

## Algae: A Health Promoting Supplement

Plants and microalgae stored lipids. The health-promoting effect of long-chain polyunsaturated fatty acids are widely recognized. Alpha-linolenic, eicosapentaenoic (EPA) and docosahexaenoic acids (DHA) are linked to the regulation of mechanisms involved in numerous biological functions associated with cardiovascular disease and cancer prevention. At present EPA and DHA sources for human nutrition are originated from marine fish. There is a need for research directed towards sustainable omega-3 production.

Microalgal source EPA and DHA have enormous potential for omega-3 production. Microalgae enriched biomass can be formulated with fish feed, which will provide EPA, DHA along with protein and carbohydrates. To satisfy the demand of EPA and DHA, cost-effective microalgae production process have to be developed. However, only a few algal species produce EPA and DHA. Also, the biomass production cost, efficient extraction of the process is costly.

High-density microalgae biomass can be cultured in heterotrophic cultivation mode using organic carbon sources. In heterotrophic cultivation mode the elimination of light requirements which can be expensive and limit the growth of cell cultures. Heterotrophic cultivation can be carried out in existing industry scale fermenter.

### Advantages:

1. The microalgae *Desmodesmus subspicatus* can be cultured in heterotrophic and autotrophic cultivation mode in axenic condition.
2. It can be cultured in stainless steel fermentor. The process can be scaled up at industrial scale production.
3. The biomass productivity is 5 times higher than autotrophic cultivation mode.
4. It can be produced in industrial scale fermenter. Hence, it can be available throughout the year.
5. Protein and carbohydrates content 39.78 and 30%, respectively. Ca (0.64 ppm), NaCl (0.75 ppm), K (0.235 ppm). P (0.12 ppm).
6. Presence of Lutein, beta carotenoids, and antioxidant properties.

