

Butanol Production from Molasses by *Clostridium beijerinckii* TISTR 1461 under Different Yeast Extract Concentration Conditions

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Abstract:

This study aimed to investigate the effect of yeast extract concentrations (1-5 g l⁻¹) for butanol production from sugarcane molasses by *Clostridium beijerinckii* TISTR 1461. The molasses without nutrient supplementation containing 60 g l⁻¹ of total sugar and varied yeast extract concentrations at 1-5 g l⁻¹ were used as butanol production media. The fermentation was carried out in a 1-L bottle with a working volume of 750 ml at 37 °C and an initial pH of 6.5 under anaerobic condition. The results showed that butanol and ABE concentration increased with increasing of yeast extract concentration at 1-3 g l⁻¹. However, the butanol concentration was slightly different at the yeast extract concentration between 4 and 5 g l⁻¹ (10.48 and 10.39 g l⁻¹) in the media. The highest butanol and ABE concentrations were obtained at 10.57 g l⁻¹, and 14.73 g l⁻¹, respectively when adding 3 g l⁻¹ yeast extract. However, the results also showed the butanol yield and butanol productivity at 0.33 and 0.22 g l⁻¹ h⁻¹, respectively. This condition enhanced the butanol concentration, yield and productivity when compared with the control medium.

Keywords: *Clostridium beijerinckii* TISTR 1461, butanol, molasses, yeast extract