A new species of *Pluteus* section *Celluloderma* (Agaricales, Basidiomycota) from Southern Brazil

Una nueva especie de *Pluteus*, sección *Celluloderma* (Agaricales, Basidiomycota) del sur de Brasil

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Wartchow, Felipe

Universidade Federal da Paraíba, Departamento de Sistemática e Ecologia, CEP 58051-970, João Pessoa, PB, BRAZIL.

Corresponding author: fwartchow@yahoo.com.br, https://orcid.org/0000-0003-4930-565X

➤ **Abstract** — *Pluteus elvaniae* is described as a new species belonging to *Pluteus* Section *Celluloderma* from Southern Brazil. The species was collected from a seasonal semidecidouous forest and it is morphologically characterized by brown pileus in fresh state, the pileus centre is venose-rugulose in dry state, with a short or indistinctly striate margin, and dermatocystidia with obtuse-rounded to obtuse apex and globose basidiospores.

Keywords: Agaricomycetes; Neotropical; Pluteaceae; taxonomy.

➤ **Resumen** — *Pluteus elvaniae* se propone como una nueva especie de *Pluteus* Sección *Celluloderma* para la región Sud de Brasil. La especie fue colectada en una floresta estacional y se caracteriza por el píleo castaño cuando es fresco, centro del píleo venoso-ruguloso cuando está seco, margen cortamente o indistintamente estriada, y los dermatocistídeos con el ápice redondeado-obtuso a obtuso y las basidiosporas globosas.

Palabras clave: Agaricomycetes; Neotrópico; Pluteaceae; taxonomía.

INTRODUCTION

Pluteus Fr. (Pluteaceae, Agaricales) is a pink-spored agaric genus relatively diverse in Brazil, on which at least 70 taxa are currently known (Putzke & Wartchow 2008, Menolli, De Meijer, Capelari, 2015a). Historically, *Pluteus* section *Celluloderma* Fayod comprises all species with a euhymenioderm or epithelial pileipellis sometimes presenting dermatocystidia, and lacking hymenial metuloids (see summary in Menolli & Capelari, 2016). Into this section, the presence of dermatocystidia was a characteristic of the former *Pluteus* subsection *Mixtini* (Singer, 1986). However, recent molecular studies showed that this subsection has not phylogenetic support (Justo *et al*., 2011).

Some species of section *Celluloderma* with dermatocystidia were reported or described from Brazil, as follow: Wartchow, Cortez, Coelho (2004) cited *P. thomsonii* (Berk. & Broome) Dennis from Rio Grande do Sul;

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Menolli & Capelari (2010) reported *P. longistriatus* (Peck) Peck from São Paulo; Menolli *et al*. (2015a) referred *P. anomocystidiatus* Menolli & de Meijer, *P. chusqueae* (E. Horak) Menolli and *P. eludens* E.F. Malysheva, Minnis & Justo from Paraná; and Menolli, Justo, Capelari (2015b) described *P. brunneocrinitus* Menolli, Justo & Capelari from São Paulo, *P. crinitus* Menolli & Capelari from Amazonas and *P. necopinatus* Menolli & Capelari from Rio de Janeiro.

Even so, I present in this report *Pluteus elvaniae* sp. nov. collected in the State of Rio Grande do Sul, Southern Brazil.

MATERIALS AND METHODS

Fungal material was collected in a 'seasonal semideciduous forest', within the Atlantic Forest Domain, and influenced by anthropoid activities (Longhi *et al*., 2000). Usual methodology on the study of agaric fungi was followed (Singer, 1986). Presentation of basidiospore data follows the methodology proposed by Tulloss, Ovrebo, Halling (1992), slightly modified (Wartchow, 2012). The holotype is deposited at JPB (Thiers, 2018; continuously updated).

RESULTS

Pluteus elvaniae Wartchow, sp. nov.
Figs. 1-2

MycoBank number.— MB 828426.

Type.— BRAZIL. Rio Grande do Sul: Santa Maria, Morro do Elefante, 15-IV-2002, *F. Wartchow 029* (JPB 63208, holotypus hic designatus!).

Diagnosis.— The new species is characterized by the combination of brown pileus in fresh state, venose-rugulose pileus centre in dried state, short or indistinctly sulcate margin, globose basidiospores 5.5–7 × 5–7 μm, Q = 1.00–1.08 (–1.12), Q = 1.04, and lageniform to broadly lageniform rounded-obtuse to obtuse dermatocystidia 63–100 × 17–40 μm.

Etymology.— In honor to my mother, Mrs. Elvani Wartchow, who helped me since when I was undergraduate student in the Biological Sciences in 1998.

