

PRELIMINARY STUDIES ON LARGE SCALE PRODUCTION OF YEAST CELL MASS**Vasanthi Arasaratnam, A. Senthuran and K. Balasubramaniam****(Department of Biochemistry, Faculty of Medicine, University of Jaffna.)**

The influence of aeration on yeast cell mass production was studied in fed-batch culture with two different nitrogen concentrations while mixing at room temperature. Glucose level in the medium was maintained at 30g l^{-1} by adding glucose syrup at appropriate time intervals. When the yeast was grown in the medium containing 30g l^{-1} glucose and 1.4g l^{-1} elemental nitrogen while aerating at the rate of $40\text{ bubbles min}^{-1}$ and $120\text{ bubbles min}^{-1}$, cell mass (dry weight) formed was 6.1g l^{-1} and 7.8g l^{-1} respectively. In the above conditions ethanol produced was 35.6g l^{-1} and 26g l^{-1} respectively and the efficiencies of substrate utilized for ethanol and cell mass production were 81.5% and 92.5% respectively. To the above medium addition of 1.15g l^{-1} peptone (having 1.6g l^{-1} elemental nitrogen) further increased the cell mass to 13.5g l^{-1} and 16.5g l^{-1} at $40\text{ bubbles min}^{-1}$ and $120\text{ bubbles min}^{-1}$ aeration rates, while decreasing the ethanol production to 22g l^{-1} and 12g l^{-1} respectively. When the glucose concentration was increased to 150g l^{-1} with the increased elemental nitrogen level in the medium at $120\text{ bubbles min}^{-1}$ aeration rate, 15g l^{-1} cell mass and 41.4g l^{-1} ethanol were produced. Therefore increase in glucose concentration has lead to an increase in ethanol production while decreasing the cell mass. Hence to obtain higher cell mass the glucose concentration should be maintained at 30g l^{-1} while aerating at $120\text{ bubbles min}^{-1}$.
