The Screening of Potential Biomass and Effect of Thermo-Chemical Treatments on Sugar Recovery

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In past years, we've been collecting the non-edible biomass from various fields such as agriculture residue, floriculture residue, organic wastes and microalgae. In this study, the content of carbohydrates in various biomass were analyzed, which have been outlined by the department of energy (DOE). The miscanthus straw and medicinal herb waste were selected as the potential feedstock based on the result which has the high carbohydrates containing. To enhance the enzymatic digestibility of the biomass, thermo-chemical treatment were performed under 100 - 150 ℃ of temperature with 0.5 - 4% of dilute sulfuric acid or 1-20% of ammonium and sodium hydroxide as alkaline catalyst. Also, the response surface methodology (RSM) was used for optimization of the treatment conditions. Finally, the theoretical glucose recovery was increased about 70% by alkaline treatments, but the dilute acid treatment showed less effective than alkaline under current conditions.