Grindelia buphthalmoides* (*Asteraceae*), 19 March 2000, R. Delhey and U. Braun 1373 (BB). **Isotype** in HAL.

Leaf spots amphigenous, subcircular to angular-irregular, 1-4 mm diam., brown, later with pale centre and brown margin. *Caespituli* amphigenous, inconspicuous to punctiform, brown. *Mycelium* internal, occasionally with some superficial secondary hyphae, creeping, septate, subhyaline to pale greenish-olivaceous, smooth, 1.5-6 µm wide. *Stromata* small to well-developed, substomatal to intraepidermal, 10-60 µm diam., yellow to medium brown, composed of swollen hyphal cells, 3-6 µm diam. *Conidiophores* in small to moderately large fascicles, loose to very dense, arising from stromata, emerging through stomata or erumpent, occasionally solitary, arising from creeping hyphae, lateral, erect, straight, subcylindric to somewhat geniculate-sinuuous, unbranched, 5-20 × 3-6 µm, 0-1-septate, olivaceous to yellowish brown, thin-walled, smooth, conidiophores usually reduced to conidiogenous cells, occasionally integrated, terminal, 5-20 µm long, scars inconspicuous. *Conidia* solitary, cylindrical to cylindrical-obclavate (-subacicular), 30-70 × 3-5 µm, 1-5-septate, subhyaline to very pale olivaceous or olivaceous brown, smooth, apex obtuse, base rounded to truncate or somewhat obconically truncate, hila unthickened, not darkened, (1.5-)2-2.5(-3) µm diam.

Notes: *Cercospora grindeliae* Ellis and Everh. is the only cercosporoid hyphomycete described from *Grindelia* spp. However, a re-examination of type material of the latter species showed that it must be reduced to synonymy with *Cercospora virgaureae* (Thüm.) Allesch. Conidiophores and conidia are colourless and the scars are conspicuous and agree with those of *Cercospora* spp. (Braun, 1995). Furthermore, there is no morphologically agreeing *Pseudocercospora* on species of *Grindelia* and allied genera.

10. *Pseudocercospora phaeochlora* (Speg.) U. Braun, R. Delhey and M. Kiehr, **comb. nov.**

(Fig. 10)

= *Cercospora phaeochlora* Speg., Anales Museo Nacional de Buenos Aires 20: 441 (1910).

Material examined: ARGENTINA, Buenos Aires, Jardín Botánico, on *Lithraea brasiliensis*, 28 April 1906, C. Spegazzini (LPS 947, **holotype**); Prov. Córdoba, Villa General Belgrano, on *Lithraea molleoides*, 21 July 1994, R. Delhey and M. Kiehr 1070 (BB, HAL).

Leaf spots almost absent to angular-irregular, 1-7 mm diam., or oblong, up to 10 mm, sometimes confluent, on the upper leaf surface visible as pale yellowish-ochraceous discoloration, on the lower leaf surface reddish to dark brown, finally sooty due to abundant fructification, margin indefinite, sometimes vein-limited. *Caespituli* hypophyllous, effuse, loose to dense, olivaceous to sooty. *Mycelium* internal. *Stromata* small to fairly large, occasionally confluent, substomatal to intraepidermal, immersed to erumpent, olivaceous brown. *Conidiophores* in small to moderately large fascicles, divergent to dense, arising from stromata, through stomata or erumpent, erect, flexuous, geniculate-sinuuous, mostly branched, 10-60 × 2-5 µm, width irregular, often with constrictions and swellings, pale yellowish brown to olivaceous or medium brown, continuous to 1-3(-4)-septate, smooth, conidiophores occasionally reduced to conidiogenous cells, but conidiogenous cells usually integrated, terminal, 10-25 µm long, scars inconspicuous. *Conidia* solitary, cylindrical to obclavate, straight to curved, (15-)30-80(-90) × (2-)3-5(-5.5) µm (according to Chupp, 1954, up to 150 µm long), 1-7-septate, sometimes constricted at the septa, pale to medium olivaceous brown or yellowish brown, smooth, apex obtuse, often broadly rounded, base rounded, truncate to obconically truncate, hila unthickened, not darkened, 2-2.5 µm diam.

Notes: Chupp (1954) discussed this species and mentioned that the type material was so sparse that Spegazzini was not sure whether it was a *Cercospora*. The type material has been re-examined and traces of fructification were found. This specimen agrees with the new collection on *Lithraea molleoides* and Chupp's (1954) description, which was mainly based

on a sample on *Lithraea venosa* from Chile. Since the conidial scars are inconspicuous, *C. phaeochlora* has to be placed in *Pseudocercospora*.

11. ***Ramularia cynarae*** Sacc., *Michelia* 1: 536 (1879) *emend.* U. Braun (1998)

Material examined: ARGENTINA, Prov. Buenos Aires, La Dulce, Necochea, on *Carduus acanthoides*, 26 July 1986, R. Delhey and M. Kiehr 107 (BB, HAL); Prov. Buenos Aires, Azul, on *Carduus acanthoides*, 7 October 1986, R. Delhey 112 (BB); Prov. Buenos Aires, Tandil, on *Carduus acanthoides*, 21 July 1993, R. Delhey and M. Kiehr 1044 (BB, HAL); Prov. Buenos Aires, Parque Province, E. Tornquist, on *Cirsium vulgare*, 1 April 1984, R. Delhey 24 (B); Prov. Buenos Aires, Arroyo Calaveras, Necochea, on *Cynara cardunculus*, 4 March 2000, R. Delhey and M. Kiehr 1299 (BB, HAL).

Notes: *R. cynarae* has been recorded before on *Cynara scolymus* (Spegazzini, 1898-99) and (as *Ramularia cardui* Karsten) on *Carduus acanthoides* (Dal Bello, 1988) in La Plata, Prov. of Buenos Aires.

12. ***Ramularia geranii*** Fuckel, *Jahrbuecher, Nassauischer Verein fuer Naturkunde* 23-24: 361 "1869" (1870) var. ***geranii***

Material examined: Argentina, Prov. La Pampa, Anzoátegui, on *Geranium molle*, 13 September 1984, R. Delhey 45 (BB).

Notes: This is the first record of this fungus for Argentina.

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