



“Gheorghe Asachi” Technical University of Iasi, Romania



P71

***Chlorella vulgaris* GROWTH IN PHOTOBIOREACTOR UNDER DIFFERENT LIGHT INTENSITIES AND DILUTION RATES**

**Bahar Aliakbarian, Alessandro A. Casazza, Erika J. Ortiz Montoya,
Patrizia Perego, Attilio Converti**

Chemical and Process Engineering Department “G.B. Bonino”, Genoa University, via Opera Pia 15, 16145 Genoa, Italy

Abstract

Biomass from microalgae (*Chlorella vulgaris*) can be used in food and pharmaceutical industries as well as bioenergy sectors to produce biofuels. *C. vulgaris* can also be used in environmental fields in order to remove CO₂ and also wastewater treatment (phytodepuration).

To such a purpose growing microalgae studies in photobioreactors are of great industrial concern. In this work the effect of different light intensities (36, 72 and 108 μE m⁻²s⁻¹) and dilution rates (0.1, 0.2 and 0.3 day⁻¹) were investigated using semicontinuous cultivation. During the growth the pH value was maintained fewer than 7.8 using carbon dioxide. Spectrophotometric analyses were used to determine biomass concentration. The lipid content and the lipid composition of dry biomass were quantified by gas chromatography.

The results of this study demonstrated that *C. vulgaris* grows efficiently in semicontinuous culture. The highest productivity (0.40 g L⁻¹ d⁻¹) was obtained at dilution rate of 0.3 day⁻¹ and 72 μE m⁻²s⁻¹ of light intensity.

Total lipid contents resulted to be 3.35, 5.42 and 10.15 g_{lipids} 100g⁻¹ dry biomass at 36, 72 and 108 μE m⁻²s⁻¹, respectively.

Form the results it can be concluded that increasing light intensity resulted to decrement of cell productivity with enhanced lipid content.