PILEUS 20–24 mm, plano-convex to narrowly convex, brown to slightly darker; surface slightly viscid, glabrous, smooth when fresh then rugulose/venose in dried state; margin not striate but only slightly distinctly very short sulcate but not showing the white context; context thin, fleshy, becoming thinner toward the margin. LAMELLAE free, subcrowded, membranous, cream with concolorous edge; lamellulae present. STIPE 21–25 × 1–1.5 mm, central, cylindrical, recurved with a small and indistinct submarginate bulb, cream, smooth, glabrous, hollow. Spore print not observed.

BASIDIOSPORES 5.5–7 × 5–7 μm (L = 6.4 μm, W = 6.1 μm, Q = 1.00–1.08 (–1.12), Q = 1.04), globose to occasionally subglobose, smooth, thick walled, with a large guttulate content, stramineous. BASIDIA 23–35 × 7–9 μm, clavate, bearing four sterigmata. PLEUROCYSTIDIA 38–63 × 12–20 μm, fusoid-lageniform to sometimes fusoid-ventricose, with obtuse tips only occasionally subcapitate, scattered over all lateral surface, thin walled, hyaline. Lamella edge sterile, with crowded cheilocystidia. CHEILOCYSTIDIA 30–51 × 8–18 μm, fusoid-ventricose to lageniform sometimes narrower clavate or with a capitate apex, thin walled, hyaline to pale brown pigmented. PILEIPELLIS an epithelium with dimorphic hyphae; (1) sphaerocysts most frequently pyriform or sphaeropedunculate (some presenting a long pedicel) to sometimes ovoid 28–47 (–58) × 18–36 μm, with brown pigment uniformly dissolved, and (2) dermatocystidia 63–100 × 17–40 μm broadly lageniform to lageniform, sometimes with subcapitate apex, and subobtuse to obtuse, not acute nor rounded, frequently with condensed brownish pigment, but sometimes uniformly dissolved. CAULOCYSTIDIA up to 50 × 7 μm, hyphoid or very slender clavate, hyaline, thin walled, occasional or occurring in small tuffs of short elements arising from context. STIPE CONTEXT with longitudinally oriented hyphae 2.5–10 μm, somewhat inflating to 20 μm wide, without a trace of terminal inflated elements. HYMENOPHORAL TRAMA bilateral inverse. Clamp connections absent from all tissues examined.

