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Two new microfungi from Brazilian Amazon Forest: *Atrogeniculata submersa* and *Nigrolentilocus amazonicus*

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ABSTRACT — *Atrogeniculata submersa* gen. & sp. nov. and *Nigrolentilocus amazonicus* sp. nov., collected on the submerged decaying leaves of an unidentified plant, are described and illustrated. *Atrogeniculata submersa* is distinguished by macronematous geniculate conidiophores, mono- and polyphialidic integrated indeterminate conidiogenous cells, and solitary aseptate globose pyriform to broadly ellipsoid conidia that are at first subhyaline but mature to reddish-brown to dark brown and secede schizolytically on a collarette. *Nigrolentilocus amazonicus* is characterized by solitary acropleurogenous obclavate conidia that are 2-septate and brown below and subhyaline to pale brown at the apex.

KEY WORDS — asexual fungi, systematics, tropical fungi

Introduction

Saprobic dematiaceous hyphomycetes are highly diverse on plant material in tropical forests and semi-arid regions, where many new genera or species have recently been discovered (e.g., Almeida et al. 2013, Castaneda Ruiz et al. 2009, 2012, Cruz et al. 2012, Ma et al. 2011, Monteiro & Gusmao 2013, Ren et al. 2012, Silva & Gusmao, 2013, Zhang et al. 2009, 2011). Taking into account its highly variable geographical and physical conditions, the Brazilian Amazon is considered an important reservoir of biodiversity. However, its mycobiota, especially of microfungi, is poorly known. During a mycological survey of fungi associated with submerged litter at Brazilian Amazon forest,

two interesting fungi were collected from submerged leaves in a stream. One showed remarkable differences from all previously described hyphomycete genera (Seifert et al. 2011) and the other from all *Nigrolentilocus* species (Castañeda-Ruiz et al. 2001). The two fungi are therefore described here as new.

Materials & methods

Samples of submerged litter were placed in paper and plastic bags, taken to the laboratory, and prepared according to Castañeda-Ruiz (2005). Mounts were prepared in PVL (polyvinyl alcohol, lactic acid, and phenol) and measurements were made at a magnification of $\times 1000$. Micrographs were obtained with an Olympus BX51 microscope equipped with bright field and Nomarski interference optics. The type specimen is deposited in the Herbarium of Universidade Estadual de Feira de Santana (HUEFS).

Taxonomy

Atrogeniculata J.S. Monteiro, Gusmão & R.F. Castañeda, **gen. nov.**

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Differs from *Phialogeniculata* by its reddish-brown to dark conidia, from *Phaeohiratsukaea* by its solitary conidia that lack a longitudinal germ slit, and from *Craspedodidymum* by its intercalary sympodially elongated conidiogenous cells.

TYPE SPECIES: *Atrogeniculata submersa* J.S. Monteiro et al.

ETYMOLOGY: *Atro-*, referred to the dark conidial pigmentation + *-geniculata*, referring to the bent conidiophores.

Asexual fungi. COLONIES on the natural substratum, hairy, golden brown to brown. Mycelium superficial and immersed. CONIDIOPHORES macronematous, mononematous, erect, geniculate, septate, brown to dark brown. CONIDIEXOGENOUS CELLS monophialidic or polyphialidic, integrated, indeterminate, intercalary and terminal, with a conspicuous collarette. Conidial secession schizolytic. CONIDIA solitary, acropleurogenous, aseptate, ellipsoid, ovoid, globose to oblong, first hyaline, later brown, reddish brown to black, smooth or verruculose.

