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Emilmuelleria, a new genus of Ascomycota

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In the course of a revision of *Chaetomium* and its relatives (VON ARX, DREYFUSS & MÜLLER, 1984), the ascomycete described by BENJAMIN (1955) as *Magnusia spirotricha* was also studied. This fungus is known from the type strain, isolated from deer dung in California, and from a strain, isolated by Dr. M. DREYFUSS from donkey dung collected in Algeria. Subcultures of both strains have been included in the CBS culture collection (CBS 211.55 and 828.71). Both proved to be sterile when reexamined in 1974 (VON ARX, 1975). Other subcultures of the latter strain were maintained by Dr. M. DREYFUSS in Basle (Switzerland) and these proved to be in excellent condition when reexamined recently.

MALLOCH & CAIN (1971, 1973) classified *Magnusia spirotricha* first in *Chaetomidium* and later in *Thielavia*. The classification in *Chaetomidium* may be considered, but the type species of this genus differs from *Magnusia spirotricha* by spherical ascomata, the absence of paraphyses and mainly by the ascospores, which are limoniform, biapiculate, bilaterally flattened, not dextrinoid when young and brown when mature. *Magnusia spirotricha* without doubt is more closely related to the Microascaceae than to the Chaetomiaceae and Sordariaceae. It should be classified in a separate genus, for which the name *Emilmuelleria* is proposed in honour of Prof. E. MÜLLER.

Emilmuelleria VON ARX gen. nov.

Ascomata superficialia, doliiformia, fabiformia vel irregularia, non-ostiolata, ad extremitates pilis dense tortuosis; paries nigris, e cellulis angularibus compositus, asci clavati vel obovati, stipitati, 8-sporibus; paraphyses filiformes, hyalinae, septatae, asci extenti; ascosporae ellipsoideae, primum hyalinae et dextrinoideae, in maturitate dilute griseae, poro germinationis apicali praeditae.

Species typica: *Magnusia spirotricha* R. K. BENJAMIN – Aliso 3: 199. 1955.

Emilmuelleria spirotricha (R. K. BENJAMIN) VON ARX comb. nov.

Magnusia spirotricha R. K. BENJAMIN – Aliso 3: 199. 1955 (basionym).

Kernia spirotricha (R. K. BENJAMIN) R. K. BENJAMIN – Aliso 3: 344. 1956.

Chaetomidium spirotrichum (R. K. BENJAMIN) MALLOCH & CAIN – Can. J. Bot. 49: 867. 1971.

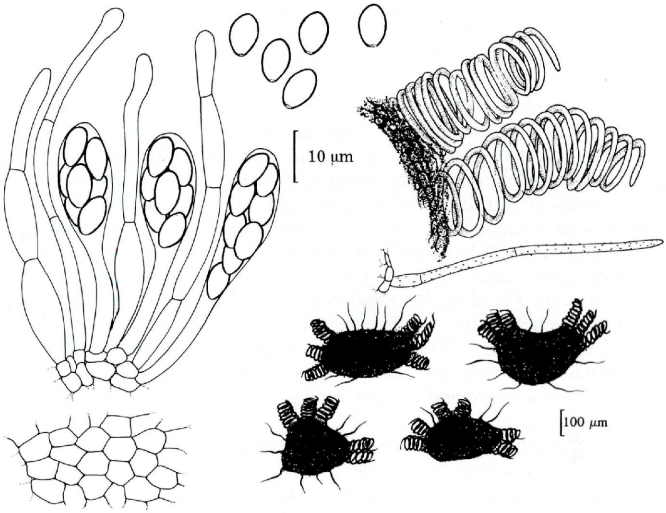


Fig. 1: *Emilmuelleria spirotricha:* ascomata, a part of the ascomatal wall in surface view, ascomatal hairs, asci with paraphyses and ascospores.

Thielavia spirotricha (R. K. BENJAMIN) MALLOCH & CAIN – Mycologia 65: 1069. 1973.

The following description is based on ETH 7927, grown on cornmeal agar in petri dishes in the dark at 28 C.

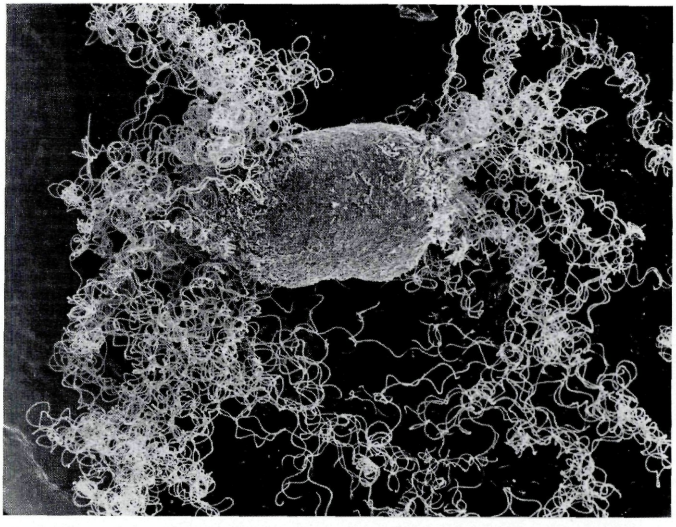
Colonies with a daily growth rate of 4–5 mm; reverse dark, nearly opaque; aerial mycelium abundant, lanose, pale grey; expanding hyphae septate, 4–6 µm broad, pigmented, with thinner, lateral branches; ascomata embedded in the aerial mycelium, black, irregular in size and shape, often barrel- or bean-shaped, 160–350 × 90–180 µm, non-ostiolate, with a thick, dark wall, composed of several layers of angular or slightly flattened, brown, 5–15 µm cells (textura angularis in surface view); ascomatal hairs of two types, 1) densely spirally coiled, smooth, thickwalled, pale, aseptate, 2–3 µm broad, arranged mainly at the opposite ends of the ascomata, 2) of variable lengths, flexuous or undulate, tapering, septate, verrucose, pale, disappearing early; asci fasciculate, clavate or obovate, with a cylindrical stalk, 8-spored, evanescent, p. sp. 20–29 × 9–12 µm, stalk 20–30 × 2–3.5 µm, surrounded and extended by paraphyses, which are filamentous, septate, often swollen at the apex, hyaline, 2.5–3.5 µm broad, and by vertical rows of barrel-

