

**Title :** Analysis of Pectic Oligosaccharide Formation from Lime Peel Pectin Using Pectinase Enzyme

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## ABSTRACT

This study investigated the optimal conditions for hydrolysis of pectin derived from waste lime peels to produce pectin oligosaccharides (POS). The molecular weight (MW) of the resulting products mixture was determined by gel permeation chromatography (GPC), while the monosaccharide composition was analyzed by High-Performance Liquid Chromatography (HPLC), respectively. Pectin was extracted from waste lime peel powder under constant pH 2 at 80 °C for 90 minutes. An average weight 10 g of lime peel powder was used per batch, repeated 25 batch, from a total weight 251.5 g of lime peel powder. The extraction yielded 53.8 g of pectin, corresponding to yield of 21.4% yield. In the POS hydrolysis process, pectin as the substrate, and hydrolysis was carried out at pectinase enzyme concentrations of 0% (v/v), 0.1% (v/v), 0.3% (v/v), and 0.5% (v/v). A pectin concentration of 1% (w/v) in 0.02 M acetate buffer was used, with the incubation times of 3, 6, and 24 hours at 45 °C. Using the control experiment was 0% (v/v) pectinase concentration incubated for 24 hours. The results of the optimal conditions of POS production. Occurred with pectinase concentration of 0.5% (v/v) and an incubation time of 24 hours. The smallest

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pectin molecular weight was 431 Da, with the highest proportion of short-chain pectin yield 67.2%. In conclusion, POS production via pectinase hydrolysis is feasible under the laboratory conditions.

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