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A study of the Colletotrichum leaf disease of rubber

Abstract.

Isolate I and Isolate V of the fungus Colletotrichum gloeosporioides from Hevea brasiliensis secreted two pectolytic enzymes, polygalacturonase (PG) and pectin lyase (PL) when grown in a liquid medium with pectin as the major source of carbon. The pattern of secretion of the two enzymes, the effect of pH, temperature and calcium ion concentration were investigated.

A time course study showed a sequential basis of pectic enzyme secretion in both isolates. PG was always detected first, followed by PL. The secretion of PG and PL appear to be related to the pH of the medium.

PG and PL of both isolates had optimum activity at pH 5.8 and 8.0 respectively. The optimum temperature for both PG and PL from the two isolates was 30°C. The activity of PL was stimulated by calcium ions and at $5 \times 10^{-4} \text{M}$ Ca^{2+} ion concentration the enzyme had maximum activity. Calcium ion concentration above $1 \times 10^{-7} \text{M}$ decreased activity of PG from both isolates. The molecular weight of the enzymes were also determined using gel filtration.

The above results suggest that the pectolytic enzymes secreted by the two isolates of the fungus are identical.