

## NOTES ON CONIDIAL FUNGI. X. A NEW SPECIES OF *CERATOSPORELLA* AND SOME NEW COMBINATIONS

R. F. Castañeda Ruiz<sup>1</sup>, J. Guarro<sup>2</sup>, J. Cano<sup>2</sup>

<sup>1</sup> Instituto de Investigaciones Fundamentales en Agricultura Tropical "Alejandro Humboldt" (INIFAT) Calle 1 esq. 2 Santiago de las Vegas, Ciudad Habana, Cuba. <sup>2</sup> Unitat de Microbiologia, Facultat de Medicina i Ciències de la Salut, Universitat Rovira i Virgili, 43201 Reus, Tarragona, Spain

### ABSTRACT

*Ceratosporella compacta* anam. sp. nov., found on a decaying stem of an unidentified member of the Poaceae, is described and illustrated. It is distinguished by its compact, dark brown to black conidia with 4 - 5 arms closely appressed. Each arm ends in a short, robust appendage toward the apex, sometimes with a mucilaginous tunica. Some species hitherto described in *Ceratosporella* are recombined.

**Key words:** *Ceratosporella*, *Acrodactys*, *Actinocladium*, *Arachnophora*, *Triposporium*, hyphomycetes, systematics, tropical fungi

### RESUMEN

Se describe e ilustra *Ceratosporella compacta* anam. sp. nov., aislada sobre restos de hojas de una especie no identificada de Poaceae. Se distingue por sus conidios compactos, de color pardo oscuro a negro, con 4 - 5 brazos estrechamente agrupados. De cada extremo del brazo emergen cortos y robustos apéndices con una envoltura mucilaginosa. Algunas especies anteriormente descritas en *Ceratosporella* son reclasificadas.

**Palabras clave:** *Ceratosporella*, *Acrodactys*, *Actinocladium*, *Arachnophora*, *Triposporium*, systematics, tropical fungi

***Ceratosporella compacta*** Castañeda Ruiz, Guarro et Cano anam. sp. nov.

(Fig. 1,2)

Ad fungos conidiales, hyphomycetes pertinens. **Coloniae** effusae, nigrae. Mycelium partim superficiale et partim in substrato immersum, ex hyphis septatis, ramosis, laevibus, atrobrunneis, 2  $\mu\text{m}$  diam compositum. **Conidiophora** conspicua, mononematosa, eramosa, erecta, recta, cylindrica vel subulata, leviter inflata ad basim, 0 - 2 septata, levia, nigra, 18 - 48 x 6 - 10  $\mu\text{m}$ . **Cellulae conidiogenae** monoblasticae, terminales, interdum percurrentes, cylindricae, in conidiophoris incorporatae. **Conidia** cheiroidea, compacta, acrogena, solitaria, levia, atrobrunnea ad basim, brunnea ad apicem, ex cellula basalis et quator vel quinque ramulis composita; cellula basalis cylindrica, truncata, nigra vel atrobrunnea, levia, 5 - 8 x 5 - 7  $\mu\text{m}$ ; ramuli plus minusve cylindrici ad basim, attenuati ad apicem, curvati, adpressi, 12 - 14 septati, 65 - 70  $\mu\text{m}$  longi et 4 - 5  $\mu\text{m}$  crassi (appendice exclusa), insidentes ad basim et apicem, sed leviter divergentes mutati in appendicibus cellularis. Appendicibus cylindricis, inflatis et rotundatis ad apicem, 2 - 6 septatis, 15 - 46 x 2.5 - 4  $\mu\text{m}$ , brunneis, pallide brunneis ad apicem, robustis, ex interdum tunica mucosa, 6-12  $\mu\text{m}$  diam ad apicem praeditis. Teleomorphosis ignota.

