

CLADONICOLA STAUROSPORA GEN. ET SP. NOV., A NEW LICHENICOLOUS
COELOMYCETE FROM WESTERN EUROPE

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ABSTRACT. — A new lichenicolous coelomycete is described as *Cladonicola staurospora* gen. et sp. nov. It has immersed pycnidia in which hyaline, branched, transversally septate conidia are produced holoblastically from ampulliform conidiogenous cells. The new fungus is confined to squamules of the primary thallus of terricolous *Cladonia* species, which become decolourized. It is currently known from the Netherlands and northern France.

KEY WORDS. — Lichenicolous fungi, coelomycetes, *Cladonicola*, *Cladonia*.

INTRODUCTION

For several years we repeatedly collected specimens of an unknown lichenicolous coelomycete, developing on squamules of the primary thallus of *Cladonia*, in the Netherlands and in northern France. Although the branched, hyaline conidia of this fungus superficially recall species of the fungicolous (incl. lichenicolous) coelomycete genus *Cornutispora*, the conidiogenesis and the conidia are nevertheless very distinct. As no similar genus could be found in either NAG RAJ (1993) or SUTTON (1980), the description of a new genus seems to be appropriate.

MATERIAL AND METHODS

All studied specimens are kept in the private herbaria of the collectors, designated by '(h)' in the

specimens list below, except the holotype which is deposited in LG. Microscopical examination was done by examining hand-made sections in water or lactophenol-cotton blue with a Zeiss Photomikroskop at a magnification of $\times 2000$, with or without phase contrast. Drawings were prepared using a drawing tube. The nomenclature of the hosts follows DIEDERICH & SÉRUSIAUX (2000).

RESULTS

Cladonicola Diederich, van den Boom & Aptroot gen. nov.

Conidiomata lichenicola, pycnidia, stromatica, fusca, subglobosa, non ostiolata; paries cellulis ellipsoideis; setae nullae. Conidiophora nulla. Cellulae conidiogenae hyalinae, aseptatae, ellipsoideae, ampulliformes vel irregulares, apice contractae, holoblasticae. Conidia abundantia,

hyalina, levia, sicca, septata, elongata, mediovalde curva, 2 ramis lateralibus, ad instar 'H' 4 brachiis cylindricis.

Type species: *Cladoniicola staurospora* Diederich, van den Boom & Aptroot.

Conidiomata lichenicolous, pycnidial, stromatic, dark brown, subglobose, opening irregularly without a well-defined ostiole; wall brown or greenish olivaceous, K-, of ellipsoid cells; setae absent. *Conidiophores* absent. *Conidiogenous cells* arising from the inner pycnidial wall, lining the pycnidial cavity, hyaline, non-septate, ellipsoidal, ampulliform or irregular in shape, tapering towards the apex, holoblastic, without annellations. *Conidia* abundant, hyaline, smooth- and thin-walled, dry, basally slightly attenuated, transversally septate, elongate, with one main axis which is \pm straight, except in the middle region where it is strongly curved (by c. 50-150°), with two lateral branches, one just before and one just after the curved segment, the resulting conidium thus often appearing H-shaped, with four cylindrical arms.

Observations: The genus *Cornutispora* Piroz., which includes several lichenicolous species, is distinguished by non-septate, Y-shaped conidia, and irregularly branched conidiophores (HAWKSWORTH 1981, NAG RAJ 1993, SUTTON 1980). Several coelomycetous genera are known with branched, multicellular conidia, without conidiophores: conidia of *Dendroseptoria* Bausá Alcalde are composed of one basal cell, from which 2-3 divergent, primary branches arise, which in turn may form up to 2 secondary branches (SUTTON 1980); conidia of *Crucellisporium* Farr, *Crucellisporiopsis* Nag Raj and *Eriosporella* Höhnelt are composed of a 0-1-septate main axis, with 2-5 divergent arms at the point of succession. The conidiogenesis in *Crucellisporiopsis* and *Eriosporella* is enteroblastic; in both *Crucellisporium* and *Crucellisporiopsis*, sterile hyphal elements develop at the conidiomatal margin; conidiomata of *Eriosporella* are acervuloid (NAG RAJ 1993). Asteroconidia, known from many species of lichenicolous heterobasidiomycetes (DIEDERICH 1996), are similar in shape to

the conidia of the new fungus, but are non-septate and have a different conidiogenesis.

