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GC-MS analysis of the lipid profile of Lebanese algae isolates

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The Fatty Acid Methyl Esters (FAMES) profiles of eight isolates of unialgal samples, collected from various locations along the Lebanese coast, were determined using GC-MS analysis. The eight isolates were cultured in 20 L flat photo-bioreactors containing seawater fertilized with Guillard's F/2 medium. After studying the growth dynamics and the dry matter yield of each isolate, the FAMES profiles were conducted using two main steps: Extraction of the lipid fraction followed by derivatization to the desired FAMES and the determination of fatty acid profiles after simultaneous washes with water. The profiles were carried out using a Thermo Gas Chromatograph equipped with an automatic injector (Triplus AS) and a Mass Spectroscopy detector (MS). The palmitic acid, linoleic acid, linolenic acid and eicosapentanoic acid are common to all eight isolates, and other fatty acids are also present in minor percentages. The percentages of saturated, monounsaturated and polyunsaturated fatty acids varied among isolates. The best microalgal isolate tested gave an Omega-3 FA percentage of around 18%, which seems to be useful for providing significant health benefits, as dietary supplements, and for medical purposes. To improve the percentage of PUFA on isolates, other studies are in progress for the optimization of culture conditions, and the search of new monoalgal samples having high percentages of PUFA.

Biography

Youssef Mouneimne has completed his Dr of engineering (1984) and Ph.D in applied chemistry (1986) from Claude Bernard Lyon I University. He worked as research scientist at the "centre de biophysique moleculaire, CNRS" in Orleans, then at Texas A&M university, Baylor and Harvard University. He invented the electroinsertion of proteins into cell membrane and the flow electroporation system for drug delivery, among many other inventions. Actually he is the director of the Central research laboratory at the American university of Beirut. He is actually involved in many research project including extraction of biofuel and other chemicals from algae, analysis of BPA and sodium in food, Benz[O] Pyrine metabolomics.

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