

On the genus *Teratosphaeria* (Ascomycetes)

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Zusammenfassung. — Die Beschreibung eines neuen parasitischen Ascomycoeten, *Teratosphaeria dispersa* auf Blättern von *Colliguaya dombeyana* aus Chile, erlaubte auch die übrigen Arten der Gattung *Teratosphaeria* sowie deren systematische Stellung zu diskutieren.

Introduction

A specimen of an obviously unknown parasitic ascomycete, collected in Chile on leaves of *Colliguaya dombeyana* JUSS. (Euphorbiaceae), stimulated us to examine the known species of *Teratosphaeria* SYDOW to which that parasite belongs. *Teratosphaeria* species are characterized by globose, perithecioid-like ascocarps growing inside the living leaf-tissue, by bitunicate asci and by brownish, bicellular ascospores. The arrangement of the ascocarps is characteristic for each species. In *Teratosphaeria fibrillosa* SYD. (type species on *Protea* spp.) the ascocarps are connected to form a number of radially arranged rows having a common center (Fig. 1, f) whereas *Teratosphaeria concentrica* (RAC.) E. MÜLLER forms concentric rings of ascocarps within necrotic leaf-spots (Fig. 1, h). The new species, for which we propose the name *Teratosphaeria dispersa*, has densely crowded ascocarps within dark spots which are dispersed over the whole leaf (Fig. 1, d).

The taxonomic position of *Teratosphaeria* is still not clear. When SYDOW (1912) described *Teratosphaeria fibrillosa* he included the genus in the Clypeosphaeriaceae. Soon after the genus was transferred to the Montagnellaceae (v. HÖHNEL, 1912; THEISSEN & SYDOW, 1915). According to our present knowledge, however, the two families are heterogeneous. *Clypeosphaeria*, the type genus of Clypeosphaeriaceae, has unitunicate asci and therefore it belongs to the Sphaeriales. On the other hand *Montagnella curumamuel* SPEG., the type species of *Montagnella* SPEG., is not mature and hence the Montagnellaceae remain a doubtful family (v. ARX & MÜLLER, 1975; ERIKSSON, 1981).

MÜLLER & v. ARX (1962) included *Teratosphaeria* in the Pleosporaceae and gave full descriptions of genus and species and a figure of *Teratosphaeria fibrillosa*. Later, v. ARX & MÜLLER (1975) transferred the genus to the Stigmateaceae (= Venturiaceae).

Description

Teratosphaeria dispersa nov. spec. — Fig. 1, a—h.

Ascomata in foliis vivis immersa, dense aggregata in maculis foliorum 1—2 mm longis, 0,5 mm latis, obscuris, connexa structurae stromatibus cellulis globosis compositis, globosa vel depressa, 140—180 μm diametro, 140—160 μm alta; peridium ascornatum fuscum, 30—40 μm crassum, compositum cellulis isodiametricis, 6—9 μm diametro, crasse tunicatis in parte exteriore, tenuiter tunicatis in parte interiore, apicaliter ostiolo periphysato apertum; asci bitunicati, cylindracei, dense parallele dispositi, 8-spore, 80—100 \times 17—20 μm , apicaliter crasse tuniciati; paraphysoides filiformes, rarae; ascospores fuscae, elongata — fusiformae, circa in medio septatae et constrictae, 38—45 \times 4—5 μm .

Hab. in foliis vivis *Colliguaya dombeyanae* JUSS. (Euphorbiaceae): Chile, prov. Maule, Pelluhue, 8. 4. 1978, leg. OEHRENS, Typus (ZT).

Ascomata densely aggregated in dark, elliptical leaf spots 1—2 mm long and 0,5 mm broad and manifested at both leaf sides, connected by stromatical complexes composed of roundish cells, peritherium like, globose or somewhat broader than high, 140—180 μm broad and 140—160 μm high. Ascomatal peridium brown, 30—40 μm thick, composed of isodiametric cells with a diameter of 6—9 μm , which are thick-walled externally and thin-walled internally. Apically the more or less even ascomatal wall breaks through the host epidermis and it is provided with a periphysate ostiolar pore with a diameter of 15—20 μm , The pore is additionally covered by comparatively thick, short, brown hyphae (Fig. 1, a).

