

ABSTRACT

In the present investigation, three strains of *Saccharomyces cerevisiae* were obtained from the available stock culture of *Institute of Industrial Biotechnology, Government College University, Lahore* while one was isolated from Young's dried yeast and screened for ethanol fermentation. *Saccharomyces cerevisiae* strain GCUS-3 being a hyper producer was selected for the optimization of cultural conditions and nutritional requirements in 500 ml cotton plugged Erlenmeyer flasks containing 300 ml of fermentation medium. Sulfuric acid treated cane molasses medium containing sugar 150.0 g/l was used as the basal medium. Different cultural conditions such as initial pH (4.5), nitrogen [1.0 g/l $(\text{NH}_4)_2\text{SO}_4$], phosphorus (1.0 g/l KH_2PO_4), magnesium (3.0 g/l MgSO_4) and metal complexing agent (1.0 g/l EDTA) were optimized for the ethanol production. Vegetative inoculum at a level of 15.0 % (v/v) was found to be the best for production of ethanol. Optimal incubation time was found to be 72 h after the inoculation. Ethanol production was increased from 58.56 ± 1.19 g/l to 78.80 ± 1.05 g/l after optimization of the cultural conditions, which was 1.34 fold higher.