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Improved biobleaching of mixed hardwood pulp and process optimization using novel GA-ANN and GA-ANFIS hybrid statistical tools

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Abstract

The process parameters for xylanase biobleaching of mixed hardwood pulp like, reaction time (6-35 h), pulp consistency (2.5-15 %) and xylanase dose (5-35 U) were optimized using OFAT approach and hybrid statistical tools *viz.* GA-ANN and GA-ANFIS. The biobleaching ability of xylanase in terms of reducing sugar yield increased up to 28.16 mg g⁻¹ (28.05%) than OFAT optimization (21.99 mg g⁻¹ of pulp) after employing hybrid statistical tools. After TCF bleaching of xylanase treated pulp, we observed that lignin content reduced to 0.29% whereas it was still 0.41% in the untreated pulp. Moreover, the brightness level achieved up to 70.4% in xylanase

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