

Recent Development in the microalgal production of omega-3, omega-6 acids and PUFAs

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ABSTRACT

Fishes are the primary source of fatty acids. With the increasing demand of fatty acids due to their significant health benefits for humans, we have a problem of overfishing. Various other sources of omega-3, omega-6 and polyunsaturated fatty acids have been explored by researchers. Microalgae suits the best eco-friendly alternative to overfishing. Numerous microalgal species have been reported to produce Poly-unsaturated-fatty acids (PUFAs). Eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA) are the members of omega-3 fatty acids which play an important role in the prevention of various diseases. Through various biotechnological interventions researchers have been able to increase the EPA and DHA content and productivity in microalgae. Some marine algae such as *Schizochytrium* sp., *Phaeodactylum* sp. are able to accumulate 49.2% DHA of total lipid content. Overexpression of heterologous enzymes have helped in increasing accumulation EPA and neutral lipid content. Various factors play a key role in EPA and DHA content increment such as LED colour in photo bioreactors, nitrogen & phosphorus substrate concentrations. To fulfil the rising EPA and DHA demand, further developments are required to decrease production cost and product yield by using inexpensive substrates and high yielding microbe strains.

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