

## ***Pseudocercospora aspidospermatis* - a new combination for *Bactrodesmiella aspidospermatis***

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The holotype of *Bactrodesmiella aspidospermatis* on leaves of *Aspidosperma macrocarpon* and three other collections were studied. The species is shown to be incorrectly classified and is better accommodated in *Pseudocercospora* as *P. aspidospermatis* comb. nov.

Keywords: Deuteromycetes, taxonomy, new combination.

*Aspidosperma macrocarpon* Mart. (Apocynaceae) is an important component of the native flora of the cerrado around Brasília. Leaves recently collected were shown to be infected with a *Pseudocercospora* species which was previously classified by Batista & al. (1961) as *Bactrodesmiella aspidospermatis* Batista, Peres & Garnier. These collections and the holotype material of *B. aspidospermatis* were studied and the name of the species transferred to *Pseudocercospora aspidospermatis* (Batista, Peres & Garnier) Dianese & Câmara comb. nov. based on the concepts adopted by Braun (1992), Ellis (1959, 1971, 1976), Sutton & Pascoe (1989), and Crous & Braun (1994). A detailed description follows.

***Pseudocercospora aspidospermatis*** (Batista, Peres & Garnier) J. C. Dianese et M. P. S. Câmara, comb. nov. - Figs. 1-13.

= *Bactrodesmiella aspidospermatis* Batista, Peres & Garnier In: Batista, Peres & Bezerra. Inst. Micol. Univ. Recife. Public. 343:9, 1961.

Lesions numerous, small, hypophyllous, dark brown with conspicuous cream-whitish center, containing masses of cream to pale brown conidia, circular to irregular, coalescing to cause extensive necrosis of the leaf blade (Fig. 1). The upper surface of the leaf becomes chlorotic, yellowish, before blight occurs. - Mycelium consisting of branched, septate, olivaceous to pale brown hyphae 2.5-3.5  $\mu\text{m}$  wide, immersed, intercellular, infecting initially the lower epidermic cells and the palisade tissue and often colonizing the entire

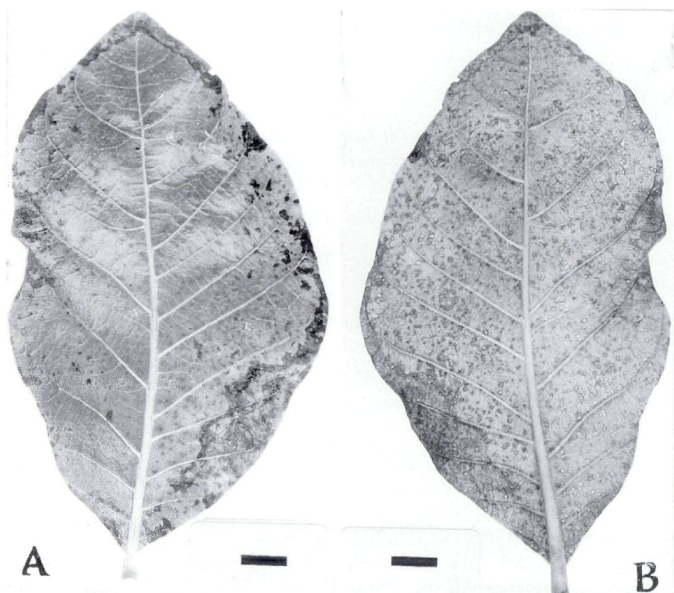
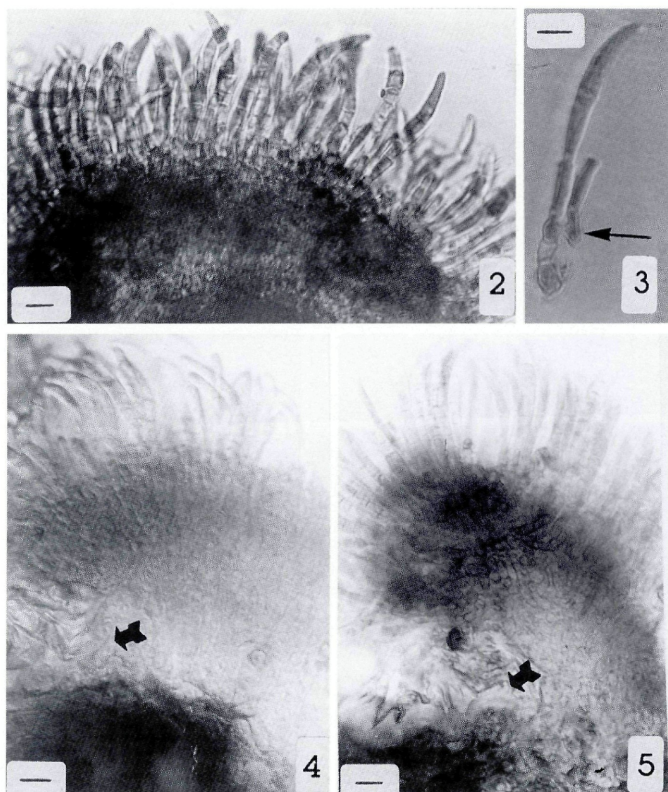


