

New Laboulbeniales (Ascomycotina) from French Guyana

Walter ROSSI* & Pasqua Rosa PONZIANI

Department of Environmental Sciences, University of L'Aquila,
67100 Coppito (AQ), Italy

Résumé – Les auteurs décrivent quatre Laboulbeniales nouvelles, parasites d'insectes de la Guyane Française : *Eucantharomyces egae*, parasite de *Ega* sp. (Coleoptera, Carabidae), *Laboulbenia apotropinae*, parasite de *Apotropina panamensis* (Diptera, Chloropidae), *Laboulbenia guyanensis*, parasite de *Micratopus* sp. (Coleoptera, Carabidae), et *Stigmatomyces kotrbae*, parasite de *Acrosticta apicalis* (Diptera, Ulidiidae).

Laboulbeniales / champignons parasites / taxonomie

Abstract – Four new Laboulbeniales parasitic on insects from French Guyana are described: *Eucantharomyces egae*, parasitic on *Ega* sp. (Coleoptera, Carabidae), *Laboulbenia apotropinae*, parasitic on *Apotropina panamensis* (Diptera, Chloropidae), *Laboulbenia guyanensis*, parasitic on *Micratopus* sp. (Coleoptera, Carabidae), and *Stigmatomyces kotrbae*, parasitic on *Acrosticta apicalis* (Diptera, Ulidiidae).

Laboulbeniales / parasitic fungi / taxonomy

INTRODUCTION

Most information about Laboulbeniales from French Guyana is found in three papers by the French entomologist Jean Balazuc (1977, 1978, 1986). In the first of these papers *Laboulbenia diademata* Balazuc is described; in the second, the following eleven species are recorded: *Dimeromyces parasiti* Thaxter, *Herpomyces periplanetae* Thaxter, *Laboulbenia auberi* Balazuc, *L. dorstii* Balazuc, *L. homophoetae* (Spegazzini) Thaxter, *L. metrionae* Balazuc, *L. negrei* Balazuc, *L. pachytelis* Thaxter, *L. pheropsophi* Thaxter, *L. subopaca* Spegazzini, and *Rhachomyces velatus* Thaxter; in the third, five more species are described: *Laboulbenia arnaudii* Balazuc, *L. durantonii* Balazuc, *L. jovetae* Balazuc, *L. remex* Balazuc, and *L. rucujenna* Balazuc. Only three Laboulbeniales were recorded from French Guyana before the 17 species reported by Balazuc, i. e. *Ceratomyces mirabilis* Thaxter (Thaxter, 1931), *Laboulbenia barbata* Thaxter (Thaxter, 1899), and *Rhachomyces cayennensis* Thaxter (Thaxter, 1900). Recently, one more species was added to this short list: *Laboulbenia richardiana* W. Rossi et Kotrba, 2004.

* Correspondence and reprints: vrossi@univaq.it

The low number of Laboulbeniales reported so far for French Guyana is evidence of the very little attention given to this, and to many other groups of fungi, in most tropical countries. Further collecting will undoubtedly increase considerably this number, as it is shown by the description of four new species, three of which were found in a single, short journey to French Guyana.

MATERIALS AND METHODS

Host insects were collected in the field using standard entomological techniques. Insects were stored in 75% ethyl alcohol for transport to the laboratory, where they were carefully examined with a dissecting microscope. The parasitic fungi were removed from the hosts by means of an entomological pin (#3) and mounted on permanent slides following the techniques described by Benjamin (1971). Holotypes of the new species are deposited in the Botanical Museum in Florence (FI); paratypes are temporarily kept in the collection of the junior author, which will be deposited in FI.

TAXONOMY

Eucantharomyces egae W. Rossi et Ponziani *sp. nov.*

Fig. 1

Fungus stramineo colore. Receptaculum parvum, e subaequalibus ac fere verticalibus cellulis constans. Appendix longior quam receptaculum, e parvis ac validis basalibus et subbasalibus cellulis constans, quarum prima paulo longior quam latior, altera paulo latior quam longior et paulo tenuior quam prima; marginalis cellula exilis, ad imum basalem cellulam quasi attingens, ad summum validam spinam producens. Antheridium e tribus seriebus cellularum constat; antheridii collum breve, incurvatum, truncato apice. Perithecii stirps magna ac varie elongata. Perithecium, cum basalibus cellulis, magnum ac fusi instar, corrugatis marginibus, ad summum tholi instar contractum. Tota longitudo 450-715 μm ; perithecium 60-80 \times 240-340 μm ; longitudo a pede usque ad apicem antheridii 140-150 μm .

