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THE HOST RANGE OF *OLPIDIOPSIS INDICA*[1]

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ABSTRACT

A study of the host range of *Olpidiopsis indica* has been made using eighteen species from seven genera of Saprolegniaceae and Pythiaceae as possible hosts. *Olpidiopsis indica* Srivastava can be described as a natural parasite of the genus *Pythium* as it could not be transferred to other genera. Its host range is extended from *Pythium aphanidermatum* to *P. ultimum* and *P. carolinianum*.

The results of present investigation have lent further support to the view that the identity of most species of *Olpidiopsis* may be based on the host range and the exospore structure of resting spores.

INTRODUCTION

Shanor (1940) and Srivastava (1966) have studied the host range of certain species of *Olpidiopsis* Cornu and have found that the host range of different species of this genus is limited. Srivastava (1966) has further shown that except for species like *Olpidiopsis varians*, where a wide range of variation occurs in exospore structure of resting spores, the identity of most species of *Olpidiopsis* may be based on the host range and the exospore structure of resting spores.

During the course of present investigations the host range of *Olpidiopsis indica*, described earlier by Srivastava (1975), was studied.

METHODS

The techniques followed during the present study were the same as employed by Shanor (1940). Cultures of the probable host species were prepared on the lines suggested by Couch (1927) and Johnson (1956). Stock cultures of these were maintained on sterilized hemp seed halves in sterile distilled water.

The cultures of *Olpidiopsis indica* were maintained on *Pythium aphanidermatum* (Edson) Fitzpatrick, the original host, and were frequently washed with sterile distilled water to eliminate bacterial contamination. When transferring the parasite from this host to the other, very young cultures of the hosts tested were used. Infected hyphae containing mature sporangia of the parasite were removed from the original culture and washed thoroughly in sterile distilled water before transfer to the host cultures. Sometimes the parasitized cultures as a whole was placed in the Petri-dish containing the young host cultures under test.

At least three attempts were made to transfer *Olpidiopsis indica* to each host tested. The host cultures were examined under a microscope after they had been exposed to the parasitized culture for 24

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HOST RANGE OF *Olpidiopsis indica* SRIVASTAVA

Saprolegnia diclina Humphrey	—
S. ferax (Gruith) Thuret	—
Achlya dubia Coker	—
A. proliferoides Coker	—
A. orion Coker and Couch	—
A. klebsiana Pieters	—
A. flagellata Coker	—
Isoachlya anisospora (de Bary) Coker var. *indica* Saksena and Bhargava	—
I. luxurians Bhargava and Srivastava	—
Dictyuchus sterile Coker	—
D. monosporus Leitgeb	—
Aphanomyces laevis de Bary	—
A. helicoides Minden	—
Pythium aphanidermatum (Edson) Fitzpatrick	H
P. ultimum Trow	+
P. undulatum Petersen	—
P. carolinianum Matthews	+
Phytophthora gonapodyides (H. E. Petersen) Buisman	—

Original host H ; susceptibility + ; no infection —.

hours. If the cross inoculation was successful, some hyphae of the host showed the characteristic swellings caused by the parasite. In those cases where no infection was found, the host under test was further exposed to the parasite and observations were made every 24 hours for 4 days, after which the experiment was discontinued.

The host species have been identified with the help of keys provided by Coker (1923), Coker and Matthews (1937), Middleton (1943), Johnson (1956) and Scott (1961).

RESULTS

The results of experiments conducted to study the host range of *Olpidiopsis indica* are given above.

The host range of *Olpidiopsis indica* was restricted to the species of *Pythium* only. Most vigorous infection of this parasite was observed in *Pythium aphanidermatum*, the original host, and in *P. ultimum*. The infection in *P. carolinianum* was poor and could be induced only after several exposures to the parasite.

The morphology of the walls of sporangia, companion cells and resting spores of the parasite was studied in all the three hosts supporting growth of *Olpidiopsis indica*. No variation in the morphology of the wall of these structures was noted.

DISCUSSION

The two main characteristics, considered together, for the identification of the species of *Olpidiopsis* are : the identity of the host and the morphology of the exospore of the resting spores. *O. indica* can be described as a natural parasite of the genus *Pythium* as it could not be transferred to the members of the other genera. The host specialization exhibited by *O. indica* emphasizes the importance of the host in identifying the species of *Olpidiopsis*.

No variation in the structure of the exospore of the resting spores of *O. indica* was noted in the three hosts studied here. Therefore, in case of *O. indica* too the character of the exospore of resting spores can be relied upon in identifying this parasite.

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