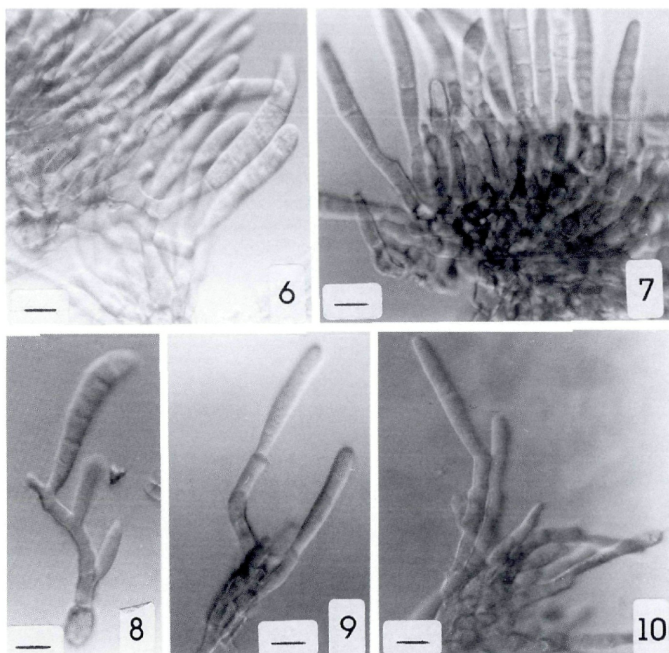
Fig. 1. *Pseudocercospora aspidospermatis*. – Lesions produced on the upper (A) and on the lower face (B) of a leaf of *Aspidosperma macrocarpon*. – Bar: 1 cm.

leaf parenchyma to reach the upper epidermis. – Conidiomata hypophyllous, sporodochial, dry, circular to irregular, subepidermal in origin, 36–160  $\mu\text{m}$  diam. (Fig. 2), erumpent, 36–98  $\mu\text{m}$  deep, containing an upper layer of ovoid to globoid cells which may be part of simple or branched conidiophores (Fig. 3); composed of pale brown thin-walled *textura angularis* 8 to 25-cells deep (Figs. 4 and 5). – Conidiophores short, 1–3 septate, light olivaceous, 15–20  $\mu\text{m}$  long x 2.5–5  $\mu\text{m}$  wide, simple or branched, terminating in 5–5.5 mm long, doliiform to ovoid cells, giving rise to the upper layer of the conidiomata which is comprised by the conidiogenous cells (Figs. 3, 6–11). – Conidiogenous cells integrated, terminal, erect, cylindrical, mostly straight, subhyaline to pale olivaceous, smooth, 7–15  $\mu\text{m}$  long and 2.54  $\mu\text{m}$  wide, with 1–3 enteroblastic percurrent and occasionally 1–2 holoblastic sympodial proliferations (Figs. 6–11). – Conidiogenous loci generally one to three per conidiogenous cell, flat, non-protuberant to slightly protuberant, unthickened



