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Separation of saccharides from prehydrolysis liquor of lignocellulose to upgrade dissolving pulp mill into biorefinery platform

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Abstract: In this work, a competitive process consisting of polyelectrolyte flocculation, active carbon absorption, and ion exchange was developed for hemicelluloses-derived saccharides (HDSs) purification from prehydrolysis liquor (PHL) of lignocellulose. Results showed that colloidal lignin counted for 20% of non-saccharide compounds (NSCs) and could be eliminated by flocculation at 500 mg/L polyaluminium chloride and 50 mg/L anionic polyacrylamide. Active carbon was very effective for decoloration of flocculation-treated PHL, but showed limited absorption selectivity toward NSCs. Lignin, the dominant component of NSCs, is characterized with phenolic hydrogen groups. Phenolic lignin could be easily captured by anion exchange resin with 80% removal. The proposed process showed great industrial potential because of the high value saccharides, but also low molecular phenolic lignin.

Keywords: Prehydrolysis; Lignocellulose; Saccharides; Hemicellulose; Separation

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