The new genus *Cladoniicola* is unique amongst the coelomycetes by the unusual conidia. They are elongate, cylindrical, septate, straight, except for the central region which is strongly curved, and have two lateral branches, one just below and the other just above the curved segment of the main axis. The upper half of the main axis might be mistaken for an additional, third lateral branch, and the resulting conidium appears as H-shaped, with 4 cylindrical arms.

Cladoniicola staurospora Diederich, van den Boom & Aptroot sp. nov. (Figs 1, 2)

Conidiomata lichenicola, immersa, fusca, subglobosa, 40-80 μ m diam. Cellulae conidiogenae 3-4.5 μ m longae, 2.5-3.5 μ m diam. Conidia 4 brachiis 1-3-septatis, cylindricis, 18-32 μ m longis, 1-2.5 μ m diam.

Type: The Netherlands, Noord-Holland, Texel, Horsmeertjes, coastal sandy dune, on *Cladonia humilis*, 9 Oct. 1999, A. Aptroot 47037 (LG - holotypus; hb. Aptroot - isotypus).

Conidiomata lichenicolous, arising singly in necrotic, whitish parts of the host primary thallus, immersed, dark greyish brown, subglobose, 40-80 μ m diam.; wall brown, K-, partly with a greenish olivaceous, K- pigment, 9-16 μ m thick, in the lower parts of the pycnidium very pale, composed of ellipsoid cells of 4-8 \times 2.5-5 μ m diam. *Conidiogenous cells* 3-4.5 μ m long, 2.5-3.5 μ m diam. *Conidia* appearing as having four 1-3-septate, cylindrical arms, each 18-32 μ m long and 1-2.5 μ m diam.

Distribution and hosts: The new fungus is currently known from the Netherlands, where it appears to be quite common, and has also recently been collected in northern France (Pas-de-Calais). It is most probably widespread, but easily overlooked, as it grows on decolourized, mostly terricolous squamules of the primary thallus of *Cladonia* species, especially on *Cladonia callosa*, *C. chlorophaea* s. l., *C. grayi* s. l., *C. humilis* and *C. rei*. The fungus obviously is a virulent parasite, killing the host squamules. Most collections are from *Calluna* heathlands, in Corynephorum