Figs. 2-5. *Pseudocercospora aspidospermatis*. - 2. Vertical median section of a sporodochium showing the general distribution of the conidia on the surface. - 3. A globoid cell from the surface of the sporodochium giving rise to a branched conidiophore with two terminal conidiogenous cells (arrow). - 4, 5. Two views of the erumpent *textura angularis* (arrows show host epidermis). - Bar: 10  $\mu$ m.

under the light microscope, 2-2.5  $\mu$ m diam., terminal or lateral but revealing as slightly thickened when seen under the scanning electron microscope (Fig. 12). - *Conidia* 36-51  $\mu$ m long and 4.5-8  $\mu$ m wide, fusiform, slightly curved, smooth, pale olivaceous, formed holoblastically, often at the apex of percurrently proliferated conidiogenous cells or being pushed aside in cells with sympodial

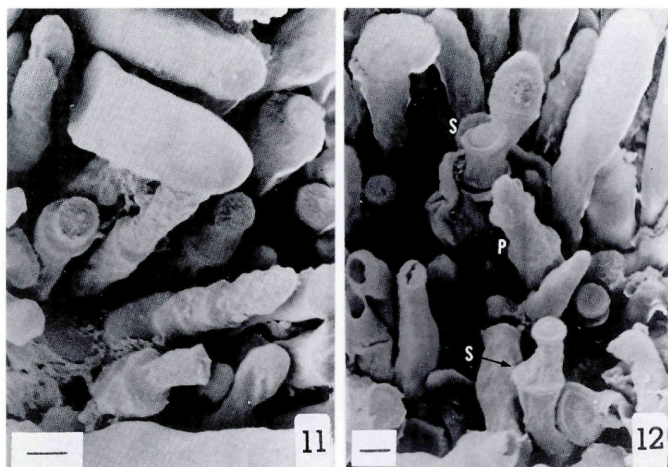


Figs. 6–10. *Pseudocercospora aspidospermatis*. – Samples of conidiogenous cells showing sympodial and percurrent proliferation as seen under the light microscope. – Bar: 10  $\mu$ m.

proliferation, (3–)5–6(–9)–euseptate, clearly guttulate when mature, with an obtuse apex; truncate unthickened base, 1.5–2.5  $\mu$ m (Fig. 13).

**Specimens examined.** – **BRASIL:** On leaves of *Aspidosperma macrocarpon* Mart., exsiccatum no. 15164, IMUR, Recife, Batista & Peres, coll. Heringer 15.9.1960, holotype; on leaves of *A. macrocarpon*, UB-3192 Coleção Micológica, Herbarium UB, Road to PADF, close to the Presídio da Papuda, Brasília, DF, J. C. Dianese, 18, II, 1993; on leaves of *A. macrocarpon*, UB-3334, Coleção Micológica, Herbarium UB, QI 4, Conj. 3 Lago Norte, Brasília, DF, J. C. Dianese, 7.3.1993; on leaves of *A. macrocarpon*, UB-3889, Coleção Micológica, Herbarium UB, Fazenda Roberto Ronald, Luziânia, Goiás, J. C. Dianese, 10.6.1993; on leaves of *Aspidosperma dorycarpon* A.D.C., Horto Florestal de Paraopeba, Minas Gerais, Leg. Dr. E. P. Heringer, 20, 6, 1960. Typus of *Cercospora aspidospermatis* Batista & Peres, 200078. IMUR.





Figs. 11–12. *Pseudocercospora aspidospermatis*. – 11. Conidiogenous cells showing percurrent proliferation as seen in the scanning electron microscope. – 12. Sympodially proliferated conidiogenous cells (S) showing unthickened scars (S and arrow) beside percurrently proliferated cells. – Bar: 1 µm.

