

Diderma albo-columella (Myxomycetes), a new species in the Brazilian Atlantic Forest

Diderma albo-columella (Myxomycetes) uma nova espécie da Floresta Atlântica brasileira

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Abstract

A new species of *Diderma* (Physarales, Didymiaceae) was recorded in the Mata Estrela Private Nature Reserve, Rio Grande do Norte state. It is characterized by sessile sporangia, white globose columella, capillitium irradiating from the peridium, forming three layers, the middle part strongly calcareous, the outer layer cartilaginous and the inner layer membranous. A key to species of sessile sporangia *Diderma* with triple peridium is presented.

Key words: Didymiaceae, Neotropic, triple peridium.

Resumo

Uma nova espécie de *Diderma* (Physarales, Didymiaceae) foi registrada na Reserva Particular do Patrimônio Natural Mata Estrela, estado do Rio Grande do Norte, caracterizada por esporângio sésil, columela globosa, branca, capilício irradiando do perídio, formando três camadas, com a parte mediana fortemente calcárea, a parte externa cartilaginosa e a interna membranosa. Uma chave para espécies de *Diderma* com esporângios sésseis e perídio triplo é apresentada.

Palavras-chave: Didymiaceae, Neotrópico, perídio triplo.

Introduction

The genus *Diderma* was proposed in 1794 by Persoon, who emphasized the presence of a double peridium wall. The type species is *D. globosum* and in this genus there are 74 currently known species (Hernández-Crespo & Lado 2005) distributed in different neotropic countries. Few species have triple peridium, such as *D. lohogadense* S.D. Patil, R.L. Mishra & Ranade, *D. nigrum* Kowalski, *D. petalloides* Buyck, *D. peyerimhoffii* (Maire & Pinoy) H. Neubert, Nowotny & K. Baumann, *D. trevelyanii* (Grev.) Fr., *D. maculatum* Buyck, *D. stellulum* M.L. Farr, *D. subasteroides* M.L. Farr, and *D. yucatanensis* Estrada, Lado & S.L. Stephenson. The last four were described for the Neotropics (Lado &

Basanta 2008). Among the ten *Diderma* species found in Brazil, only *D. stellulum* has a triple peridium.

This paper describes a new species of *Diderma* with a triple peridium and sessile sporangia found during a survey of myxomycetes diversity in an Atlantic forest fragment situated in Rio Grande do Norte State, Northeast Brazil. A key to identify sessile *Diderma* species with triple peridium is also presented.

Material and Methods

Sporocarps were collected on an unidentified dead tree in the Mata Estrela Reserve, situated in Baía Formosa municipality, Rio Grande do Norte state (06°22'10" – 06°22'43"

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S and 34°58'29" – 35°00'28" W, 1.833,12 ha; 45 m alt.). Traditional herbarium methods were used in collecting and dehydrating specimens (Farr 1971).

The material was observed through the light microscope (LM) under oil immersion objective and with the scanning electron microscope (SEM). For ultramicroscopic studies, the material was Sporocarps prepared for scanning electron microscopy, were placed on double adhesive cellophane tape mounted on a specimen stub and sputtering with gold-palladium. The nomenclature followed in this paper is that of Martin & Alexopoulos (1969) and Martin *et al.* (1983).

Results and Discussion

Diderma albo-columella A.C.C. Bezerra & L.H. Cavalcanti, *sp. nov.* Typus: BRAZIL. RIO GRANDE DO NORTE: Baía Formosa Municipality, Mata Estrela Private Nature Reserve. Gameleira trail, 25. IV.2005, dead wood, A.C.C. Bezerra 45132 (holotype UFP!). Fig. 1-2

Sporocarpi aggregati, sessili, 0.3–0.4 mm ex toto alt.; sporotheca discoidea, cremeis, peridio eius triplici, medio quidem coriaceo, calcareo; columella proeminente, globosis, alba, calcarea; capillitio presis vel peridio interno; sporis 10.5–13.0 µm diam., verrucosis.

