

Production of aromatic compounds derived from lignin residues of bioethanol production

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Lignin is a main component (4–35%) of lignocellulosic biomass together with cellulose and hemicellulose. Most biorefinery processes, especially bioethanol production, based on lignocellulosic biomass have focused on utilizing cellulose and hemicellulose as the main sugar components, on the other hand, lignin about solely remained in downstream have been just burned for low added-value heat generation. However, the main building blocks of lignin could provide significant value of potential chemical feedstocks such as aromatics, and alcohols. Types of lignin monomers differ from the source of biomass (e.g. softwood, hardwood, and grasses) and its complex linkages could cleave to unit monomers through various reactions. In this study, we carried out alkali hydrolysis and thermolysis (i.e. pyrolysis) for monomeric cleavage of lignin residues derived from bioethanol production of corn stover, rice straw, and saw dust. The alkali hydrolysis and pyrolysis of the lignin residue was conducted by thermal hydrolysis and fixed-bed reactor, respectively. All products and raw samples were analyzed by using GC/MS, HPLC, EA, and FT-IR. This study can provide information needed to design biorefinery recovery system of added-value lignin residues.