

Toxicity and algal blooms. Globalization of cyanotoxins and phycotoxins: risks and opportunities

Toxicidad y florecimientos algales. Globalización de cianotoxinas y ficotoxinas: riesgos y oportunidades

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Eutrophication and global changes have a clear influence on the increasing occurrence of cyanobacterial and algal blooms in freshwater, marine and brackish water environments. The production of toxins by selected species and strains is associated with the majority of the blooms. The increase in the studies in different geographical locations all over the world, and the opportunities given by the more sophisticated methods and equipment for the analysis of cyanotoxins, have enhanced the knowledge on the diversity of the molecules produced by cyanobacteria worldwide. In the last two decades, the number of poisoning incidents caused by marine Harmful Algal Blooms (HABs) has decreased due to the establishment of legislation for seafood consumption and monitoring practices, mainly using bivalves as indicator species. Climate change and anthropogenic intervention increase the difficulty for monitoring, since the opening of new sea canals and the rise of water temperature aid the migration and establishment of toxic alien species from warmer environments to more temperate ones. This results in the settling of emergent toxins like Tetrodotoxin, Ciguatoxins, Palytoxins and Cyclic Imines in the food-webs. Though these phycotoxins are typical from tropical environments, they already have been reported in more temperate ecosystems, causing poisoning incidents. In this talk, we will review the current knowledge on the occurrence of cyanobacteria and algal toxins around the world, with special regard to the invasive species and those responding to global warming. These new knowledge advances demonstrate the need of different approaches, in terms of monitoring strategies, analysis methods, and more importantly, an accurate human risk assessment for the update of more rigorous legislation for consumers protection.

Keywords: harmful algal blooms, cyanobacteria, toxins, global changes, invasive species.