Conidial fungi, hyphomycetes. **Colonies** effuse, black. Mycelium superficial and immersed. Hyphae septate, branched, smooth, dark brown, 2  $\mu\text{m}$  diam. **Conidiophores** differentiated, mononematous, simple, erect, straight, cylindrical or subulate, slightly inflated at the base, 0 - 2 septate, smooth, black, 18 - 48 x 6 - 10  $\mu\text{m}$ . **Conidiogenous cells** monoblastic, terminal, cylindrical, integrated, sometimes percurrent. **Conidia** cheiroid, acrogenous, solitary, smooth-walled, dark brown at the base, brown at the apex; composed of a basal cell and 4 - 5 arms; basal cell cylindrical, truncate, black or dark brown, smooth, 5 - 8 x 5 - 7  $\mu\text{m}$ ; arms more or less cylindrical, attenuate toward the apex, curved, appressed, 12 - 14 septate, 65 - 70 x 4 - 5  $\mu\text{m}$  (appendage excluded), slightly divergent toward the base and the apex, but concurrently turning progressively into cellular appendages in apical region; appendages cylindrical, inflated and rounded at the apex, robust, 2 - 6 septate, 15 - 46 x 2.5 - 4  $\mu\text{m}$ , pale brown, sometimes with a slimy tunica of 6 - 12  $\mu\text{m}$  diam at the apex. Teleomorph unknown.

**Holotype:** INIFAT C94/162, on fallen decaying stem of unidentified member of the Poaceae, Viñales, Pinar del Río, Cuba, 11 November 1994, R. F. Castañeda. **Isotype:** MUCL 39130 (Mycothèque Université Catholique de Louvain). Cultures ex type: INIFAT C94/162, CBS 184.95 and MUCL 39130.

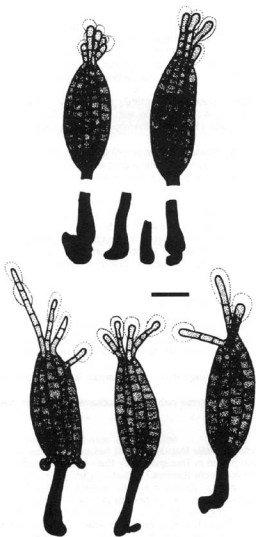


Fig. 1- *Ceratospora compacta* (INIFAT C94/162). Conidiophores and conidia (bar = 20  $\mu\text{m}$ )

Among the previously described species of *Ceratosporella*, only *C. stipitata* (Goidanich) S.J. Hughes (1952), *C. calculata* Lutrasti (1980); *C. ponapensis* Matsushima (1981) and *C. fertilis* Castañeda Ruiz (1985) resemble *C. compacta* superficially. However, *C. stipitata* has arms up to 130  $\mu\text{m}$  long and 6 - 9  $\mu\text{m}$  thick, without appendages; *C. calculata* has 6 - 7 septate arms and a verrucose outer wall; *C. ponapensis* has 4 - 7 arms up to 120  $\mu\text{m}$  long and lacks appendages and *C. fertilis* has usually 8 - 10 arms, 33 - 60  $\mu\text{m}$  long, usually without appendages.

*Ceratosporella deviata* Subramanian (1957) has stauroconidia which strongly resemble *Triposporium* Corda, especially with *T. elegans* Corda (Ellis 1971), as suggested by Sinclair et al. (1987); and the following new combination is proposed:

***Triposporium deviatum*** (Subramanian) Castañeda Ruiz, *comb. nov.*

Basionym: *Ceratosporella deviata* Subramanian in Proceeding of the Indian Academy of Sciences, Sect. B 46: 327 (1957).

