

PHAEOTRICHOSPHAERIA MINOR SPEC. NOV. FROM ARGENTINA

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A new species of ascomycetes, *Phaeotrichosphaeria minor*, is described, illustrated and compared with the closely related species within the genus and a modified key is given.

A new species of ascomycetes was found amongst collections obtained during the ongoing study of the ascomycetes of Argentina (Romero, 1987, 1998; Romero & Samuels, 1991; Romero & Carmarán, 1997; Romero et al., 1999). This species is identified as a member of the genus *Phaeotrichosphaeria* Sivan. It is still uncertain in which order and family this genus should be placed. Barr (1990) placed it in Sordariales, Lasiosphaeriaceae, although Réblová (1999) arranged it in Trichosphaeriales, Trichosphaeriaceae, mainly based on characters of the peridial wall, asci, ascospores and conidiogenesis of the anamorph.

Phaeotrichosphaeria was erected to accommodate some unitunicate pyrenomycetes with *Endophragmiella* anamorphs (Sivanesan & Sharma, 1983). It contained three species, *Phaeotrichosphaeria indica* Sivan. & N.D. Sharma from India, being the type species, *P. hymenochaetica* Sivan. & N.D. Sharma from New Zealand and *P. britannica* Sivan. & N.D. Sharma from England.

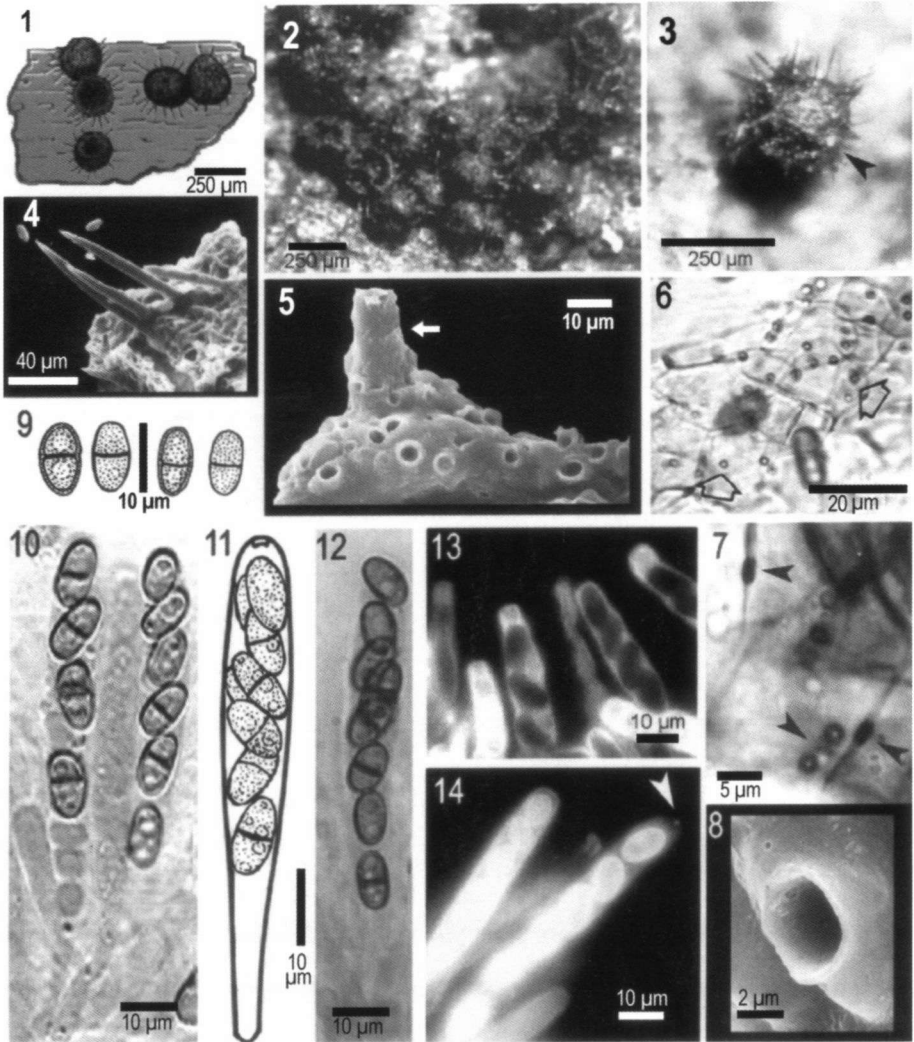
One remarkable feature of this new taxon is the presence of peridial pores. These pores are apparently similar to Munk pores, which are hitherto known only in Vialaeaceae and certain groups of the Sordariales, notably Nitschkiaceae and a few species of the Lasiosphaeriaceae. Cannon (1995) listed fungi with this kind of pore and also studied their systematic significance.

