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## Over expression of phytoene desaturase and phytoene synthase genes in some species of eukaryotic fresh water alga

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Carotenoids are prooxidant and essential for photosynthetic green plants, algae and cyanobacteria. They serve as regulators of plant growth and development, as accessory pigments in photosynthesis, photo protectors preventing photo-oxidative damage, and precursors of some hormone such as abscisic acid (ABA). The accumulation of carotenes depends on a series of isoprene condensations, followed by a series of desaturations of the polyene chain and subsequent cyclization of the end structures. These processes are regulated by the expression of two genes phytoene synthase (PYS) and phytoene desaturase (PDS). Their activities are regulated by light. The carotenoid biosynthetic is amenable to manipulation by recombinant DNA techniques. Most synthesis carotenoids required sharing of the two enzymes phytoene synthase and phytoene desaturase. In the present study the coding sequences of the two genes PYS and PDS were cloned into two expression vectors and transformed into the unicellular green alga *Chlamydomonas reinhardtii* via *Agrobacterium tumefaciens*. Analysis of PYS and PDS mRNA transcripts and protein analysis showed that the two genes are functionally expressed in the transformed algal cells. Moreover, the overexpression of the two genes are manifested under some chemicals affecting the process of carotogenesis.

**Keywords:** *Agrobacterium tumefaciens*, Carotenoids, *Chlamydomonas reinhardtii*, phytoene synthase, phytoene desaturase, SDS-Electrophoreses, Transformation, RT-PCR.

### Biography

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