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New records of lignocellulolytic fungi (Basidiomycetes) from the Atlantic Rain Forest in State of Santa Catarina, Brazil

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ABSTRACT - (New records of lignocellulolytic fungi (Basidiomycetes) from the Atlantic Rain Forest in State of Santa Catarina, Brazil).Ten new records of Auriculariales, Hymenochaetales, and Polyporales are reported and added to the checklist of the lignocellulolytic Basidiomycetes species of the Atlantic Rain Forest in Southern Brazil (State of Santa Catarina). *Trechispora mollusca* (Pers.) Liberta is reported for the first time to Brazil.
Key words: Auriculariales, Hymenochaetales, Polyporales

RESUMO - (Novos registros de fungos lignocelulolíticos (Basidiomycetes) de Floresta Atlântica no Estado de Santa Catarina, Brasil). Dez novos registros de Auriculariales, Hymenochaetales e Polyporales são apresentados e adicionados à lista de espécies de Basidiomycetes lignocelulolíticos da Floresta Atlântica no Sul do Brasil (Estado de Santa Catarina). *Trechispora mollusca* (Pers.) Liberta é nova citação para o Brasil.
Palavras-chave: Auriculariales, Hymenochaetales, Polyporales

Introduction

The Brazilian Atlantic Forest is characterized by high biological diversity and severely threatened status (Tabanez & Viana 2000). In the State of Santa Catarina (26º-30ºS, 48º30'-54ºW) Southern Brazil, there are two major vegetation types: the Atlantic Rain Forest and the Atlantic Semi-deciduous Forest (Morellato & Haddad 2000). However, only 17.4% of the Atlantic Forest original area is present today (Ministério do Meio Ambiente 2002), thus it becomes an urgency to explore its mycodiversity. The lignocellulolytic polypores have been studied by researchers of the Mycology Laboratory, Universidade Federal de Santa Catarina, since 1990 and several articles have been published regarding collections from the Atlantic Forest, Santa Catarina Island, and other areas in the State. Almost 160 species have been registered, most of them new records for the State and six new to science (Loguercio-Leite & Wright 1991a, b, 1998, Loguercio-Leite *et al*. 1998, 2001, 2002, Groposo & Loguercio-Leite 2005). The complete checklist (BASC) is available on http://www.ccb.ufsc.br/bot/micologia/basc.htm. The aim of this study is to increase the knowledge about Basidiomycota of the Atlantic Forest in the State of Santa Catarina, adding information about geographical distribution of the lignocellulolytic fungi.

Material and methods

This study is based on the collections carried out since 1983 and kept in the herbarium FLOR (Holmgren & Holmgren 1998). Macroscopic (*e.g.*, shape, size, colors, and hymenophoral configuration) and microscopic characters (*e.g.*, somatic and sporulating structures) of the basidiomata were studied (Singer 1975, Ryvarden 1991). Measurements were made from slide preparations stained with 1% aqueous phloxine and 5% KOH. Melzer's reagent was used to define wall chemical characteristics (dextrinoid, amyloid or negative reaction). Specimens were identified by using specialized literature and comparisons with reference collections at herbarium PACA. Nomenclature and authors follow Index Fungorum Partnership (2004), and fungal classification is according to Kirk *et al*. (2001).

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Results and Discussion

Ten new records of Basidiomycetes from State of Santa Catarina are presented of which only *Trechispora mollusca* (Pers.) Liberta is poroid and represents a new record for Brazil. The nine non-poroid species demonstrate high morphological diversity. The recorded species are distributed in seven families and three orders, Auriculariales, Hymenochaetales, and Polyporales. Polyporales is the more representative order in this work, as well as in almost researches in the Atlantic Rain Forest in Southern Brazil. Although the efforts to show that the fungal diversity in State of Santa Catarina is higher it still needs to be investigated.

AURICULARIACEAE

Auricularia fuscosuccinea (Mont.) Henn., Bot. Jb. 17: 19. 1893 ≡ *Hirneola fuscosuccinea* Mont., Syll. Fung. VI: 768; XII: 310. 1856.

Description: Teixeira (1945), Lowy (1952).

The basidioma with very short hairs covering the surface, hymenophore slightly wrinkled and yellowish brown are distinctive characters of *Auricularia fuscosuccinea*. This species present basidiospores hyaline, smooth, thin walled, allantoid, (12-)12.25-14 × 5-6(-6.5) μm.

