

OPTIMIZATION OF INVERTASE PRODUCTION BY YEAST STRAINS FROM THE GENUS *SACCHAROMYCES*

— research paper —

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Abstract: This paper investigates the influence of vitamins and zinc acetate on the synthesis of the enzyme invertase by nine yeast strains belonging to the genus *Saccharomyces*, namely species *Sacch. carlsbergensis* (beer yeast), *Sacch. cerevisiae* (bread yeast) and *Sacch. ellipsoideus* (wine yeast). From each yeast species, one strain was provided by collections of specialized centers and other two strains were isolated and selected from industrial microbiota belonging to the genus *Saccharomyces*. Invertase activity of yeast strains of different origins was determined by using the Schoorl chemical method. Three solutions for the improvement of the cultivation broth were tested: the addition of a vitamins complex (1 ml/l), the addition of 5 mg/l zinc acetate and the addition of both vitamins complex and zinc acetate. The results obtained in this study show that the invertase activity of the nine strains of yeast *Saccharomyces* studied increase with the supplementation of the nutritive substrate with each of the solutions tested. The highest invertase activity is obtained on a culture medium enriched with vitamins complex combined with $(\text{CH}_3\text{COO})_2\text{Zn}$, followed by vitamins complex; the addition of zinc acetate doesn't influences greatly the enzyme production. No big differences in the enzyme synthesis are observed for yeasts from the same specie. As invertase producer, the yeast SCHCCBM 307 (from the Biotechnology and Microbiology Research Center at Lucian Blaga University in Sibiu) was the best on the control substrate (malt wort) and on the substrate enriched with both vitamins and acetate and the yeast SEJ 103 (from the Jidvei Center) was the best on media enriched only with vitamins.

Key words: Yeast, vitamins, malt wort, $(\text{CH}_3\text{COO})_2\text{Zn}$

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