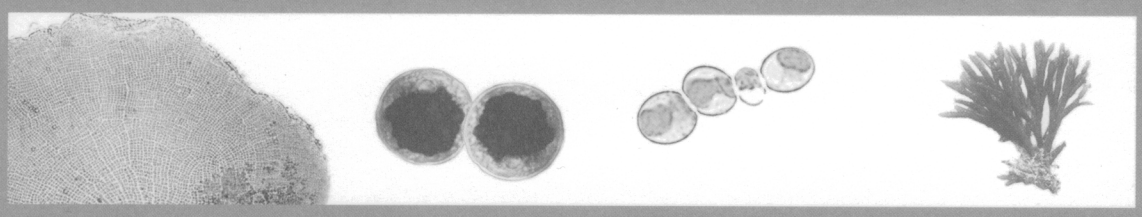


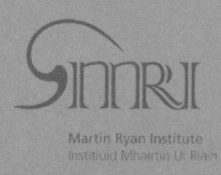
11th International Conference on Applied Phycology, Galway, Ireland, June 21-27, 2008

Applied phycology in the 21st century;
novel opportunities in a changing world

Program & Abstracts



Organised by
International Society for Applied Phycology
National University of Ireland, Galway
Irish Seaweed Centre, MRI



174. DERIVATIZATION METHODS FOR GAS-CHROMATOGRAPHIC ANALYSIS OF MARINE LIPIDS: INSIGHT STUDIES

Carvalho, A. P. and Malcata, F. X.

Escola Superior de Biotecnologia, Universidade Católica Portuguesa, Rua Dr. António Bernardino de Almeida, P-4200-072 Porto, Portugal

Analysis of fatty acid composition of biological materials is commonly carried out by gas chromatography, after derivatization of lipid material to their corresponding methyl esters (FAME). Most literature pertinent to derivatization methods is focused in differential comparison between alternative methods: however, this does not provide a fundamental understanding of the relative importance of each factor throughout the derivatization reaction, which would be required to improve existing methods via a rational framework. In this work, the influence of the parameters affecting each step of derivatization reactions were studied, using both cod liver oil and microalgal biomass as model systems. The accuracy of the methodologies was tested via comparison with the AOCS standard method, whereas their reproducibility was assessed via analysis of variance of replicated data.

Alkaline catalysts generated lower levels of FAME than acidic ones. Among these, acetyl chloride and BF_3 were statistically equivalent, as well as the standard method (which involves alkaline treatment of the samples before methylation with BF_3) when compared with the methylation with BF_3 alone. Polarity of the reaction medium was found to be of the utmost importance in the process: intermediate values of polarity (*e.g.* obtained by a mixture of methanol with diethyl ether or with toluene) provided amounts of extracted fatty acids statistically higher than those obtained when the standard method.