DRECHSLERELLA AND SOME NEMATODE-TRAPPING SPECIES OF MONACROSPORIUM

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(With 1 Text-figure)

The significance of the conidial appendage as a criterion for distinguishing Drechslerella Subram. from Monacrosporium Oud. is discussed. It is suggested that the appendage is formed as a result of precocious germination while the spore is still attached to the conidiophore and has no taxonomic significance. Monacrosporium acrochaetum (Drechs.) comb.nov. is proposed, M. parvicollis (Drechs.) R. C. Cooke & Dickinson is reported for the first time outside North America, and the probable synonymy of Dactylella coprophila Faure! & Schotter with M. bembicodes (Drechs.) Subram. is noted.

DACTYLELLA ACROCHAETA DRECHS.

Dactylella acrochaeta Drechsler (1952) was described as bearing its conidia at the apices of simple, erect conidiophores. Conidia were broadly spindle-shaped, two-septate, with the median cell much wider and longer than the other two. A number of spores were reported to have a narrow flexuous appendage attached at or near the tip of the apical cell and it was assumed that conidia lacking such an appendage were immature.

Subramanian (1963) in discussing this species suggested that its conidial morphology excluded it from Trichoconis Clements and Dactylina Arnaud ex Subram. and erected the genus Drechslerella Subram. to accommodate it. Drechslerella was distinguished from Monacrosporium Oud. solely on the possession by the former of the filiform, apical appendage on some conidia. In declining to place D. acrochaeta in Monacrosporium during his partial revision of Dactylella Grove, Subramanian was clearly not familiar with the sometimes peculiar behaviour of spores of some species of Monacrosporium while these are still attached to the conidiophores.

Apart from a few common species, most nematode-trapping fungi are rarely encountered so that descriptions are frequently based on a single isolate. This is true of D. acrochaeta. The limits of variation within a species are therefore usually little-known and there is a possibility that what may emerge as unimportant differences may be used to make rigid divisions between different isolates of the same species. Recently an isolate of M. salinum R. C. Cooke & Dickinson (1965) was studied, the conidia of which behave in a manner that, together with other evidence, throws doubt on the status of Drechslerella as a genus distinct from Monacrosporium.

The isolate of M. salinum was obtained from bryophytes from the Botany Department, The University of Western Australia, and was grown in pure culture on Difco cornmeal agar. In 2- to 3-day old cultures conidia showed
no outgrowths of any kind, but in 4- to 8-day old cultures over 50% of the spores bore appendages while still attached to the conidiophore. Appendages were simple, filiform, slightly flexuous, up to 140 μ long, 2–4 μ wide at the base and tapering to about 1 μ at the apex. They frequently arose from the distal conidial cell but they could also arise from the other cells (Fig. 1A). When a single, apical appendage was formed the conidia resembled very closely those of *D. acrochaeta* illustrated by Drechsler (1952).

![Fig. 1. A, Conidia of *Monacrosporium salinum* with appendages while still attached to the conidiophore; B, *M. parvicollis*, traps formed on cornmeal agar.](image)

Similar appendages have also been noted to form on conidia of *M. coelobrochum* (Drechs.) Subram. before these fall from the conidiophore and usually arise from the basal cells of the spore (Drechsler, 1947). Soprunov (1958) illustrated a conidium of *M. bembicodes* (Drechs.) Subram. still attached to its conidiophore and bearing an apical appendage upon which a second conidium was borne.

Whether or not it is justifiable to place species in *Drechslerella* which could be conveniently included in *Monacrosporium* depends solely on the morphological significance of the apical ‘appendage’. In both *D. acrochaeta* and *M. salinum* a large proportion of conidia lack these structures and in *M. salinum* appendages are rapidly formed when conidia reach a certain age. Young conidia show no sign that they will later bear appendages and morphogenesis of the spore is complete before these are produced. On falling to the surface of a culture appendages can grow, branch and anastomose with either vegetative hyphae or the appendages of other conidia.

