

Production of Amylase by *A. Niger* Under Submerged Fermentation Using Pineapple Peel as The Substrate and Its Application in Baking Industry

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Starch-degrading amylase was produced by *A. niger* under submerged condition utilizing pineapple peels as the substrate. Growth parameters were optimized by changing incubation period, pH of the culture media, level of carbon source (dried pineapple peel powder) and additional nitrogen source, in order to get maximum amylase production. Study revealed that the production of extracellular amylase increased with the culture growth and reached to maximum at day 7 in the cultures grown at pH 5.0. Studies with different levels of carbon source indicated that optimum level for carbon source for maximum amylase production was 18 gL⁻¹. Effect of additional nitrogen source on amylase production was also monitored supplementing the growth media with different nitrogen sources such as peptone, gelatin and urea. The result indicates that using gelatin as additional nitrogen source increase the amylase production. Experiments were also carried out to monitor extracellular and intracellular amylase production and the results revealed that extracellular amylase production was found to be higher than that of intracellular. Yield of the enzyme was 8530 units/g of pine apple peel powder. To test suitability of the enzyme for improvement of the quality of bakery products bakery products were prepared by treating the wheat flour dough with different volumes of partially purified enzyme Results showed that Treating 7.7 mL (11.5 U_{mL}⁻¹) partially purified amylase with one kg of wheat flour dough provide better quality product with improved shiny appearance, color, crumb structure, taste and better anti-staling effect than the control.

Keywords: *amylase, pineapple peel, submerged fermentation, bakery products, anti-staling effect*

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