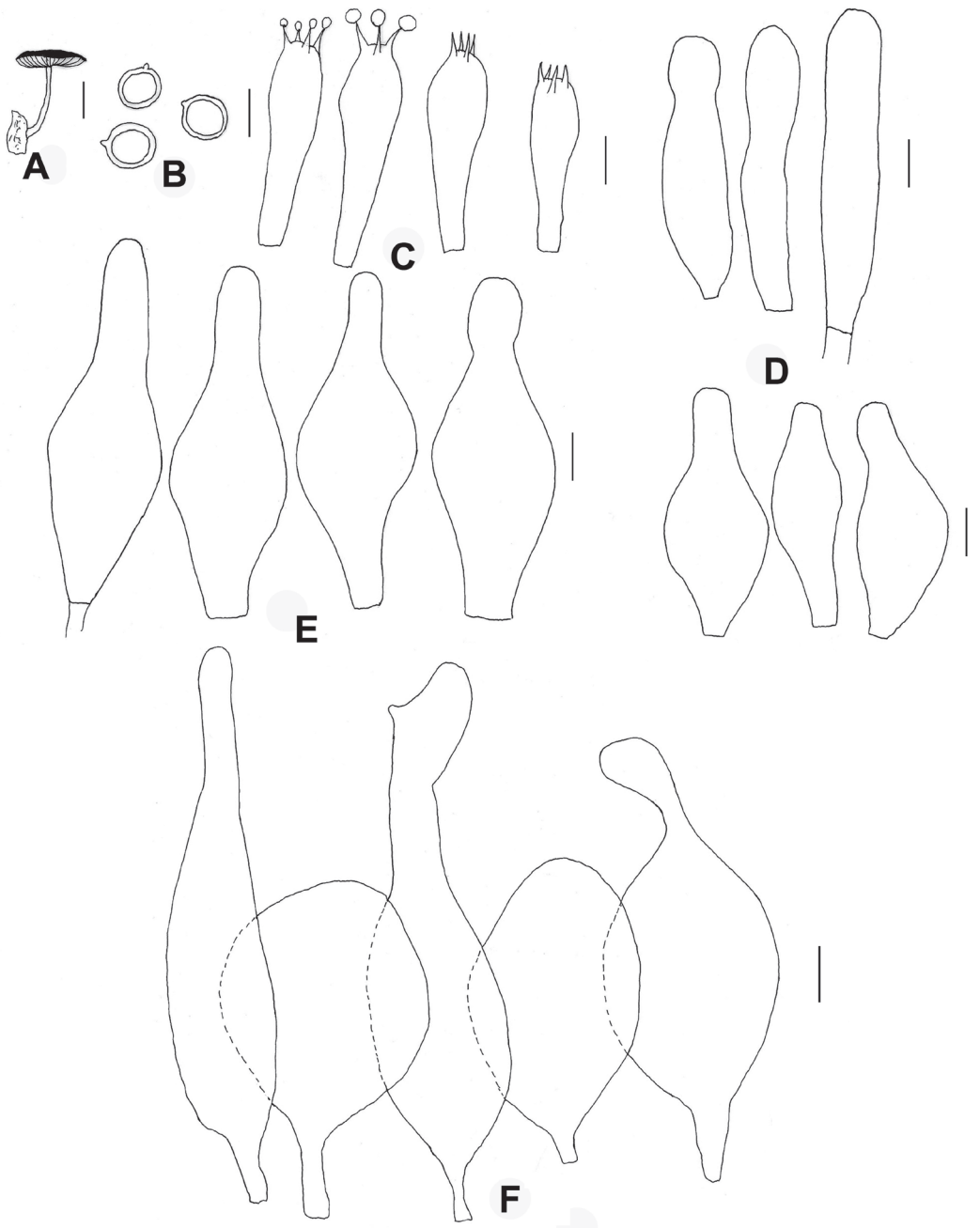

Fig. 1. *Pluteus elvaniae* (holotype). A) Basidiome. B) Basidiospores. C) Basidia. D) Pleurocystidia. E) Cheilocystidia. F) Pileipellis elements. Scales: A = 10 mm, B-F = 10 µm.

Habit.— Solitary on rotten wood in subtropical forest.

Known distribution.— Only known from type locality.

DISCUSSION

Pluteus elvaniae belongs to section *Celluloderma* due the presence of epithelial pileipellis mixed with frequent dermatocys-

Fig. 2. *Pluteus elvaniae* (holotype). Basidiome with the rugulose/venose pileus surface. Scale: 10 mm.

tidia among them and absence of metuloids (Singer, 1958, 1986; Menolli & Capelari, 2016). The subsection *Mixtini* in the sense of Singer (1958, 1986) cannot be considered due it is not phylogenetically supported (Justo *et al*., 2011). But according to Singer's (1958) key, the new species can be included together with taxa of the putative stirps '*Venosus*', that are characterized by the venose/rugulose pileus centre in dried state, short or indistinctly sulcate margin and the rounded-obtuse to obtuse (in this case) dermatocystidia (Singer, 1958, 1986). Among members included in this group, two species reported by Singer (1986) can be segregate, as follow:

Pluteus subminutus Singer from forests of Argentina and Bolivia differs in the smaller basidiospores 3.7–5.7 × 3.7–5.5 μm, the ventricose-vesiculose to vesiculose pleurocystidia, and pileipellis bearing cystidioid mostly elongate to short and broad bodies which is account by long pedicel (Singer, 1958).

Pluteus agriensis Singer from Ecuador differs in the smaller basidiospores 4.5–5 × 4.4–4.8 μm, smaller and narrower dermatocystidia 27–37 × 9.3–15 μm, ampullaceous pleurocystidia and smaller (15–18 × 3–15 μm) sphaerocysts on pileipellis (Singer, 1978).

Later, Pradeep & Vrinda (2006) described *P. delicatulus* C.K. Predeep & Vrinda from India, which differs in the smaller pileus 7–10 mm, clavate to vesiculose pleurocystidia, relatively narrow and longer dermatocystidia 46.5–147 × 15–27 μm with a long neck and obtuse to subacute apices, and slightly smaller basidiospores (4.5–) 5.5–6 × (4.5–) 5.3–5 μm.

The type species of this putative stirps, *P. venosus* Singer from Florida, USA, was protologued with transparently striate pileus margin (smooth in dried state), fuscous cystidioid hairs in the lower stipe surface, vesiculose cystidia, and relatively narrow dermatocystidia 51–68 × 10.8–16 μm (Singer, 1956, 1958). However, Minnis & Sundberg (2010) did not find any trace of elongate dermatocystidia, synonymizing this species with *Pluteus jamaicensis* Murrill. Even so, I do not consider *P. venosus* as similar species

since differences in the pileipelis occurs between this species and *P. elvaniae*.

