Proton beam irradiation Pretreatment of Biomass and Saccharification

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Sugar is a critical mediator of white biotechnology and can be produced from crops or grains such as sugarcane, sugarbeet, corn etc. But these days inedible biomass such as wastes of forestal or agricultural lignocellulosic biomass are concerned. Cellulose has β(1→4) linkage of each glucose and hydrogen bond between those polymers, then primary degradation rate is very low due to its hard and rigid structure. In order to enhance the enzymatic degradation of β(1→4)linkage, the hydroigen bond must be broken by fitable pretreatment. Irradiation pretreatment such as gamma ray and microwave was also reported.

The objective of this study is to investigate the effect of proton beam pretreatment on biomass. Converned biomasses are fine cellulose and ricestraw the typical korean agricultural waste and the effect of irradiation exposure time on those biomass was observed. In this study, the enhacement of suguar productivity was obained through the irradiation pretreatment in conparison to non-pretreated biomass and we may expect that the irradiation pretreatment contributes to increase the bioethanol yield.