Distribution: pantropical. Brazil: Pará and São Paulo States (Teixeira 1945, Dennis 1970, Pavlich 1976).

Material examined: BRASIL. Santa Catarina: Ilha de Santa Catarina, Morro do Canto da Lagoa, 10-VIII-1997, *De Toni s.n.* (FLOR11582); Santo Amaro da Imperatriz, Parque Estadual da Serra do Tabuleiro, 28-V-2001, *Groposo 144* (FLOR); Rio Grande do Sul: Cachoeirinha, Reserva Biológica Tancredo Neves, 20-II-1997, *Groposo 37* (PACA).

Auricularia polytricha (Mont.) Sacc., Atti Ist. Veneto Sci. 3: 722. 1885 ≡ *Exidia polytricha* Mont., Voy. Indes Or., Bot. 2: 154. 1834.

Description: Lowy (1952), Fidalgo (1968).

The basidioma differs from *Auricularia fuscosuccinea* by the presence of hairs covering the dark reddish brown surface and by the slightly rugose hymenophore. However the measure of basidiospores, 11.5-14 × 5.5(-5.75) μm, are similar to *A. fuscosuccinea*.

Distribution: cosmopolitan. Brazil: Amazonas, Pará, Ceará, Mato Grosso, Goiás, Rio de Janeiro, São Paulo, and Rio Grande do Sul States (Fidalgo 1968).

Material examined: BRASIL. Santa Catarina, 28-XI-1983, *Charles s.n.* (FLOR10014); Minas Gerais: Poços de Caldas, 1936, *Rick s.n.* (PACA12260).

BOREOSTEREACEAE

Mycobonia flava (Sw.) Fr., Bull. Soc. Mycol. Fr. 10: 77. 1894 ≡ *Peziza flava* Sw., Nov. Gen. Spec. Plant.: 150. 1788.

Description: Reid (1976).

This species is characterized by its basidioma pileate, laterally attached, solitary and convex, hymenophore appearing almost smooth to the eye but in fact densely covered with minute spines. Hyphal pegs projecting above the hymenium up to 180 μm, with crystals incrusted on the apex of the thick yellowish hyphae (Ibañez 1999); basidiospores cylindric, smooth, thin-walled, 14-18 × 4-6 μm, similar in width (5-7 μm) to those described by Reid (1976) and in length (15-18 μm) by Corner (1984).

Distribution: United States of America, Costa Rica, Jamaica, Panama, Venezuela, and Argentina. Brazil: Alagoas, Mato Grosso, and Rio Grande do Sul States (Reid 1976, Corner 1984, Gibertoni *et al.* 2006).

Material examined: BRASIL. Santa Catarina: Itapiranga, 15-IV-1985, *Scholz s.n.* (FLOR10109); Flona de Três Barras, 22-XI-2003, *Drechsler-Santos s.n.* (FLOR31465).

HYMENOCHAETACEAE

Hymenochaete anomala Burt, Ann. Mo. Bot. Gdn. 5: 358. 1918.

Description: Parmasto (2005).

Hymenochaete anomala is characterized by its basidioma resupinate, hymenophore smooth, brown, slightly olive, setigerous layer with lanceolate setae, most of them embedded in hymenium, some projecting up to 20 μm; basidiospores ellipsoid, smooth, thin-walled, (2.5-) 2.75-3.5 × (1.5-) 1.75-2.25 μm and presence of the incrusted cystidia.

Distribution: United States of America, El Salvador, Cuba, Venezuela, Trinidad, and Argentina. Brazil: São

Paulo and Rio Grande do Sul States (Gibertoni *et al.* 2003, Parmasto 2005).

Material examined: BRASIL. Santa Catarina: Ilha de Santa Catarina, Ratones, 27-I-1989, *Loguercio-Leite & Furlani 390* (FLOR).

Hymenochaete rhabarbarina (Berk.) Cooke, Grevillea 8: 148. 1880 ≡ *Corticium rhabarbarinum* Berk., Botany of the Antarctic Voyage of H.M. Discovery Ships Erebus and Terror, in the years 1839-1843, I, 2: 184. 1855.

Description: Parmasto (2005).

This species presented basidioma resupinate, tomentum and cortex absent; hymenophore smooth, setigerous layer with slender setae projecting up to 80 μm, often with a hyphal sheat, basidiospores ellipsoid to broadly ellipsoid, smooth, thin-walled, 5.25-6 × 2.5-3 μm.

