Highly toxic microcystis aeruginosa strain, isolated from São Paulo-Brazil, produce hepatotoxins and paralytic shellfish poison neurotoxins

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While evaluating several laboratory-cultured cyanobacteria strains for the presence of paralytic shellfish poison neurotoxins, the hydrophilic extract of Microcystis aeruginosa strain SPC777-isolated from Billings's reservoir, São Paulo, Brazil-was found to exhibit lethal neurotoxic effect in mouse bioassay. The in vivo test showed symptoms that unambiguously were those produced by PSP. In order to identify the presence of neurotoxins, cells were lyophilized, and the extracts were analyzed by HPLC-FLD and HPLC-MS. HPLC-FLD analysis revealed four main Gonyautoxins: GTX4(47.6%), GTX2(29.5%), GTX1(21.9%), and GTX3(1.0%). HPLC-MS analysis, on other hand, confirmed both epimers, with positive Zwitterions M + 395.9 m/z for GTX3/GTX2 and M + 411 m/z for GTX4/GTX1 epimers. The hepatotoxins (Microcystins) were also evaluated by ELISA and HPLC-MS analyses. Positive immunoreaction was observed by ELISA assay. Alongside, the HPLC-MS analyses revealed the presence of [l-ser 7] MCYST-RR. The N-methy