EVALUATION OF THE MICROCYSTIN CONTENT AND PROTEIN EXPRESSION IN CHLOROTIC CULTURES IN THE CYANOBACTERIUM *MICROCYSTIS* PCC 7806

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The frequency of cyanobacterial blooms is increasing all over the world. These blooms represent a serious risk of intoxication for the human population, once several cyanobacteria are toxin-producing species. *Microcystis* is the most important liver-damaging microcystin producer. Studies on the physiology of these organisms are important to develop future strategies to combat bloom formation. The aim of this work was to evaluate differences in the microcystin production and protein expression between green and chlorotic *Microcystis* cultures. *Microcystis* PCC 7806 was cultivated on a shaker, with a 16 h photoperiod until chlorotic. Microcystins were extracted from cell pellets with methanol and separated by TLC. Protein expression was evaluated through two-dimensional electrophoresis (2-DE) using 7 cm pH 3.0 -10 IPG. Different from the green cells, chlorotic cells did not contain microcystins. 2-DE of cytosolic fraction from chlorotic cells indicated reduction of the expression of some proteins; on the other hand, a protein with about 26 kDa and pI 7.7 appeared only in these cells. Reduction of the expression of some proteins was observed in the microsomal fraction, but no protein had its expression increased. In conclusion, microcystin content was decreased in chlorotic cells. Besides, differences in protein expression were observed between the phenotypes. Proteins with different expression levels were identified by mass spectrometry.

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