

ON THE NATURE OF THE SPORE-APPENDAGE IN *NEOTTIOSPORA* DESM.

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IN the course of studies on Sphærospidales from Madras a pycnidial fungus was recently collected on dead culms of *Aristida setacea* Retz. (Gramineæ) (Herb. M.U.B.L. No. 631). The fungus was characterised by the production of appendaged hyalospores, the appendage being apical. The nature of the appendage in this fungus was peculiar in that it was evanescent and easily dissolved when mounted in lactic acid or lactophenol, but could be clearly seen if mounted in water. It could be stained well with aqueous methylene blue. It seemed to us, therefore, that the appendage may be of a mucoid or gelatinous nature. This suggestion was further confirmed by an examination of the fungus mounted in India ink as suggested by Ramanathan (1938). The spores along with their appendages then appeared clearly against the dark background of India ink. It was also seen that the appendage was very thin, hyaline and like an inverted hollow cone. So far as we are aware, amongst the various genera of the Sphærospidales-Hyalosporæ no genus has definitely been stated to have the type of appendage characteristic of our fungus (Clements & Shear, 1931). There is, however, a suggestion by Grove (1935, p. 134) that the spores of *Neottiospora* Desm. are "provided at the apex with a tuft of little mucoid setæ, which readily disappear". Desmazieres, the author of the genus, himself (Desmazieres, 1843) did not suggest the appendages being mucoid. His description of the spores of *N. caricum*, the type species (Desmazieres, 1843, p. 347), was: "Le caractère essentiel des ces sporidies est de présenter, à l'une des extrémités, trois ou quatre filamens d'une ténuité extrême, simples ou bifurqués, divergens, quelquefois même un peu recourbés, et moitié environ moins longs qu'elles". Various other mycologists have used the terms "hyaline threads" (Berkeley and Broome, 1850; Cooke, 1871), "crest" (Cooke, 1871), "penicillato-setulosæ" (Saccardo, 1884), "borstenformige..... Haare" (Lindau, 1900; Migula, 1921), "pinselformigen Borsten" (Allescher, 1901) and "Pinsel von.....Borsten" (Migula, 1921) to describe the appendages. These authors have also indicated that the spore has more than one apical appendage, but none of them have suggested that these

appendages are mucoid although most of them observed that the appendages were evanescent. The illustrations of the spores given by Cooke (1871) and by Grove (1935) are similar and depict the appendages as short, distinct bristles. The observation of Grove (1935) regarding the mucoid nature of the appendages in *Neottiospora* coupled with the observations of many authors about the evanescent nature of the appendages and also our own observations on the fungus collected at Madras, indicated the need to restudy the nature of the appendage in the genus *Neottiospora* and to find out if our own fungus could not be congeneric with *N. caricum* Desm.

We have been able to procure the type collection of Roberge on which Desmazieres (1843) based his description of *Neottiospora caricum*. This collection is in good condition and an examination of a pycnidium showed a large number of spores. The spores are hyaline, fusiform and agree with the description given by Desmazieres (1843); the appendage, however, is mucoid and in the form of an inverted hollow cone as in the case of the pycnidial fungus collected by us at Madras. The appendage may not be clearly seen in unstained preparations, but careful observation, especially after staining in aqueous methylene blue, clearly indicated the mucoid nature of the appendage in this over 110-year old dry herbarium material.

A study of the fungus collected by us indicates that the appendage is probably formed in the following way. During the development of the spore, the outermost wall (or layer of the wall?), being inelastic, splits transversely along a line just below the middle of the spore due to the elongation of the body of the spore. The spore itself then gets detached from the conidiophore and the upper portion of the outer wall which has split is now seen as a cap enclosing the spore down to more than half its length. This thin cap later gets everted and this then appears as a hyaline, inverted hollow cone (Fig. 1) with very thin walls. It is obvious that the outer side of the cap which originally enclosed part of the spore now forms the inner side of the hollow cone. Careful examination of the fungus has shown that the lower part of the outer wall (of the spore) which has split remains attached to the conidiophore. An examination of the type collection of *Neottiospora caricum* has shown that the nature of the appendage in the case of the spores in this fungus is exactly similar to what has been described by us for our fungus. Our fungus is, therefore, congeneric with *N. caricum* Desm. The detailed description of our fungus will be given elsewhere, along with critical notes on species of the genus *Neottiospora*.

The main purport of this paper is to present the results of a study on the nature of the appendage in *Neottiospora* Desm. As a result of careful

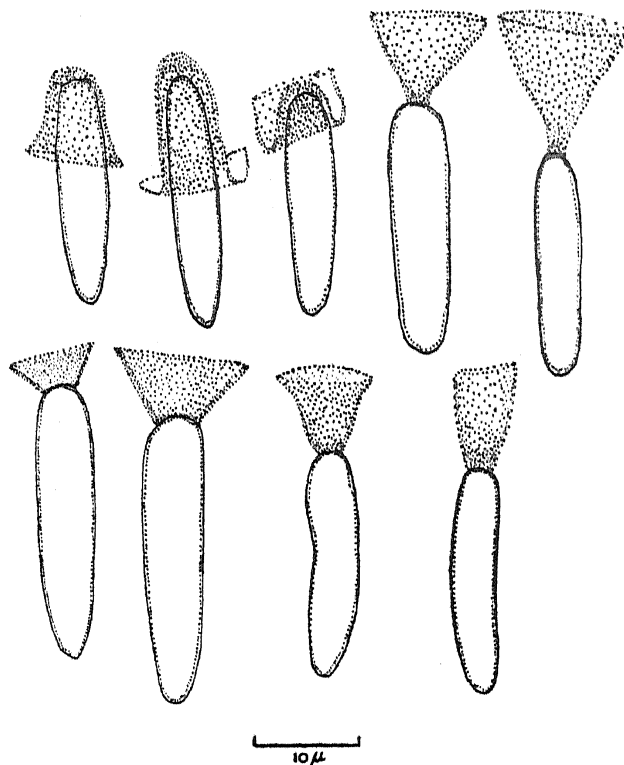


FIG. 1. Stages in the Development of the Spore-Appendage in *Neottiospora* sp. (Herb. M.U.B.L. No. 631).

study of the type collection of *N. caricum* Desm. (the type species), it may be stated that in *Neottiospora*

1. there is *only one* appendage for the spore, and it is apical;
2. the appendage is mucoid and evanescent; and
3. the appendage is in the form of an inverted hollow cone with hyaline, thin walls.

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