

"How *Synechocystis* PCC 6803 copes with acute high light stress"

Myriam Canonico

Institute of Microbiology, CAS, Centrum Algatech, Třeboň, Czech Republic

Faculty of Science, University of South Bohemia, České Budějovice, Czech Republic

Light plays an essential role in photosynthesis but can be harmful for photosynthetic organisms. When the amount of light absorbed by the light-harvesting complexes exceeds the energy consumption, the excess of energy leads to the production of reactive oxygen species (ROS), causing damage to cellular components.

Among the most common model organisms to study the effect of HL stress on phototrophs are the cyanobacteria *Synechocystis* sp. PCC 6803. Biochemical similarities between the plant chloroplasts and *Synechocystis* sp. PCC 6803 make the latter an ideal system for studying the molecular mechanisms underlying stress responses and stress adaptation in higher plants.

We studied the effect of the acute light stress on *Synechocystis* sp. 6803 on a bulk and single cell level. We analyzed the cells from physiology, pigments and protein point of view. We show that, under such intense stress, the cells display uncharacteristic carotenoid accumulation pattern, pointing at flexibility and importance of these pigments in roles beyond simple photoprotection.