Measurement of Chlorophyll Fluorescence in Two Cyanobacteria *Anabaena cylindrica* and *Synechocystis* PCC 6803 using PAM Fluorometer and LICF

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Abstract—*Continuous depletion of stratospheric ozone layer, due to release of atmospheric pollutants such as chloroflurocarbons (CFCs), chlorocarbons (CCs), and organobromide (OBs) causing an increased level of ultraviolet radiation (UVR: 280-315 nm) reaches on the earth surface. UVR is a potential abiotic stress negatively affecting crop productivity and living organisms. The cyanobacterial photosynthetic apparatus is the main target of UV-B radiation. Photosystem II is more susceptible to UV-B radiation, because the D1 and D2 reaction centre protein subunits of photosystem II are degraded after UV-B radiation.*

In this present work we have measured the effect UV radiation on chlorophyll fluorescence and electron transfer between photosystem II and photosystem I using PAM (Pulse Amplitude Modulation) and LICF (Laser induced chlorophyll fluorescence) in two cyanobacteria Anabaena cylindrica and Synechocystis PCC 6803. The yield and chlorophyll fluorescence kinetics were used to evaluate the photochemical alteration of photosystem II in term of quantum yield. The present results provide an indication of the degree of damage of UV on the photosynthetic apparatus of tested organism Anabaena cylindrica and Synechocystis PCC 6803. There was a decline of 64 and 36% of quantum yield of PSII after 48 h of UV-B exposure in Anabaena cylindrica and Synechocystis PCC 6803.This result also concluded that PAM fluorometer and LICF may be also the possible device to identify the environmental or UV stress conditions.

Keywords*: Cyanobacteria, PAM (Pulse Amplitude Modulation), LICF (Laser Induced Chlorophyll Fluorescence), Fluorescence kinetics, Photosystem, UV-B radiation.*