

INTRASPECIES PROTOPLAST FUSION PROCESS OF *Dunaliella salina*

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Abstract

Carotenoids are natural pigments found in some organisms and serve as photoprotector, photoabsorbent, attractant and required in reproduction processes. Carotenoids are often used as food supplement for improving health, protecting against diseases and preventing of several chronic diseases. Green microalgae produce carotenoids and can be manipulated easily by protoplast fusion to induce a genetic recombination. The research was conducted to obtain some recombinants of *Dunaliella salina* carrying a higher carotenoid production. Intraspecies protoplas fusion of *Dunaliella salina* was carried out by protoplast isolation, protoplast fusion and protoplast regeneration. Protoplasts were prepared by removing the cell wall using lisozymes. A fusogenic agent polyethylene glycol (PEG) was used to induce the fusion and transient hybrids or diploids formation. During this hybrid state, the genomes of chromosom would reassort which lead to a genetic recombination. Microscopic and colony analysis will used to confirm positive regenerate protoplast. Several condition supporting the protoplast fusion were also measured. The result revealed that conversion of the cells of to protoplasts was about 80% . The optimum pH for protoplast isolation was 6.0 and the optimum pH was 7.2. The fusion of microalgae protoplast was optimum with 35% of PEG addition. The regeneration of the protoplast was almost 100% with some of them having diploids formation. Most colonies of the recombinant having faster growth suggesting the positive result of potential strain.

Keywords : carotenoid, protoplant fusion, *Dunaliella salina*, recombinant