CLADONIICOLA STAUCROSPORA GEN. ET SP. NOV., A NEW LICHENICOLOUS COELOMYCETE FROM WESTERN EUROPE

Paul DIEDERICH
Musée national d’histoire naturelle, 25 rue Munster, L-2160 Luxembourg, Luxembourg
(paul.diederich@ci.educ.lu)

Pieter VAN DEN BOOM
Arafura 16, NL-5691 JA Son, The Netherlands (pvdboom@zonnet.nl)

André APTROOT
Centraalbureau voor Schimmelcultures, P. O. Box 85167, NL-3508 AD Utrecht, The Netherlands
/aptroot@cbs.knaw.nl

ABSTRACT. — A new lichenicolous coelomycete is described as Cladoniicola 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, Cladoniicola, 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 ×2000, with or without phase contrast. Drawings were prepared using a drawing tube. The nomenclature of the hosts follows DIEDERICH & SERUSIAUX (2000).

RESULTS

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

Conidiomata lichenicola, pycnidia, stromaticca, fusca, subglobosa, non ostiolata; paries cellularis ellipsoidei; setae nullae. Conidiophora nulla. Cellulae conidiogenae hyalinae, aseptatae, ellipsoideae, ampulliformes vel irregulares, apice contractae, holoblasticae. Conidia abundantia,
hyalina, levia, sicca, septata, elongata, medio valde curva, 2 ramis lateralibus, ad instar ‘H’ 4 brachiis cylindricis.

Type species: Cladoniicola staurospera
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 ± 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 Höhnel 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 staurospera
Diederich, van den Boom & Aptroot sp. nov. (Figs 1, 2)

Conidiomata lichenicolica, immersa, fusca, subglobose, 40-80 μm diam. Cellulae conidio­genae 3-4.5 μm longae, 2.5-3.5 μm diam. Conidia 4 brachiis 1-3-septatis, cylindricis, 18-32 μm longis, 1-2.5 μm diam.


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

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COMMUNITIES, BUT SOME ARE FROM GRASSY WASTELAND.


FIG. 1. - CLADONICOLA STAUROSPORA, BLACK PYCnidia GROWING ON DECOLOURIZED SQUAMULES OF CLADONIA HUMILIS (HOLOTYPUS). SCALE BAR: 1 MM.

FIG. 2. - CLADONICOLA STAUROSPORA, CONIDIOGENOUS CELLS AND CONIDIA (LEFT CONIDIUM: HOLOTYPUS, RIGHT CONIDIUM: P. DIEDERICH 14429)

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LITERATURE


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