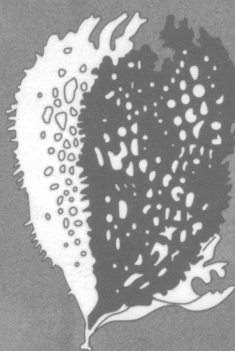


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**SEAWEEDS: SCIENCE AND TECHNOLOGY
FOR SUSTAINABLE INDUSTRY**



PROGRAMME & ABSTRACTS

Co-hosted by the University of Cape Town and Marine and Coastal Management Branch
of the Department of Environmental Affairs and Tourism.

1.4.2 Carvalho AP, Meireles LA & Malcata FX. Escola Superior de Biotecnologia, Universidade Católica Portuguesa, Porto, Portugal. **ON THE FACILE DETERMINATION OF NITRATE IN CULTURES OF MICROALGAE**

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Docosahexaenoic and eicosapentaenoic acids are extremely important polyunsaturated fatty acids (PUFA) for the human organism, owing to their biological role in the retina and brain tissues of the fetus, and as precursor of biological regulators, respectively. Although fish oil is an abundant source of PUFA, its unpredictability of supply and potential contamination when fish is captured in-shore have constrained its use as functional ingredient. On the contrary, microalgae have been claimed to possess the potential to surpass such disadvantages: some species are very rich in PUFA, and their content can be modulated through specific variations in the culturing conditions, in fermentors; these allow essentially constant rates of production to be assumed, irrespective of weather conditions or geographical source.

In order to optimize PUFA production rates in a fermentor, strict control of several parameters should be performed. Since nitrogen is, second to carbon, the most important nutrient for microalgae, and since there is a direct relationship between biosynthesis of lipids and the nitrogen content of the medium, determination of the amounts of nitrogen available for microalgal cell growth (usually in the form of nitrate) is necessary.

Quantification of nitrate in the culture media is usually complex due to the interference by nitrite. Therefore, in order to quantify nitrate in a sample also containing nitrite, one of the following two approaches is possible: either nitrite is removed from the sample, or it is co-assayed for. Several methods using the former approach (Cawse and Sulphamic acid methods) and the latter (Cadmium column method) were tested and comparatively discussed. Because of the several limitations imposed by those methods, an alternative method, based on the spectrophotometric determination of both nitrate and nitrite, was designed and tested.