Distribution: pantropical. Brazil: São Paulo and Rio Grande do Sul States (Gazzano 1998, Gibertoni *et al.* 2003, Parmasto 2005).

Material examined: BRASIL. Santa Catarina: Ilha de Santa Catarina, Morro da Lagoa da Conceição, 19-I-1988, *Loguercio-Leite & Furlani 81A* (FLOR).

MERULIACEAE

Merulius tremellosus Schrad., Spicil. Fl. Germ. 1: 139. 1794.

Description: Eriksson & Ryvarden (1976).

Merulius tremellosus is characterized by its basidioma resupinate, orbicular and confluent; hymenophore merulioid, some hyphae covered with resinous material, basidiospores allantoid, smooth, thin-walled, 3.5-4.5 × 1-1.5 μm.

Distribution: cosmopolitan. Brazil: Rio Grande do Sul State (Rick 1960, Ahmad 1972, Guzmán & Johnson 1974, Eriksson & Ryvarden 1976, Tortic 1992).

Material examined: BRASIL. Santa Catarina: Florianópolis, Morro da Lagoa, 25-V-1996, *Gerber, Loguercio-Leite & Gonçalves 974* (FLOR); Rio Grande do Sul: São Leopoldo, 1932, *Rick s.n.* (PACA14283).

PODOSCYPHACEAE

Cymatoderma caperatum (Berk. & Mont.) D.A. Reid, Kew Bull. 10: 635. 1956 ≡ *Thelephora caperata* Berk. & Mont., Annls Sci. Nat., Bot., sér. 11: 241. 1849.

Description: Reid (1965).

The basidioma infundibuliform, centrally stipitate, hymenophore with radial wrinkles, dendriform, gloeocystidia abundantly present, basidiospores subcylindrical to ellipsoid, smooth and thin-walled, 7-10.5 × 3.5-4 μm are distinctive characters of *Cymatoderma caperatum*.

Distribution: United States of America, Costa Rica, Panama, Cuba, Jamaica, República Dominicana, Porto Rico, Martinique, Venezuela, Colombia, Peru, Bolivia, Paraguay, Argentina, and Uruguay. Brazil: Bahia, Goiás, Mato Grosso, São Paulo, and Rio Grande do Sul States (Reid 1965).

Material examined: BRASIL. Santa Catarina: Florianópolis, Morro da Lagoa, 17-X-1994, *Degenhardt & Neves 589* (FLOR).

POLYPORACEAE

Lentinus badius (Berk.) Berk., Lond. J. Bot. 6: 491. 1847 ≡ *Panus badius* Berk., Lond. J. Bot. 1: 145. 1842.

Description: Singer (1975), Pegler (1983).

Lentinus badius presented basidioma soft corky, centrally stipitate, pileus infundibuliform, finely pubescent, and covered by short piles; hymenophore lamellate, basidiospores hyaline, cylindric, smooth and thin-walled, 3.75-4.25 × 1.75-2 μm.

Distribution: pantropical. Brazil: São Paulo State (Hongo 1974, Pegler 1983).

Material examined: BRASIL. Santa Catarina: Itapiranga, 15-IV-1985, *Becker s.n.* (FLOR10116); Rio das Antas, Gramados, 27-VII-1994, *Degenhardt 527* (FLOR).

Stiptophyllum erubescens (Berk.) Ryvarden, Norweg. Jl Bot. 20: 4. 1973 ≡ *Daedalea erubescens* Berk., Ann. Mag. nat. Hist., Ser. 1, 4: 292. 1840.

Description: Ryvarden (1973).

Stiptophyllum erubescens is well characterized by its basidioma stipitate, solitary, stipe forked and eccentric, forming a pseudo-sclerotium at the base; hymenophore lamellate, gills decurrent corky to rigid. This species differs from *Xerotinus* by its trimitic hyphal system and from *Gloeophyllum* by the presence of the stipe.

Distribution: Colombia, Venezuela, Guiana, Peru, Bolivia, Argentina, and Paraguay. Brazil: Amazonas, Acre, Pará, Rio Grande do Norte, Paraíba, Bahia, Mato Grosso, Goiás, Rio de Janeiro, Paraná, and Rio Grande do Sul States (Fidalgo 1968, Ryvarden 1973, 1991, Singer 1975, Wright & Deschamps 1977, Bononi 1992, Ryvarden & Iturriaga 2001, Popoff 2003, Gibertoni *et al*. 2004).

Material examined: BRASIL. Santa Catarina: Itapiranga, Linha Becker, 15-IV-1985, *Scholz s.n*. (FLOR10108).

