

Improvement of Carotenoid-Synthesizing Yeast *Rhodotorula rubra* by Chemical Mutagenesis

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A mutant *Rhodotorula rubra* with enhanced carotenoid-synthesizing activity for synthesizing total carotenoids and β -carotene was obtained by N-methyl-N'-nitro-N-nitrosoguanidine mutagenesis. When co-cultivated with yogurt starter bacteria (*Lactobacillus bulgaricus* + *Streptococcus thermophilus*) in whey ultrafiltrate it produced 15.7 mg total carotenoids l⁻¹ culture fluid or 946 μ g total carotenoids g⁻¹ dry cells of which 71% was β -carotene. Grown as a monoculture in glucose substrate, the mutant shown 1.4 times lower carotenoid-synthesizing activity, and the relative share of β -carotene in the total carotenoids was lower (63%). The individual pigments torulene and torularhodin were identified, whose mass fractions were (29% and 7%) and (24% and 4%), respectively, for the mutant grown as a monoculture and as a mixed culture with the yogurt bacteria.

Key words: Carotenogenesis Improvement, N-methyl-N'-nitro-N-nitrosoguanidine, *Rhodotorula rubra*