

# OPTIMIZATION OF CULTURE CONDITIONS FOR BAKER'S YEAST CELL MASS PRODUCTION- A PRELIMINARY STUDY

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## ABSTRACT

The aim of this study was to find out suitable culture conditions to improve the cell mass production of *Saccharomyces cerevisiae*. *S.cerevisiae* was grown in a medium(30<sup>0</sup>C, pH 5.0) with sucrose (Table sugar) from 10 to 50 g/L<sup>-1</sup> along with (g/L<sup>-1</sup>) yeast extract (2.5), bacteriological peptone(1.15), NH<sub>4</sub>HPO<sub>4</sub>(0.25) and MgSO<sub>4</sub>.7H<sub>2</sub>O(0.025). Highest cell mass of 4.43 g/L<sup>-1</sup> was obtained in the medium with 50 g/L<sup>-1</sup> of sucrose. When the oxygen supply and diffusion were improved by either, mixing in a shaker (100rpm), by an impellor (100 rpm) or aeration (100 bubbles/min), highest cell mass (4.52 g/L<sup>-1</sup>) was obtained with aeration. Increase in aeration rate to 200bubbles/min increased the yeast cell mass to 5.41 g/L<sup>-1</sup>. For volumetric scaling up, medium to flask volume ratio was maintained as 1:2, in 1,2,3 and 5 L flasks, and the highest cell mass (5.53 g/L<sup>-1</sup>) was produced in 2L flask. By optimizing the culture conditions the yeast cell mass production was increased by 1.25 times.

*Keywords:* Baker's yeast, Cell mass production, Aeration, Reaction volume ratio