Two species of *Ceratosporella*, *C. longiramosa* Castañeda Ruiz (1988) and *C. pulneyensis* Subramanian & Bhat (1987) lack cheiroid conidia. The first has stauroconidia with 3 divergent, distoseptate, 65 - 160  $\mu\text{m}$  long arms and which would be better classified in *Actinocladium* Ehrenb.: Pers. The latter has stellate conidia with two cells, each bearing 2 divergent arms, 14 x 3 - 5  $\mu\text{m}$ . It should be classified in *Arachnophora* Hennebert (1963). Hence the following new combinations are proposed:

***Actinocladium longiramosum*** (Castañeda Ruiz) Castañeda Ruiz, *comb. nov.*

Basionym: *Ceratosporella longiramosa* Castañeda Ruiz in Fungi Cubenses III, Instituto de Investigaciones Fundamentales en Agricultura Tropical "Alejandro de Humboldt", p 2 (1988) Cuba

***Arachnophora pulneyensis*** (Subramanian & Bhat) Castañeda Ruiz, *comb. nov.*

Basionym: *Ceratosporella pulneyensis* Subramanian & Bhat in Kavaka 15: 50 (1987)

*Ceratosporella lambdaepta* Matsush. (1971) has stauroconidia with 3-4 radial arms and has been placed in *Triposporium* by Kuthubutheen and Nawawi (1991), and *Ceratosporella goidanichii* Rambelli (1958) has cylindrical conidia without arms and has been relocated in *Sporidesmium* by Hughes (1979). Other previously described *Ceratosporella* spp. are: *C. bicornis* (Morgan) Höhnell (Ellis 1971), *C. novae-zelandiae* S.J. Hughes (1971), *C. cheiroidea* Sinclair, Morgan-Jones & Eicker (1987), *C. disticha* Kuthubutheen & Nawawi (1991), *C. basibicellularia* Matsush. (1993), *C. basicontinua* Matsush. (1993) and *C. flagellifera* Matsush. (1993). *Acrodictys furcata* Ellis (1963) has cheiroid conidia which resemble *C. novae-zelandiae* and could be classified as *Ceratosporella*, but no new combination is proposed.

We propose the following key for the identification of *Ceratosporella* species:

**KEY TO SPECIES OF CERATOSPORELLA**

1. Conidia smooth-walled..... 2  
 1'. Conidia verrucose, with 4 arms. Arms 6-7 septate,  
 28 - 44 x 4 - 6  $\mu$ m..... *C. calculata*
2. Conidia with 2 divergent arms forming angles  
 wider than 45°. Arms 5 - 7 septate, 50 - 80 x 9 - 13  $\mu$ m *C. bicornis*  
 2'. Conidia with no divergent arms..... 3
3. Conidia usually with more than 4 arms..... 4  
 3'. Conidia usually with 4 or less arms..... 6
4. Conidial arms 65 - 70  $\mu$ m long, 12 - 14 septate  
 and with appendages..... *C. compacta*  
 4'. Conidial arms shorter than 65  $\mu$ m..... 5
5. Conidia with 5 - 8 arms. Arms 4 - 8 septate,  
 22 - 38  $\mu$ m long..... *C. ponapensis*  
 5'. Conidia with 8 - 12 Arms. Arms 7 - 14 septate,  
 38 - 60  $\mu$ m long..... *C. fertilis*
6. Conidia with apical appendages..... 7  
 6'. Conidia without appendages..... 8
7. Conidia with septate appendages;  
 arms with 5 - 8 septa..... *C. flagelligera*  
 7'. Conidia with non-septate appendages;  
 arms with 8 - 10 septa..... *C. disticha*
8. Conidia with the basal cell darker than the rest..... *C. cheiroidea*  
 8'. Conidia not as above..... 9
9. Conidia usually with 3 - 4 arms, 6 - 8  $\mu$ m wide..... *C. stipitata*  
 9'. Conidia always with 2 arms..... 10
10. Basal part of the conidia 1-septate;  
 conidial arms 2 - 6 septate..... *C. basibicellularia*  
 10'. Basal part of the conidia aseptate..... 11
11. Conidial arms emerging symmetrically from  
 the basal cell, 1 - 5 septate..... *C. basicontinua*  
 11'. Conidial arms emerging asymmetrically from  
 the basal cell (one of them in lateral position), 1 - 3 septate,  
 slightly constricted at the septa..... *C. novae-zelandiae*

