

Autohydrolysis of Japanese Larch (*Larix kaempferi*) Sawdust in Hot Compressed Water for Hemicellulose Isolation

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An efficient isolation of hemicellulose from lignocellulosic 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 japanese larch sawdust in hot compressed water (HCW) was performed in a batch-type reactor to remove the hemicellulose. The effect of various parameters on hemicellulose solubilization such as temperature, reaction time and liquor to solid ratios 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 japanese larch. The soluble sugars, acids, furfural were quantified using high performance liquid chromatography (HPLC). The physical characteristics determined were biomass crystallinity by wide angle X-ray diffraction (WAXRD), changes in chemical structures by fourier transform infrared spectroscopy (FTIR) and surface morphology visualization by scanning electron microscopy (SEM).