

Optimization study of ethanolic fermentation from oil palm trunk, rubberwood and mixed hardwood hydrolysates using *Saccharomyces cerevisiae*

ABSTRACT

Ethanolic fermentation using *Saccharomyces cerevisiae* was carried out on three types of hydrolysates produced from lignocelulosic biomass which are commonly found in Malaysia such as oil palm trunk, rubberwood and mixed hardwood. The effect of fermentation temperature and pH of hydrolysate was evaluated to optimize the fermentation efficiency which defined as maximum ethanol yield in minimum fermentation time. The fermentation process using different temperature of 25 °C, 30 °C and 40 °C were performed on the prepared fermentation medium adjusted to pH 4, pH 6 and pH 7, respectively. Results showed that the fermentation time was significantly reduced with the increase of temperature but an adverse reduction in ethanol yield was observed using temperature of 40 °C. As the pH of hydrolysate became more acidic, the ethanol yield increased. Optimum fermentation efficiency for ethanolic fermentation of lignocellulosic hydrolysates using *S. cerevisiae* can be obtained using 33.2 °C and pH 5.3.

Keyword: Lignocelulosic biomass, Ethanol yield, Fermentation time, Fermentation efficiency