SISTOTREMATACEAE

Trechispora mollusca (Pers.) Liberta, Can. J. Bot. 51: 1878. 1974 ≡ *Boletus molluscus* Pers., Syn. Meth. Fung. (Göttingen) 2: 547. 1801.

Description: Liberta (1973), Ryvarden & Johansen (1980), Larsson (1994).

Trechispora mollusca is characterized by its basidioma resupinate, hymenophore poroid (pores 4-5/mm), basidiospores ellipsoid, walls slightly thickened and ornamented in Melzer, 4-4.5 × 3.3-3.8 μm.

Distribution: cosmopolitan (Liberta 1973, Ryvarden & Johansen 1980). This species is new record to Brazil (South America).

Material examined: BRASIL. Santa Catarina: Santo Amaro da Imperatriz, Parque Estadual da Serra do Tabuleiro, 28-III-2001, *Groposo 107* (FLOR).

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Literature cited

Ahmad, S. 1972. Basidiomycetes of West Pakistan. Biology Society of Pakistan 6: 1-141.

Bononi, V.L.R. 1992. Fungos Macroscópicos de Rio Branco, Acre, Brasil. Hoehnea 19: 31-37.

Corner, E.J.H. 1984. Ad Polyporaceas II & III. Nova Hedwigia 78: 1-222.

Dennis, R.W.G. 1970. Fungus flora of Venezuela and adjacent countries. Kew Bulletin Additional Series 3: 1-530.

Eriksson, J. & Ryvarden, L. 1976. The Corticiaceae of North Europe. Synopsis Fungorum 4: 547-886.

Fidalgo, M.E.P.K. 1968. Contribution to the fungi of Mato Grosso, Brazil. Rickia 3: 171-219.

Gazzano, S. 1998. Notas sobre Basidiomycetes Xilófilos del Uruguay. VIII. Registro de Aphyllophorales y sus sustratos arbóreos. Comunicaciones Botanicas del Museo de Historia Natural de Montevideo 109: 1-12.

Gibertoni, T.B., Parmasto, E. & Cavalcanti, M.A.Q. 2003. Non-Poroid Hymenochaetaceae (Basidiomycota) of the Atlantic Rain Forest in Northeast Brazil, with a preliminary checklist of Brazilian species. Mycotaxon 87: 437-443.

Gibertoni, T.B., Ryvarden, L. & Cavalcanti, M.A.Q. 2004. Poroid fungi (Basidiomycota) of the Atlantic Rain Forest in Northern Brazil. Synopsis Fungorum 18: 33-43.

Gibertoni, T.B., Ryvarden, L. & Cavalcanti, M.A.Q. 2006. Steroid Fungi (Basidiomycota) of the Atlantic Rain Forest in Northeast Brazil. Nova Hedwigia 8: 105-113.

Groposo, C. & Loguercio-Leite, C. 2005. Contribution to the lignocellulolytic fungi (Basidiomycetes) of the Atlantic Rain Forest in Southern Brazil. Mycotaxon 92: 103-106.

Guzmán, G. & Johnson, P.D. 1974. Registros y especies nuevas de los hongos de Palenque, Chiapas. Boletin de la Sociedad Mexicana de Micologia 8: 73-105.

Holmgren, P.K. & Holmgren, N.H. 1998. Index Herbariorum. http://sciweb.nybg.org/science2/IndexHerbariorum.asp (acesso em 20.02.2007).

Hongo, T. 1974. Agarics from Papua-New Guinea (2). Mycological reports from New Guinea and the Solomon Islands (27). Reports of the Tottori Mycological Institute 11: 29-41.

Ibañez, C.G. 1999. Cultural studies of non-poroid Aphyllophorales. Mycotaxon 71: 457-471.

Index Fungorum Partnership. 2004. ISF Search Index Fungorum. http://www.speciesfungorum.org/Names/Names.asp (acesso em 17.07.2007).

Kirk, P.M., Cannon, P.F., David, J.C. & Stalpers, J.A. 2001. Dictionary of the Fungi. 9 ed. CAB International, London.

Larsson, K.H. 1994. Poroid species in *Trechispora* and the use of calcium oxalate crystals for species identification. Mycological Research 98: 1153-1172.

Liberta, A.E. 1973. The genus *Trechispora* (Basidiomycetes, Corticiaceae). Canadian Journal of Botany 51: 1871-1892.

