

Effect of NH_4Cl and MgCl_2 on xylan hydrolysis of miscanthus straw

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This study was investigated to the effects of NH_4Cl and MgCl_2 on pretreatment of miscanthus straw for biofuels production. By the increasing of pretreatment temperature, the decreasing of solid remaining, the increasing of enzymatic digestibility, and the increasing of xylan removal were observed. When 0.2–5.0% NH_4Cl and MgCl_2 was employed to pretreatment, by increasing the inorganic salt concentration, the solid remaining was slightly diminished, however, the enzymatic digestibility was enhanced. In the condition of higher concentration than that of 2%, no xylan remained in the solid residues after pretreatment. As pretreatment time passes, the solid remaining slightly decreased, on the other hand, the enzymatic digestibility was increased. Moreover, the xylan removal was linearly increased to 15 min. After 15 min, the xylan in miscanthus straw was completely hydrolyzed. Overall, these results indicated that the pretreatment by 2% NH_4Cl or MgCl_2 at 185°C for 15 min completely hydrolyzed the xylan of miscanthus straw. Physical surface changes of miscanthus straw after pretreatment with NH_4Cl and MgCl_2 were are showed apparently damaged surface area and exposure of internal structure.