Perbaikan freeness dan mutu kertas bekas menggunakan cellulose binding domain dari endoglukanase egl-II

Abstrak

The objective of this research is improving the freeness of waste paper stock and paper quality by using the cellulose binding domain (CBD) of endoglucanase Egl-II. CBD has been separated from endoglucanase Egl-II by proteolysis method. CBD has a molecular weight of approximately 21 kD. The produced CBD contained 0.04 mg/mL protein and did not show the total enzyme activity. Waste paper disintegrated using niagara beater with no load at the consistency of 1.5%. CBD was applied to the refined waste paper fibers with a freeness of 200 mL CSF(canadian standard freeness). The dosages of CBD used for waste paper treatment were 0.2 and 0.3 mg CBD/g of oven-dried pulp. The result shows that this treatment increases the freeness of fibers by 140 mL CSF (70%). CBD also increase the amount of removed water from the fibers from 290 mL to 390 mL and 370 mL, respectively, using the dynamic drainage jar (DDJ) measurement. The cellobiose assay of the waste paper filtrate treated with CBD shows no sugar dissolution, which indicate no cellulose degradation. The tear index of paper produced by treatment with CBD shows insignificant change. The concora medium test (CMT) of paper produced by treatment with CBD has higher tensile index, burst index, and ring crush.