



IV Iberian Congress on Biotechnology
I Ibero-American Meeting on Biotechnology

BIOTEC'98

BOOK OF ABSTRACTS

Edited by

MANUEL MOTA and EUGÉNIO C. FERREIRA

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Carbon Dioxide and Microalgae: Its Influence on Growth and Fatty Acid Composition of *Phaeodactylum tricornutum*

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Microalgae that grow chymo- or photolithotrophically use carbon sources of inorganic nature, usually soluble CO₂ or HCO₃⁻, to synthesize *de novo* their organic carbon compounds. Nevertheless, the relationships between increase in the concentration of available inorganic carbon and the consequent change in biomass productivity are different between species. Furthermore, saturation of the endocellular fatty acid residues can be induced by increases in CO₂ concentration during growth in some (but not all) species.

In the present study, the effects of CO₂ upon biomass yield and fatty acid profile of *Phaeodactylum tricornutum*, a marine microalga, were ascertained via supplementation of a buffered culture medium with 0, 1 and 2% (v/v) CO₂. Biomass yields were increased proportionally to increases in CO₂ concentration, although statistically significant differences (at the 5% significance level) could only be observed after 15 days of incubation and between cultures with and without CO₂, irrespective of the concentration of gas added. Analysis of the fatty acid profile revealed consistent trends in the fractional concentration of some fatty acids (especially of the polyunsaturated type) and the amount of CO₂.