NOTE: *Atrogeniculata* superficially resembles *Phialogeniculata* Matsush., but *Phialogeniculata* has hyaline conidia that aggregate in white mucous masses (Matsushima 1971, 1993, Hyde et al. 1998). *Atrogeniculata* also resembles *Phaeohiratsukaea* Udagawa & Iwatsu, but *Phaeohiratsukaea* has pale brown or brown basocatenulate conidia with a conspicuous longitudinal germ slit (Udagawa & Iwatsu, 1990). *Craspedodidymum* Hol.-Jech. (Holubová-Jechová 1972, Yanna et al. 2000) and *Atrogeniculata* have a similar conidial ontogeny with the conidia produced through funnel-shaped collarettes, but in *Craspedodidymum* the conidiogenous cells are apical and not intercalary.

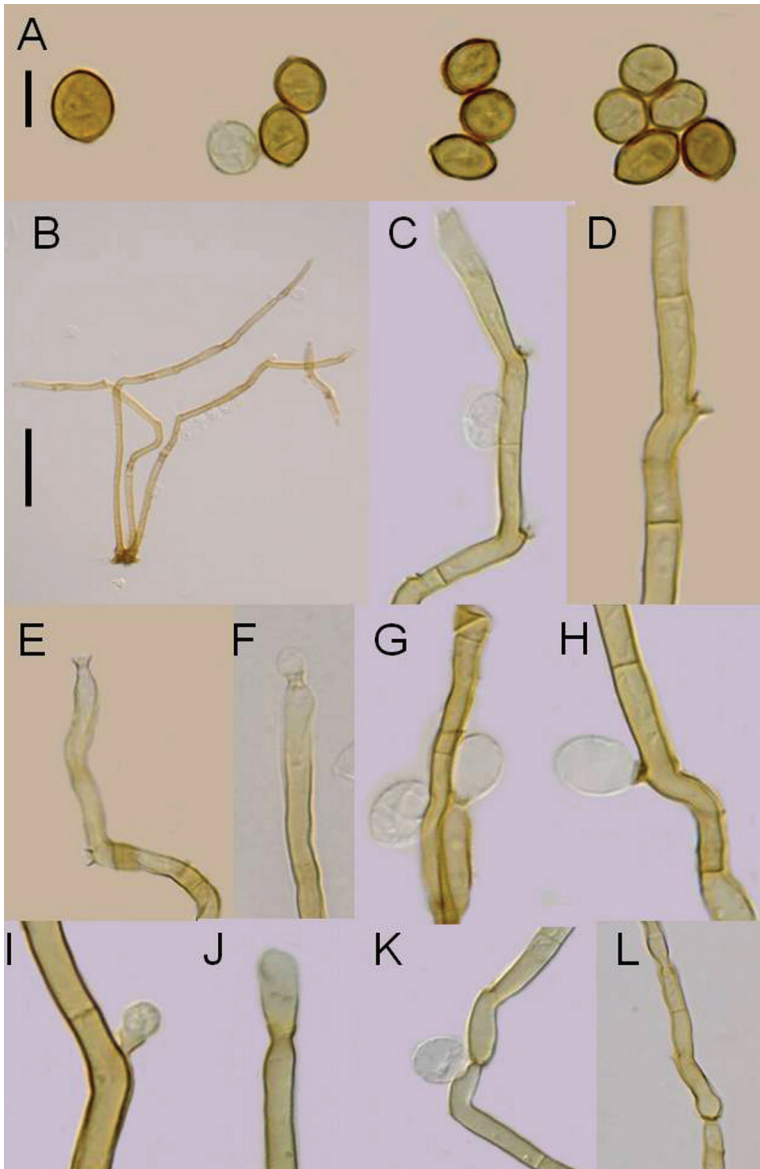


FIG. 1. *Atrogeniculata submersa* (HUEFS 196428). A. Conidia. B. Conidiophores. C-L Conidiogenous cells, collarettes, and young conidia. Scale bars: A, C-L = 10 μ m; B = 20 μ m.

Atrogeniculata submersa J.S. Monteiro, Gusmão & R.F. Castañeda, sp. nov. FIG. 1

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Differs from *Phialogeniculata* species by having brown to reddish brown, aseptate conidia and from *Phaeohiratsukaea expansa* by its solitary conidia without longitudinal germ slit.

