

ANAMORPHS OF ASCOMYCETES: THE *PHIALOPHORA* - LIKE STATE OF *EOSPHERIA ULIGINOSA* (SYN. *HERMINIA DICHROOSPORA*)

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The *Phialophora*-like anamorph of *Eosphaeria uliginosa* (= *Herminia dichroospora*) is described. Some taxonomic and nomenclatural problems relating to *E. uliginosa* are discussed.

The genus *Eosphaeria* was erected by von Höhnel (1917) to accommodate a fungus previously described by Fries (1823) under the name *Sphaeria uliginosa* Fr. As noted by Fernier (1954), von Höhnel considered *Eosphaeria* as belonging to the Perisporiales, probably because he overlooked the ostioles of the perithecia. However, this genus is closely related to *Lasiosphaeria* Ces. & De Not. and to *Cercophora* Fuckel, as already stated by Fernier (1954) and Hilber & Hilber (1979). It differs from these two genera mainly by its radiate ostiole, its complex wall structure and by the shape of its ascospores. It is debatable, whether the only species belonging to the genus *Eosphaeria* should be considered congeneric with *Cercophora* or with *Lasiosphaeria*. Cultural studies were undertaken in an attempt to obtain the anamorph, which could provide additional clues as to its correct taxonomic position. Some nomenclatural problems connected with the newly described genus *Herminia* Hilber (1979) are discussed.

Single spore isolates from material collected in the Pyrénées Atlantiques (France) were made following the method described by Samuels (1979). Cultures were grown on 2% malt extract agar at 17°C. Tests for the substrate utilization studies were carried out as described by Carroll & Petrini (1983). In order to assess proteolytic activity, the fungus was grown in 90 mm Petri dishes containing 0.1% yeast extract, 2% agar and 0.5% Promine-D (Isolated soy protein, Central Soya Chemurgy, homogenized in tap water and gently warmed to dissolve it). Proteolytic activity was noted as zones of clearing around and under the colony. Positive controls were inoculated for each activity tested.

EOSPHERIA ULIGINOSA (Fr.) von Höhnel, *Annl. mycol.* 15: 363 (1917). (Fig. 1).

Sphaeria uliginosa Fr., *Syst. mycol.* 2: 457 (1823).

Lasiosphaeria dichroospora Ell. & Ev., *Erythea* 1: 197 (1893).

Herminia dichroospora (Ell. & Ev.) Hilber, *Z. Mykol.* 45: 225 (1979).

Ascomata gregarious, ovate, black, superficial, up to 700 µm high, 400–500 µm diam, without stroma or subiculum; ostiole circular, with radiate structures. Peridial wall composed of two layers: the inner one of hyaline, thin-walled *textura prismatica* to *textura porrecta*, the outer one of thick-walled *textura globulosa*. The external cells are carbonaceous with almost no lumen, and are interrupted by 7–20 × 3–5 µm cylindrical, elongated, thin-walled cells, which form scutate structures, thus giving to the ascumatal surface a papillate appearance. *Asci* unitunicate, cylindrical, with an apical ring and a cyanophilic, slightly verruculose subapical globule, 90–110 × 9–11 µm. *Ascospores* biseriate, hyaline or slightly brown when young, (4–)5-septate, the four apical cells becoming brown at maturity, the basal cells remaining hyaline, 42–50 × 4–6 µm, with two, 3–5 × 1–1.5 µm, shortly subulate appendages.

Cultural characters. Colony on 2% malt agar very slow growing, 20–30 mm diam in 3 weeks at 17°C, with woolly, brown to olive, aerial mycelium. Colony reverse brown to black, with whitish to olive discolouration. Odour sweet, aromatic. Sporulation moderate. Optimum growth on 2% malt agar at 21–24°C, with a minimum growth at 5°C; maximum at about 27°C. No growth at 30°C. Of the six substrates tested, protease appears to be the only enzyme produced abundantly by this fungus; cellulose can be moderately utilized: no amylase, lipase or laccase production was observed, and the Bavendam reaction was negative.

Conidiophores ranging from simple phialides of a *Cladorrhinum*-type formed on undifferentiated hyphae to well-developed, brown, thick-walled conidiophores. *Conidiogenous cells* phialide, 10–25 × 3–5 µm, with a well-developed collarette. *Conidia* subglobose to 'light-bulb'-shaped with a truncate base, produced in short chains, hyaline to subhyaline, 3–5 × 2–3 µm.

Specimens examined: *Eosphaeria uliginosa* (Fr.) von Höhnel, ex type, von Höhnel slide collection, (FH); sur la terre argileuse d'un sentier de la forêt de Bugangue, 64 Oloron, France, G. Roux (F. Candoussau); same

