

Evaluation of ethanol production from sweet sorghum syrup by *Saccharomyces cerevisiae* under optimum fermentation conditions

박유리, 차영록*, 김중곤, 최용환, 구분철, 박광근
농촌진흥청 국립식량과학원 바이오에너지작물센터
(biocha@korea.kr*)

Sweet sorghum is attractive plant for bioethanol production because that has a high concentration of soluble sugars. Fermentable sugars in sweet sorghum juice are easily converted to ethanol. In this study, concentrated sweet sorghum syrup containing total sugar concentration of 71 Brix, was diluted with distilled water and used as an ethanol production medium. Our previous study optimized initial total sugar concentration of substrate, aeration time and aeration rate on ethanol production for efficient fermentation from sweet sorghum juice. The results revealed that initial total sugar concentration of 21.2 Brix, aeration time of 7.66 hours and aeration rate of 1.22 vvm were the optimal conditions for maximizing the ethanol production. Under these conditions, 92.98% of ethanol yield was obtained after 48h of fermentation without additional nitrogen source in the ethanol production medium at the 5 L reactor (2 L of working volume). For evaluation of ethanol production, scale up of batch was performed in 150 L reactor (100 L of working volume). Ethanol concentration, yield and productivity in a 150 L reactor under the above optimum conditions were 92.16 g/L, 98.54% and 1.92 g/L/h, respectively.