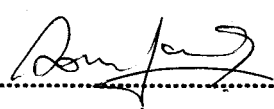


KANJANA MAHATTANATAVEE : PRODUCTION OF β -CAROTENE BY *Rhodotorula* sp. Y1621. THESIS ADVISOR : ASSO. PROF. SONGSRI KULPREECHA. 155 PP. ISBN 974-579-243-8

A yeast, *Rhodotorula* sp. Y1621 was selected from 2 strains of bacteria, 2 strains of mold, and 9 strains of yeast for the investigation of β -carotene production. Followings are the optimal conditions for β -carotene production in shaking flask culture : hydrolysed starch (3% reducing sugar) and hydrolysate of soybean meal (0.05 % N) as the suitable carbon and nitrogen source respectively; the optimal temperature of 25⁰-30⁰C; the initial pH of culture medium at 5-6; and agitation speed of the incubator shaker at 200-300 rpm. The amount of synthesized pigment increased with the addition of thiamine; 0.05 mg/L, FeSO₄.7H₂O; 0.2 mg/L, CuSO₄.5H₂O; 0.1 mg/L and ZnSO₄.7H₂O; 0.4 mg/L of which the highest yield is 450 μ g/g dried cells. No detection of the increasing amount of β -carotene when the cells were transferred to buffer solution (pH 2-9); however, addition of 0.2 g/L antioxidant to the culture medium and cultivation in illumination condition of 1000 luxes enhanced the pigment formation up to 685.09 μ g/g dried cells. Furthermore, *Rhodotorula* sp. Y1621 cultivated in a 5 L fermenter under the following conditions: temperature; 28⁰C, aeration rate; 1.0 vvm, agitation speed; 450 rpm, initial pH 6.0 and 2.5 at the end , 0.2 g/L of antioxidant, and under illumination condition of 1000 luxes, leaded to the higher amount of β -carotene (1612.50 μ g/g dried cells) and the shorter cultivation time (36 hr) than shaking flask condition.

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