Sporocarps sessile, densely aggregated, bright yellowish-brown, hemispheric-depressed to discoid, 0.4–0.8 × 0.3–0.5 mm diam., 0.3–0.4 mm alt., slightly umbilicated above. Hypothallus membranous, bright and continuous, dehiscence irregular. Peridium triple, the outer layer yellow,

shining, cartilaginous, dehiscence irregular, the middle layer calcareous, white, thick, dehiscing simultaneously with the outer layer to which it closely adheres, the inner layer yellow, membranous. Collumela subglobose, 1/3–1/4 of the sporotheca, white, calcareous. Capillitium abundant, with threads radiating from the inner layer of the peridium, violet brown, with hyaline extremities and short dilatations. Spore-mass dark brown. Spore dark to yellowish brown by transmitted light, globose to subglobose, 10.5–13.0 µm diam.

The specific epithet is in reference to collumela color.

The new species differs from *Diderma lohogadense*. for not having circumscissile dehiscence and spinulose spores (Mishra & Ranade 1979); from *D. nigrum* for not having brownish to black sporotheca and frequently lacking columella; from *D. subasteroides*, *D. petalloides* and *D. stellulum* for not having a stalk and the characteristic dehiscence, which gives the name of the species (Farr 1971; Buyck 1983); from *D. peyerimhoffii* for not having a clavate columella from which the dark threads of the capillitium irradiate, globose to fusiform expansions and spinulate spores; from *D. maculatum* (species described for Venezuela) for not having whitish peridium, with faint brown spots and the outer layer membranous, very fragile (Buyck 1984); and from *D. yucatanensis*, described for Ecuador (Lado *et al.* 2003), for not having stalked sporangia, capillitium threads attached to beige columella and spores less than 10 mm diam.

Key to sessile *Diderma* species with triple peridium

1. Subglobose on a narrow base, lower part persistent as a cup; dehiscence capillitium almost black, radiating from the columella, rarely anastomosed, with globose to fusiform expansions *D. peyerimhoffii*
- 1'. Hemispheric-depressed, discoid, circular to elliptic in outline, seated on a broad base; dehiscence irregular; capillitium filiform, threads dark brown sometimes with hyaline extremities not radiating from the columella, anastomosed, without expansions 2
2. Sporangium whitish, with faint brown spots, spores 9.7–10 µm diam. *D. maculatum*
- 2'. Sporangium yellowish brown or dark brown to black, spores 10–14 µm diam. 3
3. Sporangium dark brown to black, 1–2 mm diam., dehiscence stellate; collumela often absent, or reduced to a calcareous, yellowish brown or sometimes white mound at the base of the sporotheca *D. nigrum*
3. Sporangium yellowish brown, 0.4–0.8 mm diam., dehiscence irregular; collumela present, globose to hemispherical, grayish white *D. albo-columella*