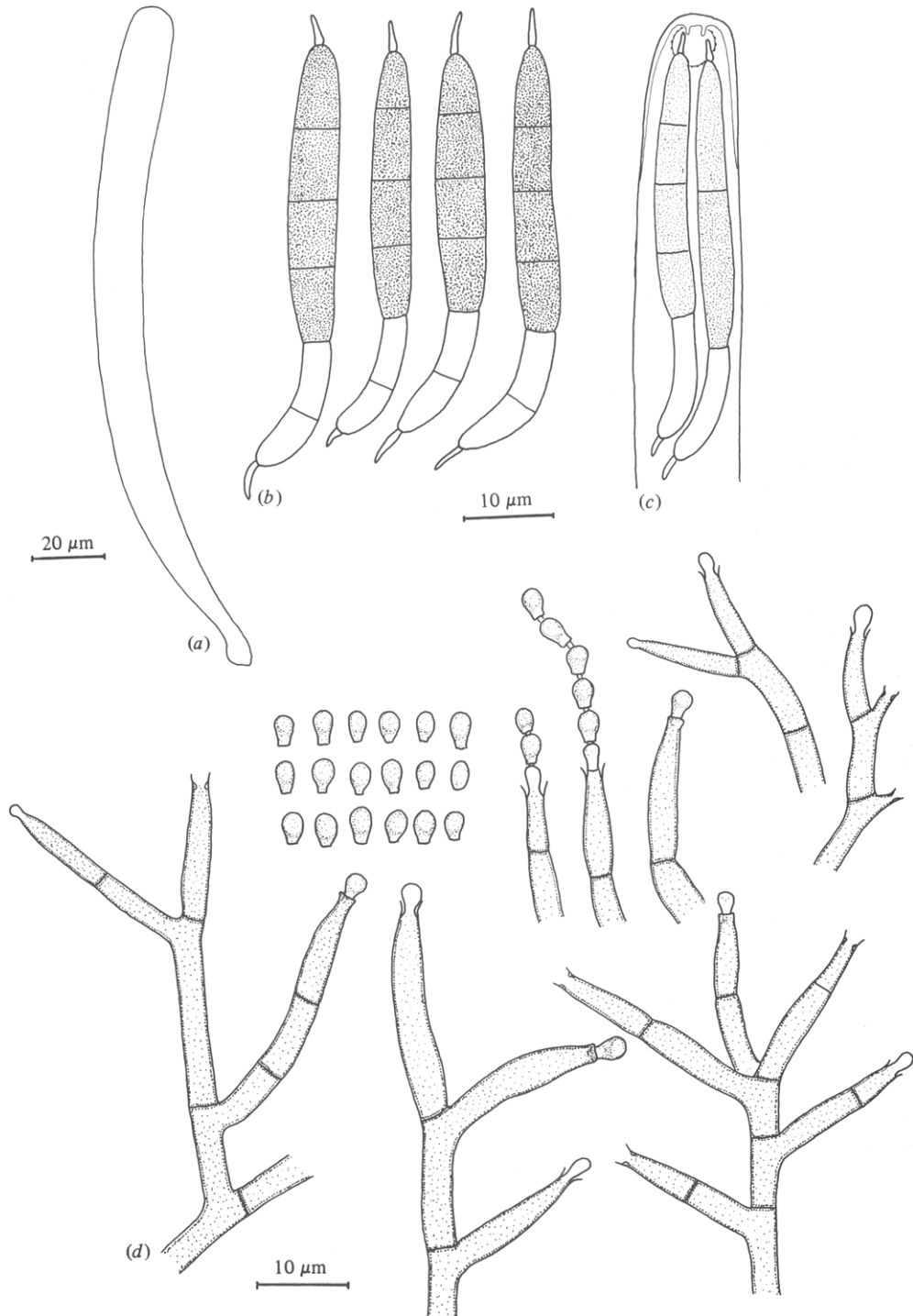


Fig. 1. *Eosphaeria uliginosa*. (a) Ascus; (b) ascospores; (c) ascus tip with young ascospores; (d) conidiophores and conidia.

locality, 3 Oct. 1982, F. Candoussau, G. Gilles & J. Vivant (ZT); *Lasiosphaeria dichroospora* Ell. & Ev., on a clayey bank in woods, Seattle, U.S.A., Apr. 1892, C. V. Piper (NY), Type.

Hilber (1979) erected the new genus *Herminia* to accommodate a fungus described by Ellis & Everhart (1893) as *Lasiosphaeria dichroospora* Ell. & Ev. In doing so, she overlooked what had been already reported by Fernier (1954), i.e. *L. dichroospora* is identical with *Eosphaeria uliginosa* (Fr.) von Höhnelt (non *Eosphaera* E. S. Barghoorn, 1965, a fossil alga), based on *Sphaeria uliginosa* Fr. Fernier (1954) gave precedence to the name *L. dichroospora* erroneously, thus contravening Art. 57 (ICBN).

The anamorph of *E. uliginosa* shows peculiar features, which, combined with the morphological characters of the teleomorph, leave little doubt as to the distinct taxonomic position of this fungus. Although *Phialophora* – like anamorphs are known for *Lasiosphaeria* (Tubaki, 1958) and for some species of *Cercophora*, especially *C. mirabilis* Fuckel (Udagawa & Muroi, 1979), anamorphs resembling species of *Phialophora* but forming conidia in chains are not known for these two genera, and are reported so far only for some *Podospora* species, e.g. *P. fimbriata* (Bayer) Cain (Mirza & Cain, 1969). Moreover, representatives of *Lasiosphaeria* are mostly wood-inhabiting fungi, and *Cercophora* species are known to be coprophilous, whereas *E. uliginosa* has been found so far only on clay. The retention of a separate genus for *E. uliginosa* therefore seems justified.

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ZELOPELTA THRINACOSPORA GEN. ET SP. NOV. (PYCNOTHYRIALES)

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Zelopelta thrinacospora gen. et sp. nov. is illustrated and described from leaves of *Hedera nepalensis*. The tri-radiate conidia have not been reported before in the Pycnothyriales.

Hedera nepalensis K. Koch. is a climber which occurs in moist forests and is fairly common on shady rocks. Living leaves were found to bear pycnothyria containing either minute microconidia or large tri-radiate macroconidia. Such

conidia have not been described in the Pycnothyriales before and the fungus is sufficiently distinct to warrant the introduction of new generic and specific names.