Parasitus Egae spp. in America meridionali.

Thallus uniformly straw colored. Receptacle small, consisting of nearly equal and almost vertical cells. Appendage longer than the receptacle, with the basal and the suprabasal cells small and stout, the former slightly longer than broad and slightly larger than the latter, which is slightly broader than long; marginal cell very slender, extending nearly to the basal cell below and terminating above with a spine-like process. Antheridial cells in three rows; the discharge tube short, curved, with a truncate apex. Perithecial stalk cell large and variably elongate. Perithecium, with its basal cells, broadly fusiform, relatively large, the margins corrugate, with a more prominent elevation near the middle, evenly tapered to a blunt apex. Total length 450-715 μm ; perithecium 60-80 \times 240-340 μm ; length from foot to the apex of the antheridium 140-150 μm .

Holotype: French Guyana, Matoury, on muddy banks of a small river near Carrefour de Barbadianes, 11-15 Dec 2003, W. Rossi, on *Ega* sp. (Coleoptera, Carabidae), no. 2738 (FI). **Paratypes:** same data as the type, nos. 2736, 2737; **Bolivia,** Dpto. Santa Cruz, Prov. Andrés Banez, Canton Terebinto, Potrerillo Guendá, sandy banks of the Rio Guendá, on elytra of *Ega* sp., 18-20 Sept 1996, W. Rossi, no. 2056. Seven mature and five young thalli were examined.



Figs. 1-5. **1.** *Eucantharomyces egae*, from the type slide. **2.** *Laboulbenia apotropinae*: paratype with short appendages. **3-4.** *Laboulbenia guyanensis*. **3.** Young specimen with trichogyne. **4.** Mature specimen from the type slide. **5.** *Stigmatomyces kotrbae*, from the type slide. Scale bar = 100 μ m.

The new species is characterized by an antheridium bearing a conspicuous spine-like process and a discharge tube quite stout and curving downwards; moreover, the receptacle is very small compared with the large, spindle-shaped perithecium. These characters together concur to distinguish the new species from the others in the same genus. The Bolivian thalli are smaller (400-440 μm) but otherwise not distinguished.

Laboulbenia apotropinae W. Rossi et Ponziani sp. nov.

Fig. 2

Perithecium et appendicum distales partes lurida; ceterus fungus helvolus, subbasali cellula receptaculi fuscior. Basalis cellula receptaculi trapeziformis, circiter duplo longior quam maxima latitudo. Subbasalis cellula elongata, parallelis lateribus, paulo latior ac duplo longior quam basalis. Cellula III+IV parva, a cellula V obliquo septo divisa. Cellula V cunei instar, inter psallium et perithecii basem posita. Psallium atrum ac breve. Basalis cellula exterioris appendicis magna ac pallens, duas parvas cellulas ferens, ex quibus 2-4 longissimi simplices rami oriuntur. Interior appendix constat e parva cellula griseo colore 2-3 elongata antheridia ferenti. Perithecium omnino solutum, late fusi instar, parietalibus cellulis spiram efficientibus, superficie punctulata, apice inaequale, e tribus labiis confecto, quorum alterum magnum ac rotundatum, cetera longiora ac tenuiora, parum divergentia, singulas parvas papillas in summo ferentia. Longitudo a pede usque ad perithecii apicem 300-460 μm ; perithecium 40-47 \times 119-139 μm ; maxima longitudo appendicum 1300 μm .

Parasitus Apotropinae panamensis in America meridionali.

