



A new combination in *Oudemansiella* (Physalacriaceae, Agaricomycetes)

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Abstract

A new combination, *Oudemansiella cephalocystidiata* comb. nov. is provided. It is also reported for the first time from Bolivia. This species is characterized by the smaller basidiospores, scarcity of hymenial cystidia and presence of capitata caulocystidia at stipe apex.

Key words – Agaricales – Basidiomycota – Neotropics – taxonomy

Introduction

The systematics of xeruloid/oudemansielloid taxa has recently been drastically changed. Petersen and Hughes (2010) erected eight genera based on morphological and molecular analysis: *Dactylosporina* (Cléménçon) Dörfelt, *Hymenopellis* R.H. Petersen, *Mucidula* Pat., *Oudemansiella* Speg., *Paraxerula* R.H. Petersen, *Ponticulomyces* R.H. Petersen, *Protoxerula* R.H. Petersen and *Xerula* Maire. Vellinga (2010: 495) in her review of Petersen & Hughes (2010) monograph already stated that “recognition of non-monophyletic genera is very problematic” and “the solution might be to recognize three genera”: *Xerula* s.str., *Oudemansiella* and *Paraxerula*, as previously referred by Wang et al. (2008) and Yang et al. (2009). Recent molecular studies by Qin et al. (2014) and Hao et al. (2014) finally proved the occurrence of the three genera mentioned above, with *Oudemansiella* comprising *Cribbea* A.H. Sm. & D.A. Reid, *Dactylosporina*, *Hymenopellis*, *Mucidula*, *Oudemansiella* s.str., *Ponticulomyces* and *Protoxerula*.

Recent studies by Wartchow et al. (2010, 2014) and Petersen & Hughes (2010) summarized the distribution of echinulate-spored taxa of *Oudemansiella* sect. *Dactylosporina* in the Neotropic, with *Dactylosporina cephalocystidiata* R.H. Petersen & Aime (Guyana), *Oudemansiella glutinosa* Singer (Colombia, Ecuador and Guyana), *O. macracantha* Singer (Argentina, Bolivia, Brazil, Colombia, Mexico, Panama and Venezuela) and *O. steffenii* (Rick) Singer (Argentina, Bolivia, Brazil, Costa Rica and French Guiana).

Regarding agarics diversity of Bolivia, Rolf Singer was the main contributor. During field trip in this country in 1956, 206 new taxa were described by him (Mueller and Wu 1997), among them *Oudemansiella macracantha* from the Province of Madre de Díos, Depto. Pando (Singer 1962). Later, Singer (1964) also cited *O. cubensis* (Berk. & M.A. Curtis) R.H. Petersen [as *O. canarii* (Jungh.) Höhnelt] and *O. steffenii* (Rick) Singer for this country.

Here I propose a new combination and expansion of the distribution of *Oudemansiella cephalocystidiata* comb. nov., protologued from Guyana and now reported for the first time from Bolivia.

Materials & Methods

Microscopic observations were made from dried material mounted in 3% KOH and Congo red solutions. Description of the basidiospores follows the methodology proposed by Tulloss et al. (1992), slightly modified by Wartchow (2012) and Wartchow et al. (2012). Measurements and statistics are based on 30 spores. Abbreviations include **L(W)** = average basidiospores length (width), **Q** = the length : width ratio range as determined from all measured basidiospores, and **Qm** = the Q value averaged from all basidiospores measured. Description of dried material is based on Singer's field notes and on dry basidiome, following the style of the studies of Yang (2000). Color codes follow Kornerup & Wanscher (1978).

Taxonomy

Oudemansiella cephalocystidiata (R.H. Petersen & Aime) Wartchow, **comb. nov.** Figs. 1, 2.
≡ *Dactylosporina cephalocystidata* R.H. Petersen & Aime in Petersen & Hughes, Beih. Nova Hedw. 137: 60. 2010.

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Basidiome slender. Pileus about 20 mm in diam., plano-umbonate, brown (6E5), sulcate-striate in dried state; context thin, fleshy. Lamellae adnexed, cream (4C4 'blond'), up to 2 mm wide, subdistant; lamellulae infrequent, truncate. Stipe 80 × 2 mm, concolorous to pileus (6E5), but white when fresh, according to field notes; bulb only slightly inflating to 3 mm, pseudorrhiza probably long; context solid.