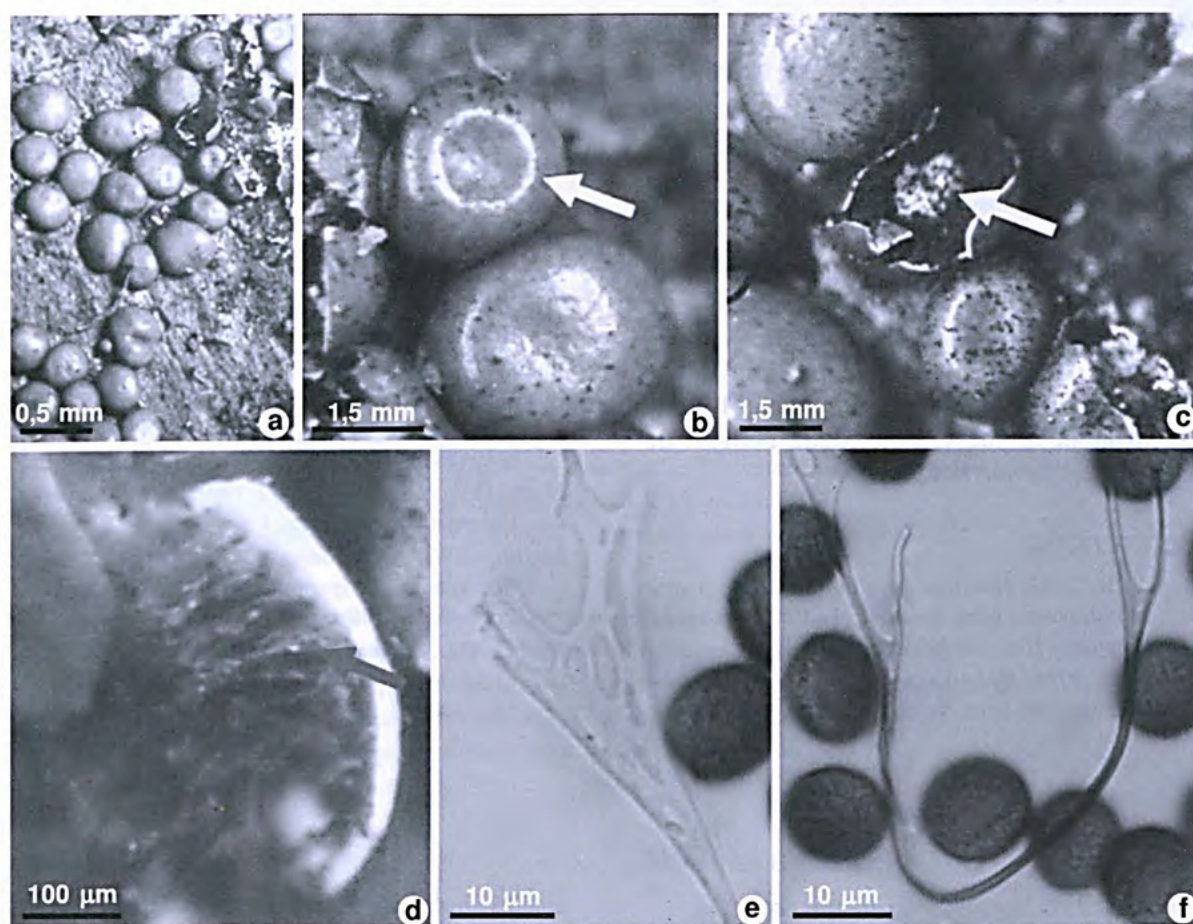


Figure 1 – *Diderma albo-columella* A.C.C. Bezerra & L.H. Cavalcanti – a. sporocarps sessile, densely aggregated; b. sporocarp slightly umbilicated above; c. collumela subglobose; d. capillitium abundant, with threads radiating from the inner layer of the peridium; e-f. capillitium and spores (Bezerra 45132).

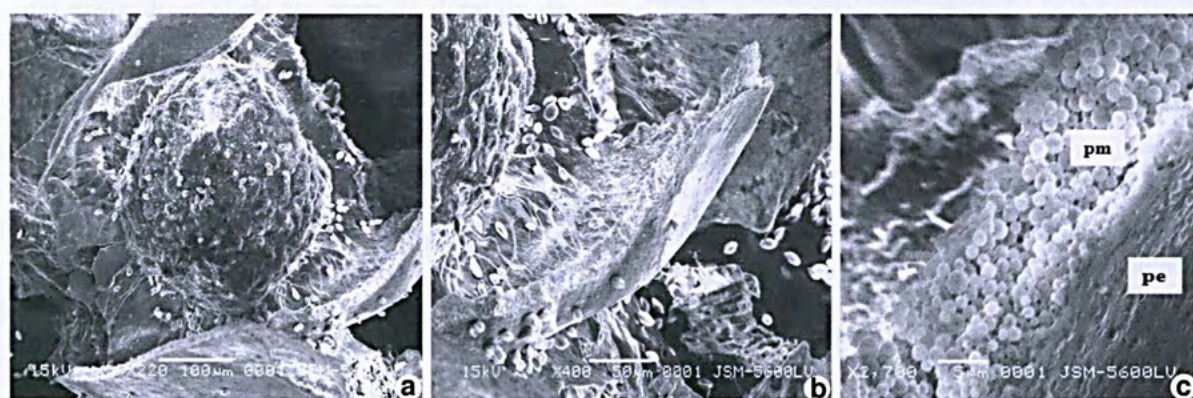


Figure 2 – *Diderma albo-columella* A.C.C. Bezerra & L.H. Cavalcanti – a. sporangia open, exposing the columella; b. arrow shows the thick wall of the peridium and threads radiating from the inner layer; c. details of the triple wall: limestone; the outer layer (pe) and the middle layer calcareous (pm), thick, with the outer layer to which it closely adheres (Bezerra 45132).

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