

CHANGES IN MALONDIALDEHYDE AND PIGMENT CONTENT DURING GROWTH OF MARINE MICROALGA *TETRASELMIS GRACILIS*

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In a unialgal culture, essential nutrients decline and metabolic toxins increase in the culture medium as the algal populations attain stationary growth phase. Moreover, with increasing cell density, light may become a limiting factor, causing changes in the contents of pigments. Cultures of *Tetraselmis gracilis* were inoculated in culture medium (1×10^4 cells/ml) and samples were followed after 3 days and 21 days. Cell densities were estimated by means of microscopic counts in haemocytometers and by chlorophyll-a fluorescence showing that both results were very similar. Oxidative damage in lipids was measured by contents of malondialdehyde (MDA) by means of MDA-TBA complex, analysed by HPLC with fluorescence detection; the cultures in the stationary phase showed a decrease of 41% in the MDA content ($0.014 \mu\text{mol/mg}$ dry weight) compared to the exponential phase ($0.023 \mu\text{mol/mg}$ dry weight), which presents an intense photosynthetic activity. In addition, the pigments neoxanthin, violaxanthin, lutein, chlorophyll-a, chlorophyll-b and β -carotene were resolved and identified by HPLC with UV/VIS detection. Each pigment displayed an increase in the stationary phase; for example, chlorophyll-b showed $3.48 \mu\text{g/mg}$ dry weight for day 3 and $24.26 \mu\text{g/mg}$ dry weight for day 21. This could be related to photoacclimation to shading conditions due to increases in cell density.

Keywords: MDA, microalgae, pigments, *Tetraselmis gracilis*

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