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ANALYSIS OF PECTIC ENZYME ACTIVITIES PRODUCED BY THREE PHYTOPATHOGENIC FUNGI GROWN ON PLANT CELL WALLS

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The plant cell wall, the main structural element that a pathogen needs to overcome in order to penetrate and colonize the plant tissue, is organized as a complex network of polysaccharides such as cellulose, hemicellulose and pectin. Pectin is a family of complex mixture of highly heterogeneous and branched polysaccharides rich in D-galacturonic acids present in all plant primary cell walls. Phytopathogenic fungi produce a variety of pectin degrading enzymes either to facilitate the invasion of the plant tissue and to release nutrients to be used as carbon source. Most of the degradative enzymes are glycoside hydrolases, which degrade the pectate matrices by the addition of water to break the glycosidic bonds. The pectate network is also degraded by polysaccharide lyases, which cleave the glycosidic bonds via a β-elimination mechanism. Three species of phytopatogenic fungi (*Rhizoctonia solani, Sclerotium rolfsii and Fomitopsis pinicola*) were compared regarding production of pectic enzymes on basal liquid colture medium containing 1% of a crude extract of monocot and dicot plant cell walls (*Zea mays* and *Brassica rapa*). Polygalacturonase, pectin methyl esterase, pectate and pectin lyase activities were quantified in a time course of 4, 9, 13 and 16 days. The results showed that the three fungi have significantly different abilities and timing to produce pectic enzymes, which may be associated to their pathogenic habit.