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Effect of nutrient media on growth of *Alternaria brassicae*

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The influence of eight nutrient media was tested on growth and sporulation of *Alternaria brassicae*. Among these, the maximum growth of the fungus was obtained in both soild and liquid form of radish root extract and which was significantly superior to the rest of the media tested, followed by carrot root extract, potato dextrose and oat meal agar. Poor growth was found on Asthana and Hawker's, Richard's, Standard nutrient and Czapek (Dox) media. No sporulation was observed on any of the solid or liquid media tested. After frequent sub-culturing, the fungus produced less mycelial growth and lost its sporulating ability.

Key words : *Alternaria brassicae*, radish, mycelial growth, sporulation, solid and liquid media

INTRODUCTION

Radish *(Raphanus sativus L.)* is an important root vegetable crop of India, which plays an important role in the economy and dietary requirements of the people in the country. In addition to other biotic problems, Alternaria blight, caused by *Alternaria brassicae,* is a serious disease hampering the successful cultivation of this crop. Work to ascertain the requirement for growth and sporulation of this pathogen was done by some workers (Thakur and Kolte, 1985 ; Ansari *et al.,* 1988 and Sharma and Singh, 1994) and it was inferred that on most of the media studied, the growth was poor and after two or three sub-cultures the sporulation was lost. It was, therefore, thought necessary to study the role of various solid and liquid media on the mycelial growth and sporulation of *A. brassicae* and the results are reported in this paper.

MATERIALS AND METHODS

Alternaria brassicae was isolated from infected leaf of radish. Twenty ml of each sterilized medium with agar agar was poured in sterilized Petri dishes for determining the radial growth of this fungus. Each Petri dish was inoculated with a 5 mm mycelial disc of the pathogen. These were then incubated at 22 ± 1°C for ten days and thereafter, the growth was recorded in mm in two directions at right angles and the average was calculated. The experiment was replicated three times.

To determine the amount of mycelial mat, produced by the pathogen, 50 ml of each liquid medium was dispensed into 150 ml Erlenmeyer flasks. The flasks were sealed with cotton plugs tightly. These were then sterilized in an autoclave at 1.1 kg pressure/cm^2 for 20 minutes. After cooling, the flasks were inoculated with an equal amount of fungal inoculum and incubated at 22 ± 1°C for ten days. The mycelial mat was filtered through Whatman's filter paper No. 42, washed with distilled water, oven dried at 60°C for 48 h, cooled and weighed. Three replicate flasks were kept for each medium to determine the dry mycelial mat.

Sporulation, if any, was also recorded on soild and liquid media following usual procedure.

RESULTS AND DISCUSSION

It is clear from the results (Table 1) that radish root extract agar medium supported the best growth of the pathogen, which was significantly superior to

the other media tested. Good growth of the pathogen was recorded on carrot root extract agar and potato dextrose agar media, which did not differ significantly from each other. Fair growth of the pathogen was obtained on oat meal agar, whereas the remaining media viz., Asthana and Hawker's agar, Richard's agar, standard nutrient agar, and Czapek (Dox) agar media supported poor growth.

Table 1 : Effect of various solid media on the growth and sporulation of *Alternaria brassicae* at 22 ± 1°C.

Medium	Average diameter of the colony (mm)	Sporulation
Radish root extract agar	64.36	—
Carrot root extract agar	50.85	—
Potato dextrose agar	48.71	—
Oat meal agar	37.27	—
Asthana and Hawker's agar	29.56	—
Richard's agar	25.42	—
Standard nutrient agar	18.14	—
Czapek (Dox) agar	14.25	—
C.D. at 5% level	2.43	—

(–) indicates no sporulation.

Table 2 : Effect of different liquid media on the growth and sporulation of *A. brassicae* at 22 ± 1°C.

Medium	Average mycelial dry weight (mg)	Sporulation
Radish root extract agar	21.35	—
Carrot root extract agar	17.58	—
Potato dextrose agar	16.97	—
Oat meal agar	15.14	—
Asthana and Hawker's agar	14.00	—
Richard's agar	13.73	—
Standard nutrient agar	11.54	—
Czapek (Dox) agar	10.13	—
C.D. at 5% level	1.00	—

(–) indicates no sporulation.

No sporulation was observed on any of the soild media tested.

The results presented in Table 2 indicated that radish root extract medium supported the maximum growth of the pathogen in liquid from also and was significantly superior to the rest of the media tested. Good growth was recorded on carrot root extract and potato dextrose media, which were statistically at par with each other, followed by oat meal medium. Asthana and Hawker's, Richard's, standard nutrient and Czapek (Dox) which supported poor growth of the pathogen. Sporulation was not found any of the liquid media tested.

Earlier studies on *Alternaria brassicae* by some workers (Thakur and Kolte, 1985 ; Ansari *et al.*, 1988 and Sharma and Singh, 1994) gets support from the present finding except a few exceptions. In the present study, no sporulation of the fungus was recorded on any of the media tested, when subcultured culture was used. The non sporulating nature of this fungus was emphasized by Sharma and Singh (1994) also who reported only mycelial growth of this fungus on potato dextrose agar medium and recommended supplementation of Richard's medium with some amino acids for obtaining sporulation.

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