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SOME OBSERVATIONS ON THE PARASITISM OF *CONIOTHYRIUM MINITANS* ON THE SCLEROTIA OF *SCLEROTINIA SCLEROTIORUM*

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Coniothyrium minitans Campbell has previously been reported as a parasite of the sclerotia of *Sclerotinia sclerotiorum* (Lib.) de Bary, *S. minor* Jagger (Campbell, 1947), *Sclerotinia trifoliorum* Erik ss., (Tribe, 1957) and *Sclerotium cepivorum* Berk., (Ghaffar, 1969). The pycnidia of *C. minitans* have been found to be produced within the sclerotia of *S. cepivorum* (Ghaffar, 1969). Neither Campbell (1947) nor Tribe (1957) have observed the development of pycnidia within the sclerotial bodies. A study of the relationship of *C. minitans* with *S. sclerotiorum* was therefore undertaken. This is reported below:

C. minitans (I.M.I. no. 51358) and *S. sclerotiorum* (Univ. of Hull, Bot. Dept. no. J 86) were inoculated at opposite sides on plates of Oxoid Potato Dextrose agar, pH 5.3. *C. minitans* being a slow growing fungus was inoculated 3 days before *S. sclerotiorum*. The dishes were incubated at 25°C and the rate of growth of the two organisms were recorded. Within two days, *C. minitans* was found to inhibit the growth of *S. sclerotiorum* producing a zone of 6-8 mm, inhibition taking place due to diffusion of toxic metabolite into the medium (Fig. 1). It may be mentioned that culture filterate of *C. minitans* has been found to lyse the hyphal walls and pseudoparenchymatous tissues of *S. sclerotiorum* (Jones & Watson, 1969).

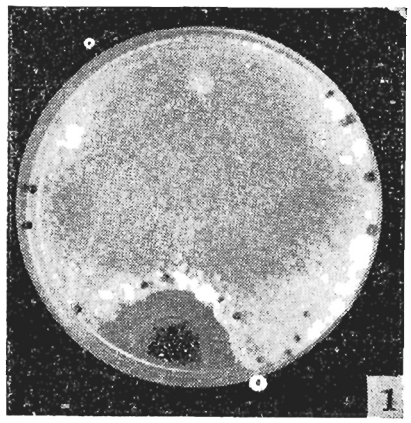

Fig. 1. Inhibition of growth of *Sclerotinia sclerotiorum* by *Coniothyrium minitans* on Potato Dextrose agar after 5 days growth at 25°C.
S. Sclerotiorum on top of the dish and *C. minitans* on the bottom.

To test the parasitism of *C. minitans* on the sclerotia of *S. sclerotiorum*, as reported by Campbell (1947), a pycnospore suspension in water (app. 2,000/ml) obtained from 7 day old agar culture of *C. minitans* was spread on cultures of *S. sclerotiorum* containing mature sclerotia. After incubation for 6-8 days at 25°C the pycnidia of *C. minitans* were produced on the exterior and the whole surface of the sclerotia of *S. sclerotiorum* appeared to be pimpled with it. Serial microtome sections showed the development of the pycnidia on and inside the sclerotia of *S. sclerotiorum* (Fig. 2-5).

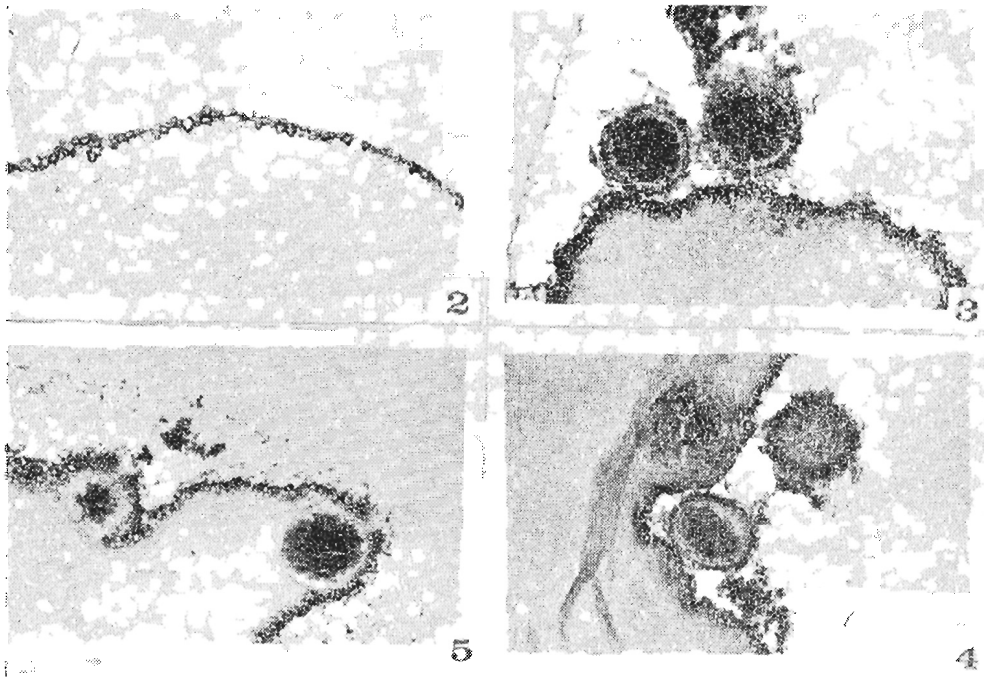

Fig. 2-5. Photomicrographs (x 150) of microtome sections of agar culture showing parasitism of *Coniothyrium minitans* on the sclerotia of *Sclerotinia sclerotiorum*.

Fig. 2. A portion of the sclerotium of *S. sclerotiorum*.

Fig. 3. Development of pycnidia of *C. minitans* on top of a sclerotium of *S. sclerotiorum*.

Fig. 4. Development of pycnidia inside the sclerotium.

Fig. 5. As no. 4, advanced stage of pycnidium inside the sclerotium. Note liberation of pynospores through the ostiole.

Melanin has generally been related to resistance of fungal cell walls to lysis since melanin containing walls of *Aspergillus nidulans* hyphae were comparatively unaffected by a mixture of *B*-(1-3) glucanase and chitinase to which the hyphal walls of melanin less mutants were highly susceptible (Kuo & Alexander, 1967). Similarly lysis of melanin covered sclerotia of *Sclerotium rolfsii* and pigmented conidial walls of *Aspergillus phoenicus* was not observed where purified enzyme from a *Streptomycin* isolate was used (Bloomfield & Alexander, 1967).

Considering the production of pycnidia of *C. minitans* within the sclerotia of *S. sclerotiorum*, it would appear that the fungus produces certain melanolytic enzymes as well enabling it to enter through the melanized sclerotial rinds. It would also suggest that melanin like components present in the sclerotial rinds do not always confer resistance to lysis by lytic micro-organisms.

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