shaped, swollen cells measuring 12–16 × 6–10 µm; ascospores ellipsoidal, hyaline and dextrinoid when young, pale grey or olivaceous when mature, 7–8 × 4.5–5.5 µm, with a distinct, relatively wide germ pore at one end.

This fungus shows characters of both Microascaceae and Chaetomiaceae-Sordariaceae. The size and shape of the ascomata, the absence of an ostiolar pore, the dark and thick expanding hyphae, the dark and thick ascomatal wall and the pigmentation of the ascospores indicate a relationship to *Kernia nitida* (SACC.) NIEUWLAND, which, however, has spherical asci and ascospores with two germ pores. The colony colour in reflected light and the clavate, stalked asci are typical characters of *Chaetomidium* and *Chaetomium*. Peculiar for *Emilmuelleria spirotricha* are the dense coils of smooth hairs, which extend to long spirals when touched (e. g. with a needle). The ascomata become free and can be dispersed by animals (or used for study). Also peculiar are the paraphyses surrounding and extending the asci.

Other species which link the Microascaceae and the Chaetomiaceae are *Bommerella trigonospora* MARCHAL [= *Chaetomium trigonosporum* (MARCHAL) CHIVERS] and *Canariomyces spectabilis* VON ARX. *Bommerella trigonospora* has ampulliform, ostiolate, setose ascomata with a cephalothecoid wall of cells arranged in a petaloid pattern. The ascospores are slightly dextrinoid when young and triangular in face view, but larger and darker than the triangular ascospores of several *Microascus* and *Kernia* species. *Canariomyces spectabilis* has non-ostiolate, spherical, black ascomata and spherical asci. The ascospores are dextrinoid when young, but relatively large and brown when mature and rather similar to the ascospores of *Chaetomium murorum* CORDA (VON ARX, 1984). The ascospores of *Emilmuelleria spirotricha* in size, shape and pigmentation are rather similar to those of *Lophotrichus ampullus* R. K. BENJAMIN; the latter, however, are biporate. The ascospores of *E. spirotricha* also are reminescent of some *Chaetomium* species. *Ch. anguipilium* AMES, as an example, also has ascospores which are dextrinoid when young and pale olivaceous grey when mature, but are slightly apiculate, bilaterally flattened and slightly darkened near the poles. The ascospores of *Chaetomium convolutum* CHIVERS and *Ch. hexagonosporum* CARTER & MALLOCH are similar to those of *Ch. anguipilium* (CARTER & MALLOCH, 1982).

Subcultures of *E. spirotricha* should be made from ascospores only after maintenance of at least one year, and should be grown in dark at 28–30 C for 20 days. Young ascospores do not germinate and subcultures from mycelium are sterile. Like other Chaetomiaceae, the fungus should preferably be maintained as dried, but not killed specimen, because the ascospores remain viable for many years.



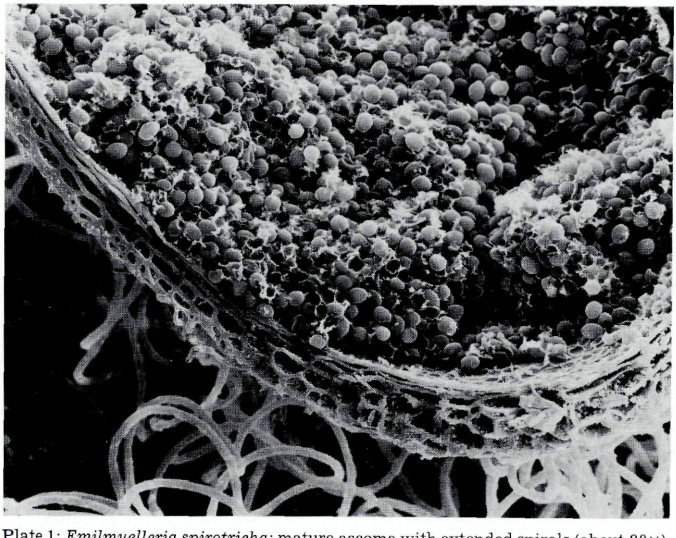


Plate 1: *Emilmuelleria spirotricha:* mature ascoma with extended spirals (about 80×) and part of a broken ascoma, showing the ascomatal wall in section, ascomatal hairs and ascospores (about 500×).

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