

Eco-friendly process for biobutanol production using planetary mill pretreatment

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This study will present a series of butanol production processes which involve pretreatment, saccharification and fermentation processes. Planetary milling was used for the pretreatment of biomass to improve enzymatic saccharification. We investigated the effects of solid to liquid ratio, buffering medium, milling time, enzyme quantity and incubation time on fermentable glucose production. Typically, interaction effects of variables on glucose production were investigated by response surface methodology (RSM). Finally, the glucose produced from planetary milled pitch pine sawdust was applied to fermenter where *Clostridium beijerinckii* produces butanol.

There was no buffer exchange or washing step from planetary pretreatment to fermentation. Therefore, this method obtains 100% solid and sugar recovers. This method uses no chemical catalyst, which can reduce the production of toxic byproducts. Therefore, this method would save time and labor and ultimately be useful for applying to industry.