

### Single-stage biofuel production using planetary mill pretreatment

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This study will present a novel single stage biobutanol production process using planetary ceramic ball mill pretreatment. Single stage biobutanol production could be possible without additional steps, such as rinsing. Planetary milling was used for the pretreatment of biomass to improve enzymatic saccharification. We investigated the interaction effects of variables on glucose production were investigated by response surface methodology (RSM). 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. Finally, we obtained 23.65 g/L of biobutanol and 0.25 g/g-glucose conversion yield.