

Lignin extraction from barley straw using ethanosolv pretreatment

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Lignocellulose represents a key sustainable source of biomass for transformation into biofuels. Unfortunately, lignocellulosic biomass is highly recalcitrant to biotransformation which limits its use and prevents. The vast majority of lignocellulosic pretreatment strategies have focused on achieving a reduction in biomass lignin content and at the same time attempting to achieve a reduction in cellulose crystallinity. In this work, an ethanosolv pretreatment has been evaluated for extracting lignin from barley straw. In order to determine crystallinity, pretreated barley straw were analyzed by X-ray diffraction. 75% ethanol was used as a pretreatment solvent to extract lignin from barley straw. The influence on delignification of three independent variables are temperature, time, catalyst(1M H₂SO₄) dose. The best pretreatment condition observed were 180°C, 120min, 0.196% H₂SO₄ resulting in delignification of 38%. The cellulose in the pretreated barley straw becomes far less crystalline without undergoing ethanosolv. X-ray diffraction results indicated that these physical changes enhance the enzymatic digestibility in the ethanosolv treated barley straw.