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Extraction of arabinoxylan from corn cob through modified alkaline protocol to improve xylooligosaccharides synthesis

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Abstract

A modified alkaline protocol involving a combination of NaOH and NH_4OH was employed for the isolation of hemicellulose from corncob. During the extraction of hemicellulose, alkaline reagents promoted selective cleavage of ester and ether linkages in corncob biomass. It was possible to obtain a hemicellulose fraction consisted of considerable branching constituents (arabinose and uronic acid, and low lignin). Based on modeling analysis, reaction parameters such as alkali concentration and temperature significantly influenced the amount of total hemicellulose extracted. Subsequent hydrolysis of isolated hemicellulose in the presence of H_2SO_4 resulted in better conversion (69% wt.) with enriched XOs conc. (73.68% with DP up to 4) than other fractions under milder conditions. Advantageously, gas phase NH_3 formation was achieved during the reaction, where NaOH and NH_4OH mix was used at an equal ratio that

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