Autohydrolysis of Herbaceous biomass (Corn Stover) in hot compressed water for hemicellulose isolation

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An efficient isolation of hemicellulose from herbaceous biomass has great potential to achieve high yield of fermentable sugars and prohibit the undesired degradation of products that are strong fermentation inhibitors. In this work, autohydrolysis experiment of corn stover in hot compressed water (HCW) was performed in a batch-type reactor to remove the hemicellulose. The effect of parameters (temperature and reaction time) on hemicellulose solubilization were investigated. The chemical and physical features of untreated, treated hydrolysates and solid residues were characterized in order to assess the process efficiency and to understand the hydrolysis behavior of hemicellulose in the corn stover. The soluble sugars, acids, furfural were quantified using HPLC. The physical characteristics determined were biomass crystallinity by WAXRD, changes in chemical structures by FTIR and surface morphology visualization by SEM.