

Biotechnological alternatives for omega-3 polyunsaturated fatty acids production

Alternativas biotecnológicas para la producción de ácidos grasos poliinsaturados omega-3

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Fish oils are the main sources of omega-3 (ω 3) polyunsaturated acids (PUFA) such as eicosapentaenoic (C20:5 ω 3) and docosahexaenoic (C22:6 ω 3) acids. World demand for ω 3 PUFA shows an increasing trend mainly due to the growth of the aquaculture industry and also due to the increasing demand for specific PUFA used as food supplements. Bacteria, fungi, microalgae and thraustochytrids are biotechnological PUFA alternatives to fish oils. These sources are characterized by specific PUFA profiles whose productivity depends on strain and growth conditions. PUFA content in bacteria is low; microalgae synthesize mixtures of PUFA; fungi system productivity is low due to long fermentation times. In heterotrophic cultures of thraustochytrids high concentrations of PUFA can be obtained. Moreover, many strains are able to synthesize a single ω 3 PUFA. The optimization of fermentation systems and the development of technology capable of large-scale production are needed in order to make these alternative