Perithecium and distal portion of the appendages grayish brown; the rest of the fungus is grayish yellow, with darker suprabasal cell of the receptacle. Basal cell (I) of the receptacle subtrapezoidal, about twice longer than maximum width. Suprabasal cell (II) elongate, with almost parallel sides, slightly broader and twice longer than the basal. Cell III+IV relatively small, divided by a very oblique septum from cell V, which is wedge-shaped and placed between the insertion cell and the base of the perithecium. Insertion cell narrow and very dark. Basal cell of outer appendage pale and quite large, bearing two smaller cells which give rise to 2-4 very long, simple branches (up to 1.3 mm!). Inner appendage consisting of a small, grayish basal cell bearing 2-3 elongate antheridia. Perithecium wholly free, broadly fusiform, the wall-cells slightly spiral and densely mottled, the tip distinctly asymmetrical, ending with three lips, one of which is large and rounded while the two others are taller, more slender, slightly divergent, both bearing a small rounded papilla on the top. Length from foot to perithecial apex 300-460 μm ; perithecium 40-47 \times 119-139 μm ; longest appendages 1300 μm .

Holotype: French Guyana, Bagne des Anamites, near Port Inini, 9 & 12 Dec 2003, W. Rossi, on the mesonotum of *Apotropina panamensis* Malloch (Diptera, Chloropidae), no. 2673 (FI). **Paratypes:** same data as the type, nos. 2674, 2675 (FI). Five mature thalli were examined.

Among the species of *Laboulbenia* parasitic on Chloropidae, only *L. crispata* Thaxter has a distinct cell V and undivided cell III+IV; this latter species, however, is very different: among other things, has darker, more slender and more numerous appendages, and its perithecium bears apically a conspicuous outgrowth (Thaxter, 1917).

Laboulbenia guyanensis W. Rossi et Ponziani sp. nov.

Figs. 3-4

Receptaculum tenue ac elongatum, suprabasali cellula quasi triplo longiore quam basali. Cellula III parva, circiter sesqui longior quam basalis. Cellulae IV et V breviores quam III, subaequales, a septo verticali divisae. Psallium tenue. Basalis

cellula exterioris appendicis tenuis ac elongata, circiter duplo longior quam latior. Exterior appendix simplex, ex elongatis cellulis ad septa contractis constans. Interior appendix e duobus comparatis ramulis constans, supra basale cellula divisus et confertum caespitem efficientibus, apicem perithecii vix superantem. Cellula VI paulo latior quam longior. Perithecium fere totum solutum, piriforme, ad apicem valde extenuatum, magnis rotundatis labiis praeditum, quorum interius supra fusca macula, abrupte distincta. Trichogyna repetite ac dichotome divisa. Ad huiusmodi specimina semper singula specimina adsunt e 4 superpositis cellulis constantia. Longitudo a pede usque ad perithecii apicem 445 μ m; perithecium 175 \times 70 μ m; ascosporeae 46 μ m.

Parasitus Micratopi sp. in America meridionali.

Thallus grayish yellow, very pale. Receptacle narrow and elongate, with the suprabasal cell almost three times as long as the basal. Cell III relatively small, about one and half times longer than broad. Cells IV and V slightly shorter than cell III, nearly equal, divided by a vertical septum. Insertion cell quite thin. Basal cell of outer appendage narrow and elongate, about twice as long as broad, followed by a linear series of elongated cells distinctly constricted at the septa. Inner appendage consisting of two paired branches which are furcate above their basal cells; all the branchlets similar, crowded, erect or slightly bent, scarcely exceeding the tip of the perithecium. Cell VI slightly broader than long. Perithecium almost wholly free, piriform, strongly tapering to the tip, ending with large, rounded lips, the inner of which is subtended by a blackish area with sharp outline. Trichogyne relatively large, repeatedly branched dichotomously. Antheridia not seen; a rudimentary paired thallus consisting of 4 superposed cells is present, the uppermost of which looks like a phialide. Length from foot to perithecial apex 445 μ m; perithecium 175 \times 70 μ m; ascospores 46 μ m.

Holotype: French Guyana, Montsinery, Carrefour du Gallion, Emerald Jungle Village, at night with artificial light, 6-15 Dec 2003, W. Rossi, on *Micratopus* sp. (Coleoptera, Carabidae, Bembidiini, Tachyina), no. 2746 (FI). **Paratype:** same data as the type, no. 2747 (FI). Two mature and two young thalli were examined.

