

Improved biobutanol production in 2-L simultaneous saccharification and fermentation with delayed yeast extract feeding and in-situ recovery

ABSTRACT

Simultaneous saccharification and fermentation (SSF) with delayed yeast extract feeding (DYEF) was conducted in a 2-L bioreactor equipped with in-situ recovery using a gas stripping in order to enhance biobutanol production from lignocellulosic biomass of oil palm empty fruit bunch (OPEFB). This study showed that 2.88 g/L of biobutanol has been produced from SSF with a similar yield of 0.23 g/g as compared to separate hydrolysis and fermentation (SHF). An increase of 42% of biobutanol concentration was observed when DYEF was introduced in the SSF at 39 h of fermentation operation. Biobutanol production was further enhanced up to 11% with a total improvement of 72% when in-situ recovery using a gas stripping was implemented to reduce the solvents inhibition in the bioreactor. In overall, DYEF and in-situ recovery were able to enhance biobutanol production in SSF.