Effect of Xylanases from *Aspergillus niger* NKUC3-0.2 Mutant Strain on Prebleaching of Hardwood Mixed Pulps and its Impact on CE_PHH Bleaching Sequence

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ABSTRACT

Effects of *Aspergillus niger* NKUC3-0.2 pretreatment on total chlorine demand of pulp during conventional bleaching sequence and its impact on pulp brightness, viscosity and mechanical strength of mixed hardwood pulps were studied. Mixed hardwood pulps of *Populus deltoides* and *Eucalyptus tereticornis* in the ratio of 90:10 was cooked by kraft pulping process and then pre-bleached with *A. niger* NKUC3-0.2 to improve pulp brightness and pulp strength. *A. niger* NKUC3-0.2 reduces kappa number from 19.6 to 5.0. The enzyme treated pulp shows an improvement in brightness and viscosity by 1.8 and 1.6 per cent (^{0}PV) respectively at enzyme dose of 20 and 40 IU/g of pulp over untreated pulp and after enzyme pretreatment, the total chlorine demand reduces by 1.3 and 1.7 per cent respectively. The average pulp brightness and viscosity of enzyme treated pulp at two different enzyme doses i.e. 20 and 40 IU/g are 86.8 and 87.0 per cent (^{0}PV) and 8.07 and 8.06 cps respectively.

Keywords: *Aspergillus niger* NKUC3-0.2, *Populous deltoids*, *Eucalyptus tereticornis*, Kraft pulping, Bleaching, Brightness and Viscosity