

## APPLICATION OF XYLANASE ENZYME IN BIOBLEACHING

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Abstract

*Until recently, bleaching process in the production of pulp still uses chlorine based material which is very toxic to the environment. A benign process is highly required to solve this problem, for example by using enzyme. This research aims to study the effectiveness of xylanase to reduce the amount of chlorine. Trichoderma reesei was used for the production of the xylanase in this research. This research consisted of several step: preparatory, production of enzyme, enzyme assay, and application in biobleaching process. In the preparatory step yeast extract was used as organic nitrogen source. Production of enzyme used solid state fermentation method. From the experimental result using enzyme activity of 7,64 IU/ml, hemicelluloses was reduced from 9,06% to 5,6% and cellulose was reduced from 70,32% to 69,86%. In the bleaching process using 0,1 gram NaOCl/gram pulp and enzyme concentration of 1069,47 IU/gram pulp, lignin was decreased from 13,21% to 6,47%. While bleaching without the addition of enzyme, to obtain the same lignin concentration of 6,47%, NaOCl of 0,33 gram/gram pulp was needed. Addition of xylanase was found effective to reduce the amount of NaOCl as high as 69,51%.*

**Keyword :** Xylanase Enzyme, NaOCl, Biobleaching