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BIOTECHNOLOGY & BIOENGINEERING

“十四五”国家重点研发计划资助项目(2018YFD0400103)

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摘要 Corn leaf and corn stalk were pretreated with only hot water and 0.1% sulfuric acid at 160℃ for 20min.

Corn leaf hydrolysate increased more than that of corn stalk hydrolysate (Increased more rapidly than that of corn leaf as the reaction time increased. On the contrary, the pH of corn leaf hydrolysate increased more than that of corn stalk with diluted acid addition. Increasing temperature enhanced the xylose dissolution rate and increased cellulose digestibility. Compared with hot water, 0.1% sulfuric acid addition improved the xylan removal and the enzymatic hydrolysis of both corn leaf and corn stalk residue. Much less xylan must be removed to achieve the same cellulose digestibility for the corn leaf as that for the corn stalk. 55% digestibility was obtained when only 52% xylan was removed from corn leaf, whereas corn stalk required removal of about 83% of the xylan to achieve the same digestibility. Overall, the descending order of enzymatic digestibility was: dilute acid hydrolysate of corn leaf > dilute acid hydrolysate of corn stalk > water-only hydrolysate of corn leaf > water-only hydrolysate of corn stalk. Finally, one separate pretreatment strategy was developed to transfer corn leaf and corn stalk to fermentable sugars for further bioenergy production.

关键词 pretreatment; corn leaf; corn stalk; xylan removal; enzymatic digestibility.

分类号

Info

Effects of different pretreatment modes on the enzymatic digestibility of corn leaf and corn stalk

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Key words pretreatment; corn leaf; corn stalk; xylan removal; enzymatic digestibility.

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