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Comparison of the HPLC and Protein Phosphatase Assay in the Detection of Cyanobacterial Toxins in the Naktong River Samples

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Bloom formation of hepatotoxins producing species of *Microcystis* has been observed during the summer of 1998 in the Naktong River. Predominant species observed in the bloom material were *Microcystis aeruginosa* (96.6 %), *M. wesenbergii* (3.3 %) and *M. incerta* (0.1 %). Liquid chromatographic analysis of cell samples showed that microcystin-RR (mean ± S.E. 800.46 ± 91.0 μg/g dry weight) was the dominant variant present in the sample. Microcystins are known to be potent inhibitors of protein phosphatases 1 and 2A, which are essential in cellular function. Therefore, one of the most promising methods to determine hepatotoxicity of cyanobacterial blooms is the protein phosphatase assay. These hepatotoxins were detected in the water column at biologically active levels, based on their activity (in microcystin-RR equivalent units) by a highly sensitive protein phosphatase assay system. A comparison between HPLC measurement and protein phosphatase analysis has been made in measuring the concentration of these cyanobacterial toxins. The highest concentration of microcystin-RR in the cell free water was in the range of 1.84 - 2.43 μg/ℓ. This study revealed that a direct comparison between the two methods, HPLC and protein phosphatase assay might not be applicable for all the filed samples.