D36 PECTINASE AND PROTEASE ENZYME PRODUCTION BY *COLLETOTRICHUM GLOEOSPORIOIDES*, THE CAUSE OF ANTHRACNOSE IN RIPE AVOCADO FRUITS

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Anthracnose disease Colletotrichum gloeosporioides in ripe avocados originates as latent infections in the immature fruit[1]. One explanation for latency is that the enzyme potential of the fungus is inadequate to breakdown the pectic fraction of the immature cell wall (enzyme hypothesis) or that substances inhibitory to pectic enzymes are present in the immature fruit tissue.

Colletotrichum gloeosporioides produced much higher levels of pectinase (polygalacturonase and polygalacturonate transeliminase) and protease when grown in (a) liquid cultures incorporated with crude cell walls from immature avocados as the carbon source and (b) autoclaved immature fruit. In the ripe avocado tissue rotted by the fungus however, only a trace of exo-polygalacturonase activity and moderate protease activity were detected. Ripe avocado fruit tissue also contained endogeneous protease activity. A cell wall protein extracted from unripe avocados inhibited fungal protease enzymes in liquid cultures. This type of inhibition was not observed with pectinase.

Production of sufficient pectinase enzymes in liquid culture and in the autoclaved fruit may suggest that the fungus possesses enzyme potential, but in the unripe and, to some extent, in the ripe fruit the fungus is unable to produce such enzymes at its full capacity. This information together with the fact that avocado fruits are devoid of pectinase inhibitors may indicate that 'enzyme hypothesis' has little or no relevance with regard to the development of latent infections in the unripe avocados by Colletotrichum gloeosporioides.

Also these results further confirm our previous conclusion that the presence of preformed antifungal compounds in the unripe avocados is the major factor controlling the latency in avocado fruits[1].

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Reference

1. Sivanathan, S. and Adikaram, N.K.B. (1985). Proc. Sri Lanka Ass. Adv. Sci. 41 55