When spores of predaceous species of *Monacrosporium* germinate they may do so in two ways. First a normal germ tube may arise from any conidial cell but usually from the smaller apical or basal cell. Alternatively relatively short conidiophores may be produced from these cells and give rise at their apices to secondary conidia. There seems to be little doubt that
the appearance of ‘appendages’ on conidia of *D. acrochaeta*, *M. bembicodes*, *M. coelobrochum* and *M. salinum* is due to a precocious germination of the spores before they become detached from the conidiophore. The ‘appendages’ are most probably germ tubes although some may be secondary conidiophores which have failed to produce conidia. Although it is of some physiological interest this character must be considered as only of minor importance and cannot be used as a major taxonomic criterion.

The isolate of *M. salinum* described here, apart from exhibiting precocious germination, is indistinguishable in other morphological characters from the type isolate of this species (Cooke & Dickinson, 1965).

Drechsler (1952) stated that *D. acrochaeta* strongly resembled *M. doedycoides* (Drechsler, 1940) in size and shape of predaceous organs and in the size, shape and septation of conidia. The only distinction between the two species was the formation by *D. acrochaeta* of chlamydospores and conidial appendages. Chlamydospore formation cannot be used reliably to distinguish between species in the nematode-trapping series (Cooke & Satchuthananthavale, 1966) and it may be that *D. acrochaeta* and *M. doedycoides* are variants of the same species. Unfortunately as a culture of the former does not apparently exist no definite statement on this point can be made.

It seems logical on the evidence available to place *D. acrochaeta* in *Monacrosporium* and to consider the name *Drechslerella* as superfluous.

**Monacrosporium acrochaetum** (Drechs.) comb.nov.

≡ *Dactylella acrochaeta* Drechs. in *Mycologia* 44, 541, 1952 (basionym).

A very full description of the species is given in the original publication.

**Monacrosporium parvicollis** (Drechs.) R. C. Cooke & Dickinson

A fungus growing from decaying grass stems from Lindrick, Notts., was observed to trap nematodes on globose, adhesive, one-celled lateral branches. These were either sessile or borne on a short unicellular stalk and occasionally proliferated giving rise distally to one or more further adhesive cells.

Conidiophores were simple, erect and bore conidia singly and terminally at their apices. Conidia were fusiform, distally rounded, basally truncate, usually 4-septate, 48 × 9–12 μ, with the median cell larger than the others. While still attached to the conidiophore they frequently produced a globose, adhesive cell at the conidium apex.

The fungus closely resembled *M. parvicollis* (Drechs.) R. C. Cooke & Dickinson (1965). Drechsler (1962) described this as *Dactylella parvicollis* but refers to it twice in the English description as *D. brevicollis*. This appears to be the first time that it has been recorded outside North America. Drechsler stated that in pure culture on cornmeal agar the mycelium of *D. parvicollis* was devoid of predaceous organs and conidiophores. The English isolate when grown in pure culture on cornmeal agar sporulated well and frequently produced adhesive cells similar to those observed on
nematode-infested agar. The fusiform conidia were up to 88 μ long, 9–12 μ wide, mostly 4-septate and frequently curved. As on nematode-infested agar, conidia usually produced a terminal adhesive knob while still attached to the conidiophore. On falling to the agar surface conidia often produced a second knob from either the truncate basal cell or the median cell or both (Fig. 1B). The ability of this species to produce large numbers of traps on both its mycelium and its conidia in the absence of a nematode-derived stimulus makes this an interesting member of the predaceous group.

**Dactylella coprophila** Faurel & Schotter

Recently a fungus which is very obviously a species of *Monacrosporium* has been described under the name *Dactylella coprophila* Faurel & Schotter (1965). Its solitary conidia were 3-septate, 40–45 × 18–24 μ with a swollen penultimate cell.

It closely resembled *M. bembicodes* (Drechsler, 1937) which the authors stated as having ‘bien des spores triseptées mais plus petites, 34–38 × 16–23 μ’. However, these figures are incorrect, conidia of *M. bembicodes* being 34–48 μ long, and it is almost certain that *D. coprophila* and *M. bembicodes* are identical.

I wish to thank Dr John Webster for providing material from Lindrick and for drawing my attention to the description of *D. coprophila*. I am also grateful to Dr R. N. Hilton and Mr H. K. Tan for the culture of *M. salinum*.

REFERENCES


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