TYPE: Brazil, Pará State, Belém, Parque Estadual do Utinga, 1°25'S 48°27'W, on submerged decaying leaves of an unidentified plant in a stream, 28 October 2011, coll. J.S. Monteiro (Holotype: HUEFS 196428).

ETYMOLOGY: Latin, *submersa*, meaning submerged, growing under water.

COLONIES on the natural substratum, hairy, epiphyllous, golden brown to brown. Mycelium superficial and immersed, composed of septate, branched, brown, smooth, 1–3 µm diam hyphae. CONIDIOPHORES macronematous, mononematous, erect, geniculate, 7–15-septate, brown to golden brown, smooth, 60–200 × 5–8 µm. CONIDIOGENOUS CELLS monopialidic, rarely polyphialidic with sympodial extensions, sometimes with enteroblastic percurrent elongations, integrated, indeterminate, intercalary and terminal, brown to golden brown, 39–60 × 2.5–4.0 µm, with several conspicuous funnel-shaped or infundibuliform, 2–3 µm diam, 2.0–3.5 µm deep collarettes, more or less at the middle of each intercalary conidiogenous cell and at the apex of each terminal conidiogenous cell. Conidial secession schizolytic. CONIDIA solitary, acropleurogenous, aseptate, ellipsoid, ovoid, globose to ellipsoid, but frequently slightly apiculate, with inconspicuous hilum at the base, successively produced, hyaline at first, brown to reddish brown after maturation, smooth, 10–12 × 7–9 µm, dry.

Nigrolentilocus amazonicus J.S. Monteiro, Gusmão & R.F. Castañeda, sp. nov.

FIG. 2

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Differs from all other *Nigrolentilocus* species by its 2-septate, obclavate to obpyriform conidia.

TYPE: Brazil, Pará State, Belém, Área de Preservação Ambiental Ilha do Combu, 1°29'S 48°25'W, on submerged rotten leaves of unidentified plant in stream, 05.IV.2011, coll. J.S. Monteiro (Holotype: HUEFS 196429).

ETYMOLOGY: Latin, *amazonicus*, referring to the type locality.

COLONIES on the natural substratum, effuse, hairy, amphigenous, dark brown to black. Mycelium mostly immersed. Hyphae septate, branched, 1–2 µm diam., smooth, brown. CONIDIOPHORES macronematous, mononematous, erect, straight, sometimes slightly sinuate towards the apex, unbranched, 5–10-septate, with several annellations, smooth, 50–150 × 5–8 µm, brown to dark brown at the base, brown towards the apex. CONIDIOGENOUS CELLS



FIG. 2. *Nigrolentilocus amazonicus* (HUEFS 196429). A. Conidiophore, conidiogenous cells, and conidia. B–C. Conidiogenous cells. D. Conidia. Scale bar = 20 μm .

polyblastic, terminal and intercalary, brown, $39\text{--}70 \times 4\text{--}5 \mu\text{m}$, integrated, indeterminate, with several sympodial elongations bearing conspicuous, lenticular, black conidiogenous loci after enteroblastic percurrent elongations. Conidial secession schizolytic. CONIDIA solitary, obclavate to obpyriform, obscure cicatrized at the base, obtuse at the apex, acropleurogenous, smooth, dry, 2-septate, $15\text{--}20 \times 6.0\text{--}6.5 \mu\text{m}$, with basal and central cells brown and apical cell pale brown.

NOTE: Castañeda-Ruiz et al. (2001) established the genus *Nigrolentilocus*, with *N. africanus* (B. Sutton) R.F. Castañeda & Heredia as type species to accommodate one new species and four species previously treated in *Pseudospiropes* M.B. Ellis and *Helminthosporium* Link. None of the five previously described *Nigrolentilocus* species, which are easily differentiated from each other, is close to or resembles *N. amazonicus*.

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