Asci cylindrical, densely packed to form a hymenium and only in younger stages separated by filiform paraphysoids (which gelatinize later), 80—100 \times 17—20 μm , 8-spored, apical portion thick-walled with a distinct dome. Ascospores brown, elongated fusiform, with one septum in the middle or somewhat above it, at the septum constricted, 38—45 \times 4—5 μm .

Living on *Colliguaya dombeyana* JUSS. (Euphorbiaceae), Chile, prov. Maule, Pelluhue (south of Chanco), about 36 S, on hills of the costal range of mountains, 8. IV. 1978, leg. OEHRENS (ZT).

According to a recent study of the pycnidia which are intermixed with the ascomata of *Teratosphaeria fibrillosa* (MÜLLER & v. ARX, 1962: fig. 117, p. 316) the suggested anamorph of that species belongs to the genus *Pleurophoma* v. HÖHN. (SUTTON, 1980). The conidia are bacilliform, 1,5—2 μm long and 0,5 μm broad; they develop enteroblastically from phialides, which occur in chains on hyaline conidiophores. These are growing densely along the inner wall of the globose pycnidia.

Comparison of the three species of *Teratosphaeria*

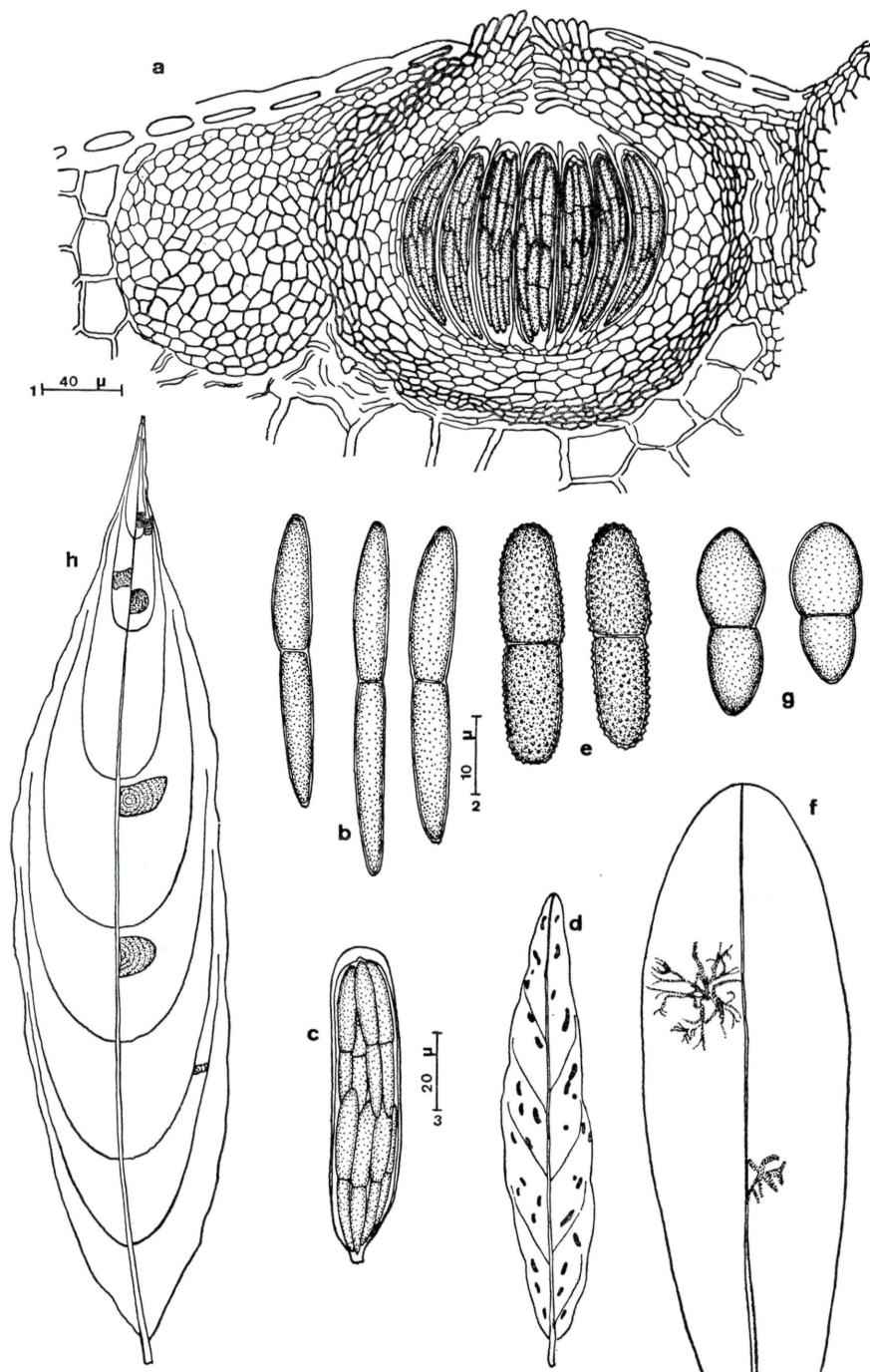
	<i>T. fibrillosa</i>	<i>T. concentrica</i>	<i>T. dispersa</i>
Host	<i>Protea</i> ¹⁾ (Proteaceae)	<i>Lasianthus</i> (Rubiaceae)	<i>Colliguaya</i> (Euphorbiaceae)
Geographical distribution	South-Africa	Java	South-America, Chile
Anamorph	<i>Pleurophoma</i>	unknown	unknown
Ascus	8-spored $75-105 \times$ $22-33 \mu\text{m}$	4-spored $80-100 \times$ $9-11 \mu\text{m}$	8-spored $80-100 \times$ $17-20 \mu\text{m}$
Ascospores:			
Shape	cylindrical	indistinctly clavate	elongated-fusoid
Surface	rough	smooth	smooth
Septation	median	median or towards lower end	median or towards upper end
Size	$30-48 \times 8-12 \mu\text{m}$	$18-24 \times 8-10 \mu\text{m}$	$38-45 \times 4-5 \mu\text{m}$
Arrangement of ascomata	radially-fibrillar	in concentric rows	aggregated in irregular spots