This Argentine fungus is unique on account of a combination of ascus and ascospores morphology and peridial pores. After the examination of holotypes of the species belonging to the genus *Phaeotrichosphaeria*, we conclude that it is a new species which is described here.

MATERIAL AND METHODS

The material considered here is deposited at the BAFC and IMI herbaria. Specimens from IMI (herbarium abbreviations follow Holmgren et al., 1990) were also studied.

The specimens mounted in KOH and floxine were studied under bright field microscopy (M). The asci were observed with fluorescence microscope (EFM) using 5% calcofluor (Romero & Minter, 1988). The peridium was examined by scanning electronic microscopy (SEM). The drawings were made using a camera lucida and the photographs were taken with Tri X Pan 400 ASA film for fluorescence.



Figs. 1–14. *Phaeotrichosphaeria minor*. 1. Habit sketch of ascomata; 2. ascomata; 3. detail of perithecium (arrow = ostiole); 4. portion of peridium with setae (SEM); 5, 6. detail of peridium showing the pores (5: arrow shows a base of a seta, SEM; 6: M); 7. peridial pores in lateral view and two pores in top view (arrows); 8. detail of a pore (SEM); 9. ascospores; 10–14. asci (13, 14: note the apical ring, arrow, EFM).

***Phaeotrichosphaeria minor* A.I. Romero & Carmarán, *spec. nov.* — Figs. 1–14**

Phaeotrichosphaeria indica similis sed ascosporis differti in $7\text{--}12 \times 5\text{--}6 \mu\text{m}$. Asci cylindrici $70\text{--}90 \times 8\text{--}10 \mu\text{m}$. Status conidialis: ignoto.

Holotypus: Argentina, Salta province, Departamento La Caldera, at 6 km of the boundary of Jujuy province, on National Route 9, on fallen branch, 11.VII.1994, *Carmarán* (BAFC 50390, holotypus; IMI 385826, isotypus).

Etymology: referring to the small size of the ascospores.

Perithecia superficial, separate and scattered or in groups of 2–4 or densely crowded, globose, 160–300 μm , bearing numerous setae, ostiolate with an apical shortly papillate pore lined on the inside by hyaline periphyses. Setae straight or flexuous, brown, cylindrical, septate, simple, 70–105 μm long, 7–10 μm wide at the base. Peridium 10–30 μm thick, composed of polygonal, brown, thick-walled cells which become progressively less thick-walled, subhyaline to hyaline and compressed towards the interior. Munk pores 1–3 μm wide, prominent, with thick, reddish rim, appearing as dark rings. Paraphyses filiform, hyaline, persistent. Asci arising from a basal hymenium, cylindrical, short-stalked, 8-spored, unitunicate, 70–90 \times 7–10 μm with a non-amyloid thin plate-like apical structure. Ascospores uniseriate in the ascus, 0–1 septate, not constricted at the septum, smooth, pale brown when mature, somewhat thick-walled, 7–12 \times 5–6 μm .

Anamorph unknown.

