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Biobutanol production from sago hampas through simultaneous saccharification and fermentation by *Clostridium acetobutylicum* ATCC 824

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Abstract. The mounting prices of the current gasoline have driven the attention of researchers towards the utilization of various biomass residue for the production of biobutanol as it has a superior fuel characteristic. Sago hampas contains starchy and lignocellulosic materials that is usually discharged to the nearby river without a proper treatment. It is composed of 54.6% starch and 31.7% of cellulose and hemicellulose with only 3.3% of lignin. High carbohydrate contents with low percentage of lignin and no pretreatment process is required, make the sago hampas as a promising feedstock for biobutanol production. Simultaneous saccharification and acetone-butanol-ethanol (ABE) fermentation approach which is the conjoint addition of glucoamylase and cellulase together with microorganism and biomass in a single vessel system is carried out in order to reduce step, cost and time in biobutanol production. In this study, the saccharification of sago hampas is done using Dextrozyme amylase and Acremonium cellulase. The simultaneous saccharification and fermentation (SSF) of sago hampas conducted at the conditions needed for ABE fermentation by *Clostridium acetobutylicum* ATCC 824 produced 3.81 g/L biobutanol concentration and yield of 0.11 g/g_{sugar}. In this study, it suggested that sago hampas possess great potential to be implemented for biobutanol production using the simultaneous system integrated two different processes of saccharification and fermentation.

Keywords: ABE fermentation; Biobutanol; *Clostridium acetobutylicum*; Sago hampas; Simultaneous saccharification and fermentation