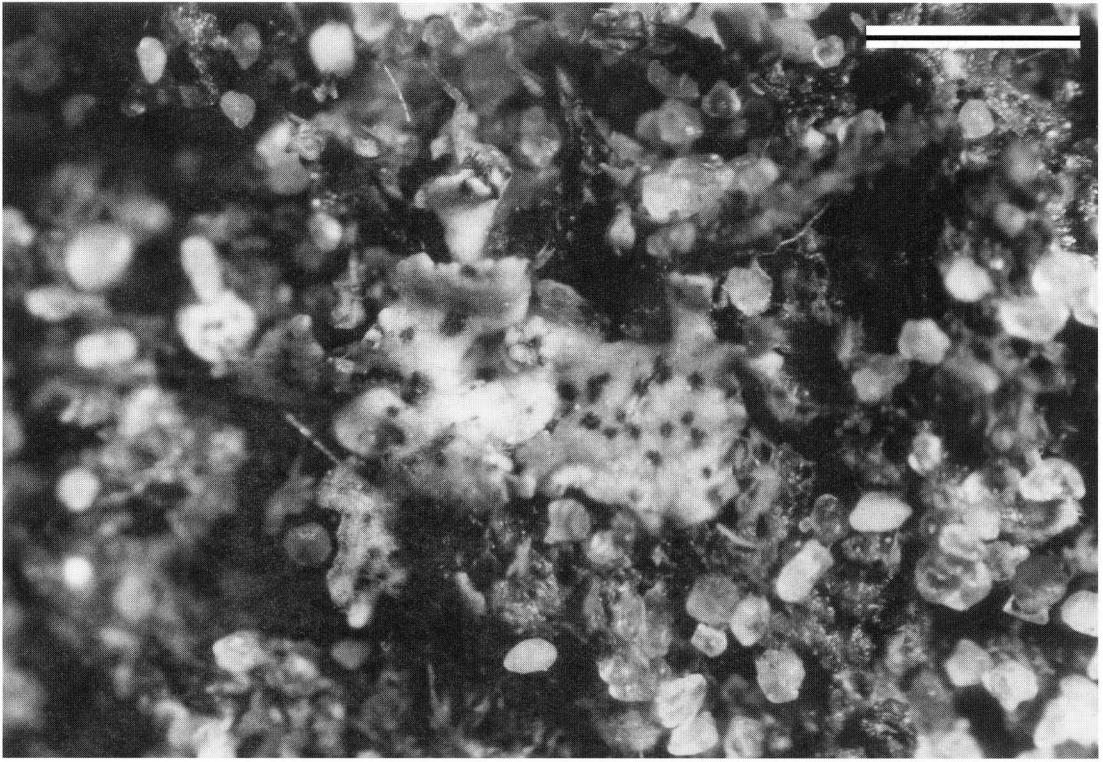


FIG. 1. — *Cladonicola staurospora*, black pycnidia growing on decolourized squamules of *Cladonia humilis* (holotypus). Scale bar : 1 mm.

communities, but some are from grassy wasteland.

Selected specimens examined : France, Pas-de-Calais : E of Ambleteuse, le Communal, E of the road from Raventhun to Slack, at 900 m S of the road D 119E, heathland with *Ulex*, on *Cladonia grayi* s.l., Aug. 2000, *P. Diederich* 14429 (h) & *J. Signoret*. — The Netherlands, Noord-Brabant : NNE of Heeze, Rul, Strabrechtse Heide, *Calluna* heathland, Sept. 1998, *P. van den Boom* 21680 (h) ; SE of Mierlo, Molenheide, Febr. 2000, *P. van den Boom* 23819 (h) ; NW of Geldrop, S of Eindhoven's channel, E of Hulster bridge, in grassy wasteland, on *C. humilis*, Dec. 1997, *P. van den Boom* 19778, 19782 (h, LG, hb. Diederich) ; E of Best, Nieuwe Heide, *Calluna* heathland, on *C. chlorophaea* s.l., Nov. 2000, *P. & B. van den Boom* 25381 (h). Drente : NW of Norg, WSW of Steenberg, Zuursche duinen, *Calluna* heathland with *Empetrum*, on *C. callosa*,

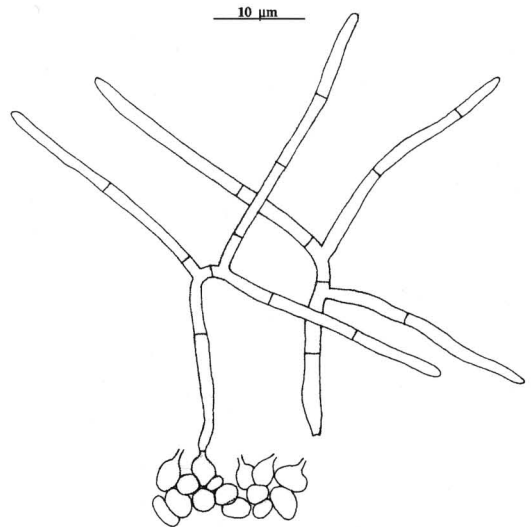


FIG. 2. — *Cladonicola staurospora*, conidiogenous cells and conidia (left conidium : holotypus, right conidium : *P. Diederich* 14429)

Oct. 2000, *P. & B. van den Boom* 25257 (h). Friesland : SW of Assen, SW of Appelscha, Aekingerzand of Kale Duinen, in hilly *Calluna* heathland, on *C. callosa*, Oct. 2000, *P. & B. van den Boom* 25351 (h). Utrecht : Amersfoort, Bekensteinselaan 44, on *C. rei* (det. M. Brand), Sept. 1994, *L. Spier* 6584 (h).

ACKNOWLEDGMENTS

We are grateful to Emmanuël Sérusiaux for his critical comments on the manuscript, and to Leo Spier for sending us one additional specimen of the new fungus.

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Manuscript received 22 January 2001.