ADDITIONAL SPECIES EXAMINED

Phaeotrichosphaeria indica. INDIA: Narsungpur, Bohami, 17.XI.1978, N.D. Sharma 6c (IMI 232780, holotype).

Phaeotrichosphaeria britannica. UNITED KINGDOM: Surrey, Ranmore, on *Quercus* wood, 14.XII.1947, S.J. Hughes (IMI 20032g, holotype).

Phaeotrichosphaeria hymenochaeticola. NEW ZEALAND: Centennial, track, Upper Piha Valley, Waitakere Range, on *Hymenochaete mougeotii*, 2.V.1963, J.M. Dingley DAOM 159752 (IMI 259002, slide of the holotype).

Nitschkia phaeospora. TAIWAN: Ilan, IV.1995 (IMI 371137, holotype).

DISCUSSION

The taxonomic position of this fungus has been difficult to ascertain. In the type of ascus, especially the structure of the apical ring, it resembles members of the Sordariales. The presence of an ostiole and of peridial pores further suggest the family Lasiosphaeriaceae (Barr, 1990). Réblová (1999) placed *Phaeotrichosphaeria* in the Trichosphaeriaceae but she did neither study the type nor notice the presence of peridial pores. Nevertheless, our examination of the holotype of *Phaeotrichosphaeria indica* Sivan. & N.D. Sharma revealed the presence of these peridial pores and until more research is done we follow Barr (1990) and place *Phaeotrichosphaeria* in Lasiosphaeriaceae.

The asci and ascospores of *Phaeotrichosphaeria indica* and *P. minor* are both very similar but *P. indica* has larger perithecia, asci and ascospores than *P. minor*. Furthermore, the ascomata of *P. indica* are completely covered by hyphal hairs and they also differ in the type of peridial pores. In *P. indica* these are simple holes, one or two per cell, which are very easy to overlook. They were not described by Sivanesan & Sharma (1983). In *P. minor* the pores are very abundant along the peridial cells (Figs. 5, 6), conspicuous, one or more per cell and very evident with a dark red rim around the hole (Fig. 7). According to Sivanesan & Sharma (1983) the anamorph of *P. indica* is *Endophragmiella* spec. We could not affirm that *P. minor* also has an *Endophragmiella* anamorph but some free conidia of the *Endophragmiella* type are present around the perithecia.

Peridial pores are also present in the other two species of *Phaeotrichosphaeria*, *P. britannica* and *P. hymenochaeticola*. But in longitudinal section of the ascoma they can be hardly seen and are very scarce, only one or two in very few cells. These pores are very simple, similar to those of *P. indica* and even more inconspicuous. It is necessary to examine additional specimens of all species to confirm the presence of pores in the genus.

Sivanesan & Sharma (1983) suggested a close relationship between *Phaeotrichosphaeria* and *Lasiosphaeria*. The occurrence of peridial pores in this genus and in *Lasiosphaeria* (Cannon, 1995) reinforces this suggestion.

The peridial pores and the dark, 1-septate ascospores also invite comparison with *Nitschkia phaeospora* described from Taiwan (Hsieh et al., 1998). However, the asci are different: in Nitschkiaceae they are simple without any apical structure, in the new species *Phaeotrichosphaeria minor* there is an apical ring. The presence of an ostiole in *P. minor* further suggests that it cannot be referred to the Nitschkiaceae.

KEY TO THE SPECIES OF PHAEOTRICHOSPHAERIA (modified from Sivanesan & Sharma, 1983)

- 1a. Ascospores 0–1 septate, smooth 2
- b. Ascospores aseptate, echinulate 3
- 2a. Ascospores 15–18(–20) × 8–10 μm . Peridial pores simple *P. indica*
- b. Ascospores 7–12 × 5–6 μm . Peridial pores with rim *P. minor*
- 3a. Ascospores 8–9 × 3.5–5.5 μm *P. hymenochaeticola*
- b. Ascospores 12.5–18.5 × 5–7 μm *P. britannica*

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