Basidiospores (8.5–) 9–10.5 (–11) × (8–) 8.5–10 (–10.5) μm (excluded spines), **L** = 9.8 μm, **W** = 9.5 μm, **Q** = 1.00–1.11 (–1.16), **Qm** = 1.04, inamyloid, colorless, globose only infrequently subglobose, moderately thick walled, strongly spinose, spines about 23, 2–4 μm long, subacute to subobtuse, infrequently with acute tips, contents guttulate; hilar appendix difficult to discern. Basidia 41–43 × 13–14 μm, clavate, 2- or sometimes 4-sterigmate, sterigmata to 9 × 4.5 μm (width measured at base). Subhymenium made of filamentous hyphae up to 6 μm wide. Cystidia: not seen, probably collapsed due age of material. Lamella trama regular with filamentous hyphae long and flexuous 1.5–14 μm, thin walled; sometimes short-celled (to 70 μm long) thickness-walled 0.5–1.5 μm, occasionally clamped. Pileipellis composed of ixohymenioderm with common pedunculate, rounded to broadly clavate elements 16–25(–34) × 12–22(–24) μm in centre of pileus and overall, with brownish or pale condensed pigment; walls to 1 μm thick. Pileus context with hyphae 2.5–9 μm, mostly thin walled (sometimes to 0.5 μm thick). Stipitipellis at midstipe and above hyphae occasionally arising from the pellis, not truly cystidiate but apparent one caulocystidia about 70 × 21 μm, pale colored thin-walled, fusoid-lageniform; at apex erect isolated or fascicles of caulocystidia 62.5–162.5 × 6–19 μm, cylindric then occasionally lageniform, capitate with capitulum to 11 μm in diam., but some of them only obscurely capitate (due age of material and non-satisfactorily rehydration), mostly thin- or slightly thick-walled (up to 0.5 μm thick), colorless; pellis hyphae 1.5–7 μm, thin-walled. Clamps often inconspicuous although present.

Known distribution – Solitary on soil (attached to buried rotting wood?) in forest at 2000 m alt. (Singer's field notes).

Material examined – Bolivia, Departamento de La Paz, Provincia de Nor Yungas, Carmen Pampa, Solitary on soil (attached to buried rotting wood?) in forest at 2000 m alt. (Singer's field notes) 26 February 1956, leg. R. Singer B 1488 (F 1014625).

Additional specimens examined: *Oudemansiella stefenii* (Rick) Singer – Bolivia, Departamento del Beni, Provincia de Vaca Díez, Ivon, 3 April 1956, R. Singer B 2428 (F).



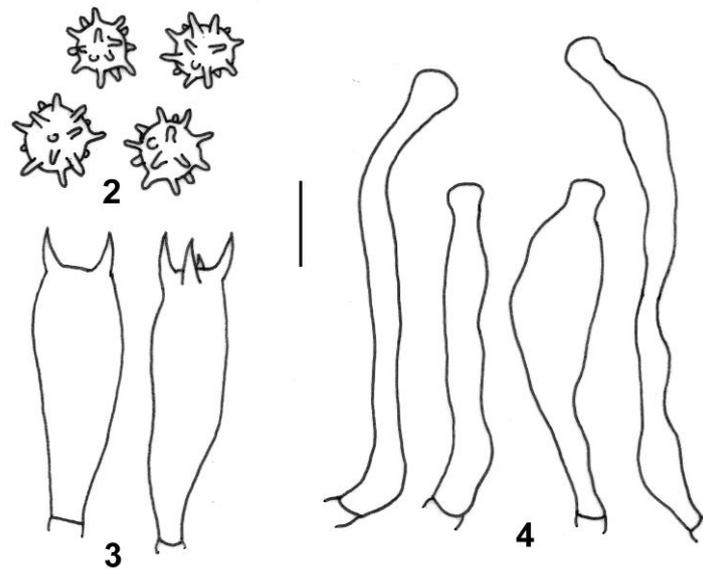
Fig. 1 – *Oudemansiella cephalocystidiata* (F 1014625). Exsiccate and Rolf Singer's collection number. Bar: 20 mm. Photo by F. Wartchow.

