Genetic transformation of astaxanthin mutants of Phaffia rhodozyma

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Stable red astaxanthin-producing transformants were obtained after genetic transformation of two Phaffia rhodozyma mutants. A yellow mutant, accumulating ?-carotene, and an albino mutant, accumulating phytoene, from P. rhodozyma were transformed using a genomic library of wild-type strain UCD 67-385 in the pBluescript vector. Hybridization assays, using the pBluescript DNA as a radioactive probe, indicate integration of vector sequences into the genome of the transformants. Transformants DNA was digested with restriction endonucleases, ligated with T4 DNA ligase and then used to transform E. coli. Ampicillin resistant plasmids, containing 0.1, 0.2, and 2.5 kb DNA inserts of P. rhodozyma, were rescued from the yeast red transformants. The molecular analysis indicate that transformation has occurred by an integration event of donor DNA into the genome of the host strains.