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EFFECT OF HOST-LEAF EXTRACTS ON PME AND ENDO-PG ACTIVITIES OF *ALTERNARIA BRASSICÆ*

It has been experimentally found out that of the four varieties of cauliflower tested, two (BOB 3208 and BOB 4209) are resistant and the rest two (Snowball and Late Banaras) are susceptible (Maitra and Samajpati, 1974). In order to elucidate the biochemical nature of this resistant mechanisms, attempts have been made to find out the effect of all the above four varieties leaf extracts on the enzymatic activities (PME and ENDO-PG) of the pathogen. For this purpose, three types of extracts, *viz.*, (i) leaf extract (untreated), (ii) heated leaf extract and (iii) dialyzed leaf extracts have been used.

10 g of healthy leaves were collected from the healthy plants after 30 days of growth. Leaf extracts were prepared by grinding them with sterile distilled water in cold and filtered in cold under asceptic condition. The filtrates were then added to Richard's medium containing 0.5 percent glucose and 1.00 percent pectin before application. 50 ml of the medium contained extracts of 2.5 g of fresh leaves. The PME activity was measured by the continuous titration technique (Kertesz, 1951) and Endo-PG activity was determined at 30°C by the method of Bell *et al.* (1955). The preparation of samples for enzyme analysis was done following the method of Hancock *et al.* (1964). All other experimental procedures are, however, described in the previous paper (Maitra and Samajpati, 1974).

The results obtained have been prescribed in Tables 1 and 2.

Table 1. *Data (mean) showing the effect of cauliflower leaf extract of different varieties on fungal pectin methylesterase activity*

Variety	Enzymatic activity (%)[a]		
	With leaf extracts[b]	With heated leaf extracts[c]	With dialyzed leaf extracts[d]
BOB 3208 (R)	38±6	39±6	80±4
BOB 4209 (R)	42±5	43±7	82±5
Snowball (S)	78±6	78±7	97±7
Late Banaras (S)	80±4	81±6	96±6

a The enzyme activity in the control (incubated with distilled water instead of leaf extracts) is considered as 100. Each value represents an average of separate determinations from different preparations ± S.E.M.

b Leaf extracts prepared by grinding leaves collected from healthy cauliflower leaves after 30 days of growth with distilled water and filtration in cold, were added to the incubation mixture.

c Leaf extracts were heated by keeping the same in boiling water bath for 10 minutes.

d Leaf extracts were dialyzed at 20°C for 24 hrs. against distilled water (1 : 100) which was changed every 8 hrs.

Table 2. *Data (mean) showing the effect of cauliflower leaf extract of different varieties on fungal endopolygalacturonase activity*

Variety	Enzymatic activity (%)[a] With leaf extracts[b]	With heated leaf extracts[c]	With dialyzed leaf extracts[d]
BOB 3208 (R)	51±6	50±7	85±6
BOB 4209 (R)	53±7	52±6	89±5
Snowball (S)	81±6	82±5	97±8
Late Banaras (S)	84±6	84±7	98±7

a The enzyme activity in the control (incubated with distilled water instead of leaf extracts) is considered as 100. Each value represents an average of separate determinations from different preparations ± S.E.M.

b Leaf extracts prepared by grinding leaves collected from healthy cauliflower leaves after 30 days of growth with distilled water and filtration in cold, were added to the incubation mixture.

c Leaf extracts were heated by keeping the same in boiling water bath for 10 minutes.

d Leaf extracts were dialyzed at 20°C for 24 hrs. against distilled water (1 : 100) which was changed every 8 hrs.

It is evident from the data in Tables 1 and 2 that the degree of inhibition of fungal pectinmethylesterase and pectin endopolygalacturonase activities comply with the results of artificial infection (Maitra and Samajpati, 1974). The leaf extracts of resistant varieties are more inhibitory than that of susceptible varieties. Though heating of leaf extracts does not change the inhibitory effect of the preparations yet dialyzed extracts appear to have almost no inhibitory effects. It is, therefore, predictable that the active inhibitory principle(s) is heat stable but dialyzable substance(s). It is further assumable that deactivation of pathogenic PME and Endo-PG in the parasitized tissues of resistant varieties occur promptly than it takes place in the infected tissues of susceptible varieties. This is possibly due to accumulation of phenolic compounds in the leaves of resistant varieties of cauliflower due to increase in activities of polyphenoloxidase and peroxidase enzymes.

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