



“Gheorghe Asachi” Technical University of Iasi, Romania



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GROWTH AND TOXIN PRODUCTION OF TOXIC *Microcystis aeruginosa* IN THE PRESENCE AND DOMINANCE OF A NON-TOXIC STRAIN

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Abstract

Among the growing serious problems concerning the quality of surface water is the occurrence of toxin-producing cyanobacteria. During their bloom, *M. aeruginosa* produce microcystins, which have been found in epidemiological studies and animal laboratory tests to cause hepatic damage and promote tumor. With the ultimate goal of developing ways to control the presence of cyanobacterial toxins in surface water, this study aimed to determine the growth and toxin production of toxic *M. aeruginosa* in the presence and dominance of non-toxic *M. aeruginosa* strain. The cell density, nitrate, phosphate, pH, intracellular and extracellular microcystin levels were monitored for 25 days. In the presence of non-toxic strain the cell density of the toxic strain was found to be higher than that in the pure culture of the toxic strain. The extracellular and the intracellular toxin levels in the mixed culture were higher than that of the pure toxic culture. On the other hand, with the dominance of non-toxic strain the result showed that the growth of the toxic strain was even higher in the mixed culture. The extracellular toxin levels in the mixed cultures having much higher ratio of initial cell concentration of the non-toxic strain to toxic strain were higher than the pure culture of the toxic strain. In the presence of the same and higher initial cell concentrations of non-toxic strain, the toxin production of the toxic strain increases as the initial cell ratio of the non-toxic to toxic strain is increased from 1 to 4. Thus, it may be more dangerous if there are different strains of the same species of *M. aeruginosa* blooming together in a water body.
