Measurement of cyanotoxin concentration based on nanostructured sensors

V. Bertucci-Neto[1], N. Consolin-Filho[1, 2], R. F. Pepino[2], E. J. Ferreira[1], L. H. C. Mattoso[1] and A. A. H. Vieira[2]

[1]*Embrapa Instrumentação Agropecuária – Laboratório Nacional de Nanotecnologia Aplicada ao Agronegócio (LNNA), São Carlos – São Paulo – Brazil*

[2]*Universidade Federal de São Carlos – Departamento de Botânica, São Carlos – São Paulo – Brazil*

Cyanotoxins can expose the people to health risks such as severe liver damage, acute poisoning, skin irritation, and gastrointestinal illness. Animals can die or survive accumulating sublethal levels of toxins transferring them to the chain food. Frequently the toxicity of cyanobacteria is strain specific and morphological observations alone can not predict the hazard level. Usually, the most used method for detection of these toxins is the HPLC plus mass spectroscopy. The absence of a field instrument for quick classification and detection of safe concentration of toxins is an apparent lack. The aim of this work is to investigate the behavior of a sensory system based on nanostructured sensors in the presence of different concentrations of cyanotoxin patterns known as *Microcystins.* The measurement system is based on the analysis of the response patterns obtained by the application of an AC signal to the sensors while they are immersed in the medium to be analyzed. Sensors are digitated electrodes sheathed with ultra-thin films made of organic compounds [1]. Each electrode is recovered with a polyaniline layer. Polyaniline (PANI) and its derivatives are conducting polymers, which can be doped by protonic acid leading to great increase in the electrical conductivity and other related properties. These properties can be further changed by the interaction with other compounds, modifying structure, morphology or doping features of the polymer. The work shows the results and discusses the measurement possibility.

Keywords: Cyanotoxins, microcystins, digitated electrodes, sensors

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victor@cnpdia.embrapa.br