¹⁾ *Protea caffra* MEISN., *Protea gaguedi* GMEL. (= *P. abyssinica* WILLD.), *Protea nitida* MILL. (= *P. grandiflora* THUNB.).

The three species demonstrate a typical southern geographical distribution suggesting a West Gondwanaland origin (PIROZYNSKI & WERESUB, 1979). The host plants, however, belonging to the Proteales, Gentianales and Euphorbiales are not closely related.

Neither Clypeosphaeriaceae (SYDOW, 1912), Montagnellaceae (v. HÖHNEL, 1912), Pleosporaceae (MÜLLER & v. ARX, 1962) nor Venturiaceae (v. ARX & MÜLLER, 1975) offer a convincing taxonomic position for *Teratosphaeria*. In comparison with the genus *Dermatodothis* RAC. (MÜLLER, 1975) whose species occur in the same geographical range, *Teratosphaeria* shows obvious similarities in the kind of ascocarps with periphysate ostioles, in the bitunicate asci and in the

Figure 1. *Teratosphaeria* spp.: a-d: *Teratosphaeria dispersa*: a: section through an ascocarp and the surrounding stroma portion (scale 1). — b: ascospores (scale 2). — c: ascus (scale 3). — d: leaf of *Colliguaya dombeyana* (Euphorbiaceae) with spots caused by the fungus ($\frac{1}{2}$ natural size). — e, f: *Teratosphaeria fibrillosa*: e: ascospores (scale 2). — f: leaf of *Protea nitida* GMEL. (Proteaceae) with fibrils composed of ascocarps ($\frac{1}{2}$ natural size). — g, h: *Teratosphaeria concentrica*; g: ascospores (scale 2). — h: leaf of *Lasianthus* spec. (Rubiaceae) with leaf spots and concentric rows of ascocarps ($\frac{1}{2}$ natural size)



shape and colour of ascospores. Differences can be found in the structure of their stromata and in the septation of the ascospores (phragmosporous). *Dermatodothis* is arranged with Pleosporaceae by v. ARX & MÜLLER (1975). However, the family Pleosporaceae was given a very wide range and it seems better to consider it to be heterogeneous (MÜLLER et al., 1979). Smaller families were proposed by BARR (1979; revised by ERIKSSON, 1981) e. g. Phaeosphaeriaceae which includes, besides *Phaeosphaeria* MIYAKE several genera as *Leptosphaeria* CES. & de Not. or *Nodulosphaeria* RABENH. These have some characteristics in common with *Teratosphaeria* and *Dermatodothis*. At present *Teratosphaeria* fits best into the Phaeosphaeriaceae.

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