Characterization of ethanol production from sweet sorghum syrup in fed-batch fermentation by *Saccahromyces cerevisiae*

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Sweet sorghum is attractive plant for bio-ethanol production that has a high concentration of soluble sugars. Fermentable sugars in sweet sorghum juice can be easily contaminated in a few days at room temperature. In this study, concentrated sweet sorghum syrup containing total sugar concentration of 71 Brix, was used as an ethanol fermentation medium. The substrate feeding strategy was one time feeding at the initial working volumes of 50 and 75% of the total working volume. The fed-batch fermentation was carried out in batch mode for 24h, and then added sweet sorghum syrup was diluted with water according to sugar concentration, into reactor by feeding pump. The effects of different concentrations of sweet sorghum syrup as feeding substrate on ethanol fermentation were investigated for fed-batch fermentation. In fed-batch fermentation, the ethanol concentration and productivity were 91.8 g/L, and 1.28 g/L/h respectively after 72h of fermentation with adding of 25% substrate (concentration of 71 Brix). In the fed-batch fermentation with adding of 50% substrate (concentration of 50 Brix), 102.1 g/L of ethanol concentration were obtained after 96 h fermentation.