Batista & al. (1961) described and illustrated *Bactrodesmiella aspidospermatis* Batista, Peres & Garnier as a new species of hyphomycete producing hyaline to pale brown 1–9-septate catenate or non-catenate conidia on a sporodochium topped by a layer of 60 µm long conidiophores. According to our observations, the fungus does not form these long conidiophores but the conidiophores are at the most 20 µm long on the surface of an erumpent, cream to light olivaceous stroma composed of a *textura angularis*. A portion of the stroma was apparently interpreted by Batista & al. (1961) as the continuation of the conidiophores.

Also the presence of catenate conidia, a characteristic of *Bactrodesmiella* M. B. Ellis, was never detected in the specimens examined and in the holotype. This fact associated with the presence of a large stroma covered by a layer of conidiogenous cells which proliferate mostly percurrently but also sympodially, does not allow for a classification of the fungus in *Bactrodesmiella* (Ellis, 1959; 1971). The fungus, however, could be placed in *Stigmina* Sacc. or in *Pseudocercospora* Speg.

Sutton & Pascoe (1989) discussed the complexity of the genus *Stigmina* and suggested its division in two groups: *Stigmina stricto sensu* would be applied to species associated with stomata and possessing „superficial and immersed mycelium, and percurrently proliferated verruculose, ragged conidiogenous cells“. The other group would include among others those species with pulvinate sporodochia produced on leaves but retaining the percurrent proliferation as a characteristic of their smooth conidiogenous cells. Sympodial and percurrent proliferation of conidiogenous cells occurring simultaneously is not a main characteristic of *Stigmina* but it is recognized by Sutton & Pascoe (1989) as occurring in a few species. Also *S. celastri* (Kalchbr.) M. B. Ellis (Crous & Braun, 1994) cannot be placed in either of the groups mentioned. Observations under light microscope indicated percurrent proliferation to be frequent in *B. aspidospermatis* but simultaneous sympodial conidiogenesis occurred in most conidiogenous cells. The fungus is clearly not a member of *Stigmina sensu* Sutton & Pascoe (1989), which is a group segregating from a broad genus in need of a detailed revision which may eventually yield several new combinations into *Pseudocercospora*.

Deighton (1976, 1987) showed for the entire genus and recently Sutton (Dianese & al., 1993) for *Pseudocercospora punctata* (Wakefield) B. C. Sutton that the formation of a sporodochium containing conidiogenous cells that proliferate both percurrently and sympodially are major characteristics of *Pseudocercospora*. A similar interpretation was adopted by Sutton & al. (1987), and Sutton & Hodges (1990). In all cases it was shown that conidia formed by *Pseudocercospora* spp. always had unthickened basal scars, as seen in the light microscope and the same holds for scars on the conidiogenous cells. All these basic features related to conidiogenesis and morphology of conidia and conidiophores are present in *B. aspidospermatis* and support a new combination in *Pseudocercospora*. Therefore, the present species is transferred to *P. aspidospermatis*.

In the family Apocynaceae two *Pseudocercospora* species were previously reported: *Pseudocercospora apocynacearum* Gupta & al. (1987) described on *Iconocarpus frutescens* R. Br. (Apocynaceae) and *Cercospora aspidospermatis* Batista & Peres, on leaves of *Aspidosperma dorycarpon* A. D. C. (Batista & al., 1960). The first species differs from *P. aspidospermatis* by forming large infection spots (2 or more cm in diam.), not forming stomata, and producing longer and slender conidia (27-98 x 2.5-4.7 µm) (Gupta & al., 1987).

The type material of *C. aspidospermatis* (pieces of leaves) was examined but it did not contain the fungus any longer. The leaf spots were larger, clearer, epiphyllous, and with better defined borders than those shown on leaves infected with *P. aspidospermatis*. Batista & al.



Fig. 13. *Pseudocercospora aspidospermatis*. – Multiseptate, guttulate conidia with unthickened truncate base. – Bar: 10  $\mu$ m.

(1960) also showed *C. aspidospermatis* with 0-3 septate conidia completely different from the 3-9-septate conidia formed by *P. aspidospermatis*.

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