

EFFECT OF LIGHT AND TEMPERATURE ON CAROTENOGENESIS BY *RHODOTORULA MUCILAGINOSA*

Iriani R. Maldonade, Delia B. Rodriguez-Amaya, Adilma R. P. Scamparini. Embrapa Vegetables, CP 218, CEP 70359-970, Brasília, Distrito Federal, and University of Campinas, Faculty of Food Engineering, CP 6121, CEP 13081-862 Campinas, SP, Brazil.

Carotenoids are natural pigments responsible for the pleasing yellow, orange and red colour of many foods, a property that makes them important to food quality. Some of these compounds are precursors of vitamin A, the deficiency of which persists as a serious public health problem in developing countries. The present work had the objective of studying the effect of temperature and light on the production of carotenoids by wild *Rhodotorula mucilaginosa*, isolated in Brazil, using central composite design (CCD). A factorial 2^2 experimental design was used, with three levels: temperature (20, 25 and 30°C) and incidence of light (0, 150 and 300 lux). Fermentation assays were carried out using 500 mL Erlenmeyer flasks with 200 mL of YM medium. Each flask was inoculated with 7.5% (v/v) of inoculum and was incubated at 200 rpm in a rotary shaker for 5 days. The carotenoids profile was determined by HPLC. As compared to carotenoid production in the dark, a moderate increase was observed in the total carotenoid produced under light at the same temperatures. More importantly, exposition to light at higher temperature (30°C), shifted carotenogenesis to the production of torulene, while at 20°C in the presence of light, there was an increase in the production of β -carotene. Torulene can become an important carotenoid for commercial use because it has provitamin A activity, it should be an effective antioxidant because it has 13 conjugated double bonds (compared to 11 in β -carotene) and it has a vivid pinkish red colour.