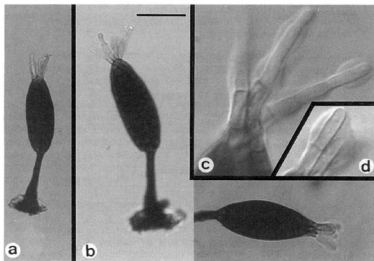


Fig.2- *Ceratospora compacta* (INIFAT C94/162). **a,b**, conidiophores and conidium; **c,d**, cellular appendages (bar: **a** = 40  $\mu\text{m}$ , **b** = 25  $\mu\text{m}$ , **c,d**, = 10  $\mu\text{m}$ ).

## ACKNOWLEDGEMENTS

We gratefully acknowledge Dr. E. Descals (Inst. Mediterrani d' Estudis Avançats de les Balears, C.S.I.C.) for serving as pre-submission reviewers, The Cuban Ministry of Agriculture for facilities during this work. This work was supported the "Fundación Ciencia i Salut", Reus, Spain.

## REFERENCES

- Castañeda Ruiz, R.F. (1985). Deuteromycotina de Cuba. Hyphomycetes. II. Instituto de Investigaciones Fundamentales en Agricultura Tropical "Alejandro de Humboldt", Cuba, 23 pp.
- Castañeda Ruiz, R.F. (1988). Fungi cubenses III. Instituto de Investigaciones Fundamentales en Agricultura Tropical "Alejandro de Humboldt", Cuba, 54 pp.
- Ellis, M. B. (1963). Dematiaceous Hyphomycetes. V. *Mycol. Pap.* **93**: 1-33.
- Ellis, M. B. (1971). Dematiaceous Hyphomycetes. *Commonth. Mycol. Inst., Kew*, 608 pp.
- Hennebert, G.L. (1963). Un hyphomycete nouveau, *Arachnophora fagicola* gen. nov., sp. nov. *Can. J. Bot.* **41**: 1165-1169.
- Hughes, S.J. (1952). *Speira stipitata*. *Trans. Brit. Mycol. Soc.* **35**: 243-247.
- Hughes, S.J. (1971). New Zealand Fungi 16. *Brachydesmiella*, *Ceratosporella*. *N. Z. J. Bot.* **9**: 351-354.
- Hughes, S.J. (1979). Relocation of species of *Endophragma* auct. with notes on relevant generic names. *N. Z. J. Bot.* **17**: 139-188.
- Lustrati, L. (1980). *Ceratosporella calculata*, sp. nov. nuova specie di ifale demaziaceo. *Mic. Ital.* **3**: 11-14.
- Kuthubutheen, A. J. & Nawawi A. (1991). A new species of *Ceratosporella* and *Triposporium lambdaseptatum* (Matsush.) comb. nov. from Malaysia. *Mycol. Res.* **95**: 158-162.
- Matsushima, T. (1971). Microfungi of the Solomon Islands and Papua-New Guinea, Kobe. Matsushima.
- Matsushima, T. (1981). Matsushima Mycological Memoirs No.2, Kobe. Matsushima.
- Matsushima, T. (1993). Matsushima Mycological Memoirs No.7, Kobe. Matsushima.
- Rambelli, A. (1958). Micromiceti della Foresta di Campigna. 11<sup>o</sup> Contributo. *Atti Accad. Scienze Ist. Bologna, cl. Sci. Fis., ser. XI*, **5**: 1-15.
- Sinclair, R. C., Eicker, A. & Morgan-Jones G. (1987). Notes on : Hyphomycetes. LVI. *Ceratosporella cheiroidea*, a new species. *Mycotaxon* **30**: 351-355.
- Subramanian, C. V. (1957). Hyphomycetes IV. *Proc. Indian Acad. Sci., sect. B*, **46**: 324-335.
- Subramanian, C. V. & Bhat, D.J. (1987). Hyphomycetes from South India I. Some new taxa. *Kavaka*, **15**: 41-74.