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Parameter Estimation of Photosynthetic Mechanisms in *Heterosigma akashiwo*

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In the context of CO_2 fixation potential by micro algae, effects of different light intensities on *Heterosigma akashiwo* were studied. The main factor affecting the CO_2 uptakeis the photosynthetic apparatus which is affected by light intensity. The photosynthetic parameters are characterized by values like zero fluorescence level (F_0), maximum fluorescence (F_m) and efficiency of Photosystem II (F_v/F_m). These values and the cell concentration are the main focus of this study. To further study the light inhibiting effect, the lag time was analyzed - the duration of the lag phase. The longer it is, the more light inhibited is the organism. In case of *Heterosigma akashiwo* the lag time decreased with increasing light intensity up to 100 μmol · m^{-2} · s^{-1}. The growth rate increases until 100 μmol · m^{-2} · s^{-1} and the lag time decreases. After that, starting at 150 μmol · m^{-2} · s^{-1} two growth phases were observed. One explanation for that could be that *Heterosigma akashiwo*is exposed to light stress to which it tries to adapt during the first of the two growth phases.

Key words: *Heterosigma akashiwo,* photosynthetic mechanisms, light intensity, lag time

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Toxicity Test with *Chlorella* sp. and *Synechocystis* sp. PCC 6803

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The effect of DCMU (Diuron) and Malachite Green on *Chlorella* sp. and *Synechocystis* sp. PCC 6803 was experimented in this study. The photosynthetic efficiencies were measured with the dual-channel photosynthesis yield analyzer, ToxY-Pam, produced by Heinz Walz GmbH (Effeltrich, Germany) and the cell concentrations were measured by optical density measurement. *Chlorella* sp. reacts more sensitively with the chemicals than Cyanobacteria. The herbicide DCMU shows a high efficiency on *Chlorella*sp. at a concentration above 5 μg · L^{-1} while it does not make big effects on *Synechocystis* sp. PCC 6803. The effect after 1 hour was highest with a maximal inhibition of 10.7% from the concentration of 100 μg · L^{-1}. Malachite Green showed a high efficiency on *Chlorella*sp. with the concentrations higher than 1 mg · L^{-1} and was harmful to *Synechocystis* sp. PCC 6803. One of the main purposes of this study was to test if ToxY-Pam can be used as a new toxicity test method with chemicals above.

Key words: *Chlorella* sp. *Synechocystis* sp. PCC 6803, ToxY-Pam, DCMU, Malachite Green