Loguercio-Leite, C. & Wright, J.E. 1991a. Contribution to a biogeographical study of the austroamerican xilophilous polypores (Aphyllophorales) from Santa Catarina Island, SC, Brazil. Mycotaxon 41: 161-166.

Loguercio-Leite, C. & Wright, J.E. 1991b. New South American pileate polypores (Polyporaceae) from Santa Catarina Island, SC, Brazil. Mycotaxon 41: 167-172.

Loguercio-Leite, C. & Wright, J.E. 1998. *Diplomitoporus dilutabilis* a new species of Polyporaceae (Aphyllophorales) from Santa Catarina Island, Brazil. Mycotaxon 68: 47-51.

Loguercio-Leite, C., Gerber, A.L. & Ryvarden, L. 1998. *Wrigthoporia porilacerata*, a new species of pore fungi from southern Brazil. Mycotaxon 67: 251-255.

Loguercio-Leite, C., Gonçalves, G.V. & Ryvarden, L. 2001. Studies in Neotropical polypores 13. *Ceriporiopsis cystidiata* sp. nov. Mycotaxon 79: 285-288.

Loguercio-Leite, C., Ryvarden, L. & Groposo, C. 2002. Studies in Neotropical polypores 16. *Rubroporus carneoporis* genus & species nova. Mycotaxon 83: 223-227.

Lowy, B. 1952. The genus *Auricularia*. Mycologia 44: 657-692.

Ministério do Meio Ambiente. 2002. Biodiversidade Brasileira: avaliação e identificação de áreas e ações prioritárias para conservação, utilização sustentável e repartição de benefícios da biodiversidade brasileira. Ministério do Meio Ambiente, Secretaria de Biodiversidade e Florestas, Brasília.

Morellato, L.P.C & Haddad, C.F.B. 2000. Introduction: the Brazilian Atlantic Forest. Biotropica 32: 786-792.

Parmasto, E. 2005. New data on rare species of *Hydnochaete* and *Hymenochaete* (Hymenochaetales). Mycotaxon 91: 137-163.

Pavlich, M. 1976. Ascomycetes y Basidiomycetes del Peru. I. Memórias del Museo de Historia Natural "Javier Prado", Lima.

Pegler, D.N. 1983. The Genus *Lentinus*. A World Monograph. Kew Bulletin Additional Series 10: 1-281.

Popoff, O.F. 2003. Notes on *Daedalea erubescens*, *Hexagonia decipiens* and the Phaeotrametaceae. Mycotaxon 87: 103-108.

Reid, D.A. 1965. A monograph of the stipitate stereoid fungi. Nova Hedwigia 18: 1-184.

Reid, D.A. 1976. Notes on Polypores. 2. Memoirs of the New York Botanical Garden 28: 179-198.

Rick, J. 1960. Basidiomycetes eubasidii in Rio Grande do Sul, Brasília 4. Iheringia 7: 193-296.

Ryvarden, L. 1973. New genera in the Polyporaceae. Norwegian Journal of Botany 20: 1-5.

Ryvarden, L. 1991. Genera of Polypores. Nomenclature and taxonomy. Synopsis Fungorum 5: 1-363.

Ryvarden, L. & Iturriaga, T. 2001. Studies in Neotropical Polypores 9. A critical checklist of poroid fungi from Venezuela. Mycotaxon 78: 393-405.

Ryvarden, L. & Johansen, I. 1980. A preliminary polypore flora of East Africa. Fungiflora**,** Oslo.

Singer, R. 1975. The Agaricales in Modern Taxonomy. 3 ed. J. Cramer, Stuttgart.

Tabanez, A.A.J. & Viana, V.M. 2000. Patch structure within Brazilian Atlantic Forest fragments and implications for conservation. Biotropica 32: 1007-1015.

Teixeira, A.R. 1945. Himenomicetos brasileiros: Auriculariales e Dacryomycetales. Bragantia 5: 153-186.

Tortic, M. 1992. Macromycetes of Gorski Kotar (Croacia) III. Acta Botanica Croatica 51: 113-130.

Wright, J.E. & Deschamps, J.R. 1977. Basidiomicetos xilófilos de la Región Mesopotámica III. Los géneros *Bjekandera*, *Gloeophyllum*, *Gloeoporus*, *Hirschioporus*, *Hydnopolyporus*, *Phaeocoriolellus*, *Pycnoporus* y *Xerotinus*. Revista de Investigaciones Agropecuárias 13: 27-70.