

Public Abstract

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Title:DEEP EUTECTIC SOLVENT PRETREATMENT FOR ENHANCING BIOCHEMICAL CONVERSION OF SWITCHGRASS

In this study, green solvent-based pretreatment was developed for improving the conversion of switchgrass to acetoin which is a versatile platform chemical. Deep eutectic solvent (DES) pretreatment is an emerging pretreatment method that can efficiently fractionate biomass. Deep eutectic solvents (DESs), comprising choline chloride (ChCl) as a hydrogen-bond acceptor (HBA) and various chemical as a hydrogen-bond donor (HBD), were used to pretreat switchgrass. Different HBD groups. The DESs using ChCl-formic acid and ChCl-lactic acid-acetic acid showed excellent performance in enhancing switchgrass digestibility. The obtained hydrolysate was successfully detoxified by using overliming detoxification, which was further used for acetoin fermentation by *Bacillus licheniformis* (NRRL B-642). The yield and titer of the produced acetoin were 0.377 g/g and 19.6 g/L, respectively. Our research demonstrates that DES pretreatment is an effective method for reducing biomass recalcitrance and improving the conversion of biomass into chemicals.