

Comparison of Production of Total Carotenoids and Cell Growth in Strain of Yeast Isolated From Natural Habitat, in Two Broth Mediums of YM and MMS

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Background & Objectives: Yeasts are common members of aquatic environments and carotenogenic yeasts are even present in marine and freshwater oligotrophic habitats. Carotenoids are natural pigments which play an important role in protecting cell and organism. Composition of cultivation medium can influence the production of total Carotenoids and cell growth. This work aimed at comparing values of growth and production of total carotenoids produced by a strain of yeast which separated from leather tanning wastewater, in two broth mediums: YM and MMS. (Yeast-malt extract medium, Semi-synthetic medium).

Methods: Biomass was determined by optical density using a spectrophotometer at 600 nm. To isolate the carotenoid pigment, cells were suspended in acetone and broken using a homogenizer, followed by centrifugation. The supernatant was separated and process was repeated 5 times. For analytical methods pigments were measured spectrophotometrically at 450 nm using the extinction coefficient $E_{1\%}^{1\text{cm}}_{450}=2500$.

Results: The results show that the amount of cell growth in YM broth was higher than MMS broth, whereas the content of total carotenoid in YM broth was less.

Conclusion: The significant positive effects of malt and yeast extract in amount of cell growth were evaluated in other studies. However in the case of yeast, also the affirmative possessions of two mentioned material in the concentrations of total carotenoid were indicated. However, in general the maximum rates of total carotenoid are not directly associated to the maximum amount of cell biomass. This case, the existence of former material in YM broth caused higher amount of biomass, but the superior concentration of total carotenoid in MMS broth maybe derived from the presence of mineral composition.

Keywords: Biomass; Carotenoid; Yeast; Spectrophotometer