Discussion

Echinulate spored taxa with xeruloid habit (i.e., species with radicate stipe) belong to monophyletic genus *Oudemansiella* (Qin et al. 2014; Hao et al. 2014). Together with *O. glutinosa* Singer, *O. cephalocystidiata* belongs to a small set of taxa of section *Dactylosporina* that were keyed as having basidiospores not larger than 12 μm in diam. and lacking caulocystidia at midstipe (Petersen and Hughes 2010: key page 59). In the herbarium box this material was originally labeled as *O. macracantha* by Singer. However, Singer (1964: 156) included as voucher of *O. steffanii* with collection number (R. Singer B 1488) deposited at BAFC, but not F (Thiers, continuously updated).

This material shares several points with the excellent protologue of *Dactylosporina cephalocystidiata* from Guyana (Petersen and Hughes 2010). The Guyanese fungus was reported with basidiospores slightly larger in its range, 9–12 μm in diam., but somewhat similar in the average (10.1 μm while 9.8 μm in Bolivian material). Other similarity is the scarcity of pleurocystidia in both materials and the most prominent feature of this taxon: the presence of common capitate caulocystidia at stipe apex. In the protologue of *D. cephalocystidiata* only three pleurocystidia were found (Petersen and Hughes 2010: 60), while in the Bolivian material I did not find any hymenial cystidia.

The stature of *O. cephalocystidiata* is somewhat similar to *O. steffanii*. However, the basidiospores are considerable larger and have more spines (about 30 against >23 in *O. cephalocystidiata*) and presence of prominent hymenial cystidia and common caulocystidia at midstipe (Singer 1964; Corner 1994; Wartchow et al. 2010; Petersen and Hughes 2010). Examination of material 'R. Singer B 2428', also used as voucher of *O. steffanii* by Singer (1964), revealed that these features are evident: basidiospores larger (11.5–) 12–14 (–16) \times (11–) 8.5–14 (–15) μm (without ornamentation), **L** = 13.1 μm , **W** = 12.5 μm , **Q** = 1.00–1.07, **Qm** = 1.02 with much more crowded spines 2–3 μm high; and frequent occurrence of voluminous hymenial cystidia and presence of caulocystidia at midstipe.



Figs 2–4 – *Oudemansiella cephalocystidiata* (F 1014625). 2 Basidiospores. 3 Basidia. 4 Caulocystidia from stipe apex. – Bars = 10 μ m. Drawings by V.R.M. Coimbra.

Oudemansiella macracantha is easily segregated by the pileus diameter smaller than 15 mm, proportionally much longer stipe to 100 mm, larger basidiospores with longer spines, occurrence of caulocystidia at midstipe and abundant hymenial cystidia (Singer 1964; Petersen and Hughes 2010; Wartchow et al. 2010, 2014).

The unique European entity in this section, *O. kuehnerii* (Romagn.) Singer also possesses larger basidiospores $10.5\text{--}14 \times 10\text{--}13.5 \mu\text{m}$ (excluded spines), $L = 12.6 \mu\text{m}$, $Q = 1.00\text{--}1.18$, $Q_m = 1.08$, about 36 spines $1.5\text{--}3 \mu\text{m}$ high, and pileipellis ornamentation with narrowly clavate, lageniform and fusiform elements mixed with some long pileocystidia and presence of mid-stipe caulocystidia [Boekhout and Bas 1986 as *Xerula kuehneri* (Romagn) Bas & Boekhout; Petersen and Hughes 2010 as *Dactylosporina kuehnerii* (Romagn.) R.H. Petersen].

Oudemansiella glutinosa from Colombia, Ecuador and Guyana is the most phenetically similar taxon. It differs, however, in the longer stipe (range to 125 mm long), and somewhat larger basidiospores $(8\text{--}) 9\text{--}13\text{--}(16) \times (7\text{--}) 10\text{--}12\text{--}(15) \mu\text{m}$ (excluding spines), $L = 11.2 \mu\text{m}$, W = not informed, $Q = 1.00\text{--}1.17$, $Q_m = 1.10$ with coalescent spines, and cylindrical to vermiform caulocystidia at stipe apex (Singer 1989, Petersen and Hughes 2010).

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