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Pectin-degrading Enzymes Produced by Fungi

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Carbohydrates are the most abundant material produced by plants and processes for their efficient conversion and utilization are of major importance in biotechnology. Their enzymatic conversion can be systematically optimized if suitable enzymes of known degradative activity are available. However, the process is complicated for pectins, in which the carbohydrate structures and sugar composition are varied. Pectins consist of homogalacturonan regions and rhamnogalacturonan regions carrying neutral sugar side-chains. Galacturonic acid residues in the homogalacturonan may be replaced by different compounds such as methanol, acetic acid and xylose. Arabinans and galactans are most frequently found in rhamnogalacturonan regions of pectins. Furthermore, ferulic acid is associated almost exclusively with the neutral sugar side-chains. In order to achieve effective or selective degradation of pectins, I have studied various pectin-degrading enzymes with different catalytic properties. This paper deals with characterizations of arabinanases, ferulic acid esterases, a rhamnogalacturonase and an exo-polygalacturonase.

Key words: pectin, arabinanase, ferulic acid esterase, rhamnogalacturonase, exo-polygalacturonase

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