The above description is based on a specimen found on the pronotum of a host-insect; at the base of the antenna of another host-insect, a second mature thallus was found displaying the same characters, with the exception of the much lesser length (225 μ m) caused by a much shorter receptacle.

The new species is likely dioecious because of the absence of atheridia on the normally developed thalli, the presence of a rudimentary paired thallus ending with a phialide-like cell, and because of a trichogyne pointing downwards. These same characteristics are found in other dioecious species of *Laboulbenia* (Santamaria, 1996).

Laboulbenia guynensis seems to be allied to *L. asperata* Thaxter, described from Argentina on *Tachys* sp. (Thaxter, 1912) and recently recorded from Spain on *Eotachys* sp. (Santamaria, 1999). The new species, however, differs from the latter in having the perithecium more tapered, the insertion cell blackened and, above all, the basal cell of the outer appendage slender, elongate, and not prominent externally; it also lacks the roughening of the outer basal wall-cell of the perithecium which gives the name to *L. asperata*.

***Stigmatomyces kotrbae* W. Rossi et Ponziani sp. nov.**

Fig. 5

Basalis ac subbasalis cellulae receptaculi quasi hyalinae; ceterus fungus sucino colore, perithecii apice, perithecii stirpe et appendicibus dilutionibus. Receptaculum varie elongatum, basali et subbasali cellulis longitudine

subaequalibus. Cellula appendicem sufferens elongata, inferne cuneata, superne parum extrorsum producta. Appendix e 6 (raro 5) cellulis constans binis antheridiis praeditis, praeter ultimam, tribus antheridiis praeditam. Cellula perithecium sufferens parva, latior quam longior. Basales cellulae perithecii parvae ac subaequales. Perithecii venter subellipticus; perithecii collum paulo longior quam venter, infra apicem inflatum, deinde in 4 labia extenuatum, quorum 3 parva ac truncata, ceterum maius ac rotundatum. Tota longitudo 270-640 μm ; perithecium 55-80 \times 135-210 μm ; appendix 60-85 μm .

Parasitus Acrostictae apicalis in America meridionali.

Basal (I) and suprabasal (II) cells of the receptacle almost hyaline; the rest of the thallus is amber yellow, with paler distal portion of the appendage and perithecial tip and stalk cell (VI). Receptacle variably elongate, with the basal and suprabasal cells not strongly unequal in length. Stalk cell (III) of the appendage elongate, with a cuneate lower portion and a variably convex outer side. Axis of the free appendage consisting of six cells (rarely five), each bearing two antheridia except the uppermost, which bears apically a third antheridium. Stalk cell of the perithecium small, distinctly broader than long. Basal cells of the perithecium small and subequal. Perithecial venter nearly elliptical, slightly shorter than the neck, which is slightly prominent externally at its junction with the strongly tapering tip; the apex is asymmetrical, with three small truncate lips and a fourth rounded and more prominent. Total length 270-640 μm ; perithecium 55-80 \times 135-210 μm ; free appendage 60-85 μm .

Holotype: French Guyana, near Camp Caiman, on felled logs, 4 Jan 2003, M. Kotrba, on *Acrosticta apicalis* Williston (Diptera Ulidiidae), no. 2666 (FI).

Paratypes: same data as the type, nos. 2665a, 2665b, 2667a, 2667b. 64 mature and 15 young thalli were examined; most of these thalli were found in dense tufts on the palpi of the host insects.

Derivatio nominis: Named after the collector, Dr. Marion Kotrba of the Zoologische Staatssammlung München, Germany.

The new species is somewhat similar to *Stigmatomyces limnophorae* Thaxter, which is found on the Muscidae; the latter, however, has a shorter cell I, a stouter free appendage, different perithecial apex, and perithecial wall cells spirally twisted.

Stigmatomyces kotrbae is the first species of the Laboulbeniales to be described on a member of the Ulidiidae. The frequency of thalli on the palpi of the host insects gives evidence of head to head contact between individuals, either during courtship (“kissing” or trophallaxis) or during agonistic interactions between males.

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