Other Brazilian species of *Pluteus* section *Celluloderma* bearing dermatocystidia are known: *P. anomocystidiatus* differs in the clavate to spheropedunculate pleurocystidia and filiform cheilocystida; *P. brunneocrinitus* in the brown fibrils on stipe and smaller basidiospores 4.5–5.5 × 4.5(–5.0) μm; *P. chusqueae* in the scarce pleurocystidia and narrowly fusiform or narrowly clavate to filiform dermatocystidioid elements; *P. crinitus* in the presence of long tuffs hairs on pileus surface; *P. eludens* in the pigmented cheilocystidia given a dark brown lamellaedge; *P. longistriatus* in the deeply deeply sulcate-striate over at least one-half the radius pileus and the elongate-fusiform or elongate-clavate dermatocystidia; *P. necopinatus* in the globose basidiospores 5.0–5.5 × 5.0–5.5 μm and fusiform more acute dermatocystidia; and *P. thomsonii* in the presence of rostrate cystidia (Wartchow *et al.,* 2004; Menolli & Capelari, 2010; Menolli *et al*., 2015a, 2015b).

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REFERENCES

Justo, A., Vizzini, A., Minnis, A. M., Menolli Jr., N., Capelari, M., Rodriguez, O., Malysheva, E., Contu, M., Ghignone, S. & Hibbett, D. S. (2011). Phylogeny of the Pluteaceae (Agaricales, Basidiomycota): taxonomy and character evolution. *Fungal Biology 115*: 1-20.

Longhi, S. J., Machado, M. A., Brucker, M. K., Hoppe, J. M., Müller, I. & Borsoi, G. A. (2000). Aspectos fitossociológicos de fragmento de floresta estacional decidual, Santa Maria, RS. *Ciência Florestal 10*: 59-74.

Menolli Jr., N. & Capelari, M. (2010). Notes on *Pluteus* (Pluteaceae, Agaricales) from Brazil including two new species and a new record. *Mycologia 102*: 697-707.

Menolli Jr., N. & Capelari, M. (2016). *Pluteus* sect. *Celluloderma* (Pluteaceae, Agaricales) in Brazil: additional morphological studies and an annotated checklist of all named taxa. *Iheringia Série Botânica 71*: 319-330.

Menolli Jr., N., de Meijer, A. A. R. & Capelari, M. (2015a). The genus *Pluteus* (Pluteaceae, Agaricales) from the state of Paraná, Brazil. *Nova Hedwigia 100*: 101-157.

Menolli Jr., N., Justo, A. & Capelari, M. (2015b). Phylogeny of *Pluteus* section *Celluloderma* including eight new species from Brazil. *Mycologia 107*: 1205-1220.

Minnis, A. M. & Sundberg, W. J. (2010). *Pluteus* section *Celluloderma* in the U.S.A. *North American Fungi 5*: 1-107.

Pradeep, C. K. & Vrinda, K. B. (2006). New and noteworthty species of *Pluteus* (Pluteaceae, Agaricales) from Kerala state, India. *Persoonia 19*: 95-99.

Putzke, J. & Wartchow, F. (2008). Lista de species de Pluteaceae (Agaricales) que ocorrem no Brasil. *Biociências 16*: 110-113.

Singer, R. (1956). Contributions toward a monograph of the genus *Pluteus*. *Transaction of the British Mycological Society 39*: 145-232.

Singer, R. (1958). Monographs of South American Basidiomycetes, especially those of the east slope of the Andes and Brazil. I. The genus *Pluteus* in South America. *Lloydia 21*: 195-299.

Singer, R. (1978). Interesting and new species of *Basidiomycetes* from Ecuador II. Nova *Hedwigia 29*: 1-98.

Singer, R. (1986). The Agaricales in Modern Taxonomy. 4th ed. Koenigstein, Germany: Koeltz Scientifc Books.

Thiers, B. (2018). Index Herbariorum: a global directory of public herbal and The associated staff. New York Botanical Garden's Virtual Herbarium. Retrieved from http://sweetgum.nybg.org/ih

Tulloss, R. E., Ovrebo, C. L. & Halling, R. E. (1992). Studies on *Amanita* (Amanitaceae) from Andean Colombia. *Memoirs of the New York Botanical Garden 66*: 1-46.

Wartchow, F. (2012). *Clavulina incrustata*, a new species from Pernambuco, Brazil. *Cryptogamie, Mycologie 33*: 105-113.

Wartchow, F., Cortez, V. G. & Coelho, G. (2004). *Pluteus thomsonii* (Pluteaceae): a northern agaric found in South America. *Mycotaxon 89*: 349-353.