

Optimization of Riboflavin Production by Yeasts Isolated from Environmental Sources

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Background & Objectives: Besides introducing a productive strain, designing an appropriate fermentation medium is of crucial importance to improve the efficiency and productivity of riboflavin fermentation process because medium composition can significantly affect yield, the ease and cost of downstream product separation. One of the main purposes of this study is to investigate the effect of different sources of carbon and nitrogen on riboflavin production.

Methods: In current research, yeasts were isolated from various environmental sources and all colonies were examined for riboflavin production. Then spectrophotometer, TLC and HPLC was used to identify and analysis this vitamin in the production medium. After determination of the best producer between all of strains with these Methods, Inorder to determine the best sources for production, different carbon and nitrogen sources were evaluated. Sucrose, lactose, carboxy methyl cellulose and starch as carbon sources, and peptone, trypton, yeast extract, meat extract and potassium nitrate as nitrogen sources were tested. After selection the best sources, different concentration were added to production medium.

Results: Results showed that yeast extract 0.7% was the best nitrogen sources but sucrose for some strains and lactose for others were the best carbon sources. Potassium nitrate and starch had no effect on riboflavin production.

Conclusion: There are many factors that affect riboflavin biosynthesis, which varies in each microorganism. The conventional Methods that has been used for optimization of riboflavin production is the one-factor-at-a-time approach in which a single factor is varied while fixing all others at a specific level, so in our study “one-at-a-time” experiment was done to work on the effect of selected carbon and nitrogen sources on production.

Keywords: Yeast; Riboflavin Production; Optimization; Carbon and Nitrogen Sources