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In Vitro Observation on Three Fungal Parasites of Lance and Lesion Nematodes

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Nematode culture pots of *Hoplolaimus indicus* and *Pratylenchus zeae*, kept under open condition exhibited decline in population irrespective of presence of host as well as other favourable conditions. In soil platings, three fungi *viz.*, *Catenaria vermicola* Birchfield, *Protoascus subuliformis* Dangeared and *Alternaria tenuis* Nees. Ex. Pers were frequently observed attacking these nematodes.

To evaluate the possible role of these fungi in reducing the nematode populations, soil samples from these culture pots were plated as per the technique of Warchup (1950) using Tolmsof's (1959) milk agar medium and incubated for 15 days at room temperature (27-30°C). When a profuse fungal growth was observed, the parasitised *H. indicus* and *P. zeae* were picked up from these plates, washed in sterilized water 3-4 times and again transferred to Petri plates containing fresh medium and incubated at room temperature (27-30°C) for 2 days. Fresh nematode suspension containing 100 each of different stages of *H. indicus* and *P. zeae* were surface-sterilized by suspending them for 10 minutes in a mixture of 0.02 per cent ethoxy-ethyl murcury chloride(Aretan) and 0.1 per cent dihydrostreptomycin sulphate, washed in sterile distilled water and transferred to the fungal culture and left undisturbed for a further period of 15 days. Five replicates were maintained for each fungus. Parasitised nematodes were counted, separated and the parasitic fungi identified. The mode of infection, development and life history in the nematode body were observed under a light microscope.

Examination of Petri plates revealed the presence of *C. vermicola*, *P. subuliformis* and *A. tenuis*. *H. indicus* was parasitised with

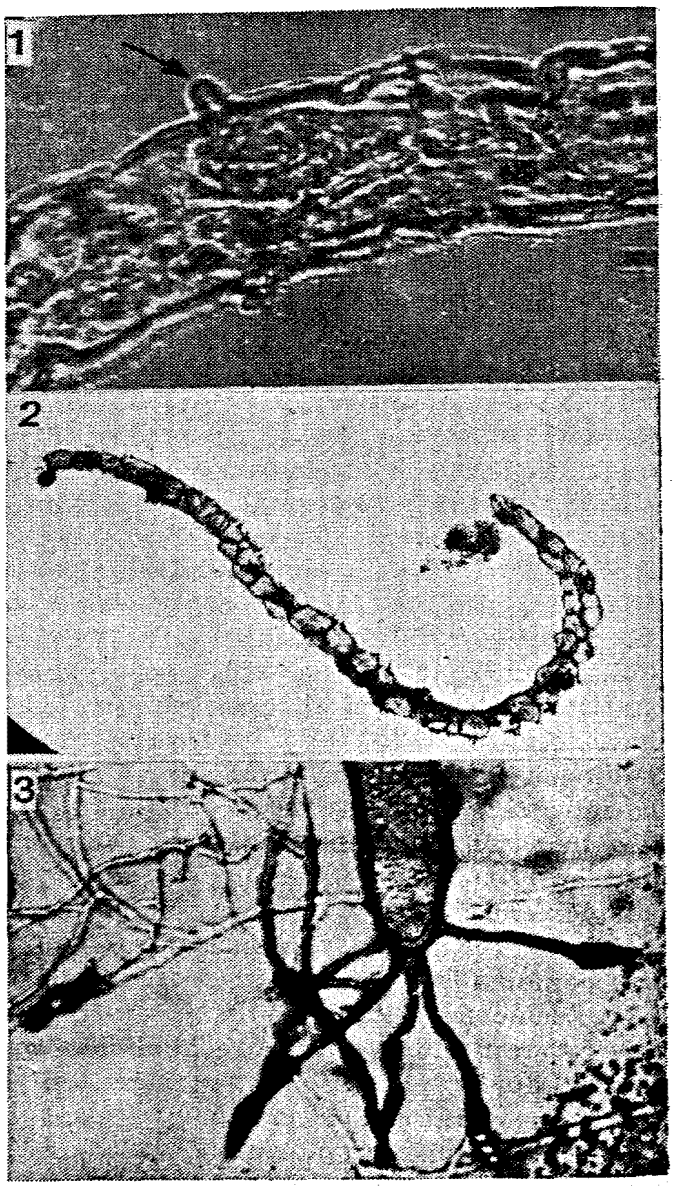

Fig. 1. Discharge tube (arrow) produced by *C. vermicola* in *H. indicus*

Fig. 2. *H. indicus* carcase filled with sporangia of *C. vermicola*

Fig. 3. *A. tenuis* growing on *H. indicus* tail

C. vermicola (81%) and *A. tenuis* (5%) while *P. zeae* with only *P. subuliformis* (80%). No individual nematode was found parasitised with two or more fungi at a time. The zoospores of *C. vermicola* adhered around the head and other body openings of the nematode. Fine strands of hyaline branched hyphae developing from them traversed longitudinally into the nematode body with inter-calary swellings. About 36 h later, septa were seen between such swellings and another 12 h later, these swellings developed into round or oval intercalary sporangia having double walls with granular contents. A protruberance was seen about 24 h after the formation of a sporangium which later turned into a discharge tube at maturity (Fig. 1). Zoospores were discharged through such tubes. Five days after infection, the entire body contents of the nematode were digested by the fungus except for the stylet, spicules and the cuticle. The body wall of the dead nematode retained its original shape filled with sporangia (Fig. 2).

H. indicus infected with *A. tenuis* first showed slight bulging of the body usually near the tail (Fig. 3) under the cuticle, from where septate mycelia and conidiophores emerged. Within 12 h of appearance of this symptom, the nematodes were found in a relaxed position. Chain-like conidia appeared on conidiophores within next 12 hours. The other morphological details were similar to that given for *A. tenuis*.

All the dead *P. zeae* were found parasitised with *P. subuliformis*. Its spores were seen adhering to the nematode body usually at the anterior end. The germ tube of the germinating spores pierced the nematode cuticle and quickly filled up the entire body with irregular filaments. The fungal protoplast appeared to be divided by irregular segments, which later turned into a sporangium occupying the entire nematode body. Each sporangium produced a large number of spores which were discharged outside the nematode body through a tube-like out growth. These spores were picked up by other passing nematodes. Nematodes with several zygospores in a row within the body were observed frequently. These zygospores were produced as a result of conjugation between two thali. Adjacent segments function as male and female gametangia. In the process of conjugation, the contents of the male gametangium passed into the female gametangium through the conjugation tube. The female gametangium then rounded up into a gobular mass resulting in the formation of thick walled zygospores, which were set free after disintegration of nematode body The description of the fungus agrees with that of *P. subuliformis* given by Duddington (1950) and Juniper (1954). This appears to be the first report of *P. subuliformis* parasitising *P. zeae* or any other plant parasitic nematode.

Singh (1967) reported the occurrence of *C. vermicola* on some plant parasitic nematodes but there appears to be no record of *A. tenuis* and *P. subuliformis* parasitising any plant parasitic forms, though there were reports of some saprozoic nematodes being attacked by *P. subuliformis* (Sachidanand and Swaroop, 1966).

KEY WORDS : *Catenaria vermicola, Protoascus subuliformis, Alternaria tenuis, Pratylenchus zeae.*

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