

PRODUCTION OF EXTRACELLULAR ACID PROTEASE AND CAROTENOIDS FROM THE ANTARCTIC YEAST *RHODOTORULA MUCILAGINOSA* L7

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In the last decades, several psychrotrophic microorganisms have been screened for production, purification and characterization of enzymes of industrial interest, because of their high catalytic activity at low temperatures and low thermostability at high temperatures. Such characteristics make them suitable candidates for biotechnological applications, especially those that require a supply of exogenous energy or that are exposed to high risk of microbial contamination or temperature instability of reactants or products. In this work, were evaluated the production of proteases released by *Rhodotorula mucilaginosa* L7, which was isolated from an Antarctic marine alga and previously selected among others based on the capacity to produce the highest extracellular proteolytic activity in preliminary tests. Moreover, carotenoids biosynthesis is characteristic of yeasts from the genus *Rhodotorula*. Therefore, the objective of the present work was to optimize the protease and carotenoids production in bioreactors. Protease production by *R. mucilaginosa* L7 was dependent on the medium composition and became optimal when glucose and peptone were used as the nitrogen and carbon sources. Moreover, the production of proteases and carotenoids were proportional to the yeast growth. Through KLa variation, the best condition for protease and carotenoids production was: agitation of 500 rpm, aeration of 1.5 vvm, during 48 h at 25 °C. These results are of interest for future studies and may lead to potential biotechnological applications.

Keywords: cold-adapted yeast, extracellular protease, carotenoids.

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