



节球藻和柱胞藻毒素免疫分析的前处理方法研究

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Ex-treatment of immunoassay method for nodularin and cylindrospermopsins

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摘要 采用固相萃取前处理技术和酶联免疫吸附 (Enzyme-Linked Immunosorbent Assays, ELISAs) 检测技术, 研究了水样中节球藻和柱胞藻毒素的免疫前处理方法. 由于两种藻毒素极性差异较大, 分别对水样中节球藻和柱胞藻毒素采用不同的前处理方法, 具体如下. ①节球藻毒素: 先后用10 mL 甲醇和10 mL 纯水活化C₁₈柱, 以3~4 mL/min的速度上样后用10 mL 纯水淋洗, 再用12 mL 甲醇洗脱节球藻毒素, 氮气吹干后纯水定容至1 mL待测. ②柱胞藻毒素: 先后用10 mL 甲醇和10 mL 纯水活化碳黑固相萃取柱, 以2~3 mL/min的速度上样后用10 mL 甲醇淋洗, 再用12 mL 含0.1% 三氟乙酸的甲醇洗脱柱胞藻毒素, 氮气吹干后用0.1% 氨水定容至1 mL待测. 结果表明, 这两种前处理方法对节球藻与柱胞藻毒素的ELISAs检测能保证有较好的回收率, 加标回收率可分别达到99.4%和77%.

关键词: 节球藻毒素 柱胞藻毒素 ELISAs

Abstract: Effective solid phase extraction (SPE) ex-treatment method and sensitive enzyme-linked immunosorbent assay (ELISA) were developed for determining the nodularins (NOD) and cylindrospermopsins (CYN) in water samples. Due to the different polarities, two different ex-treatment methods were applied to NOD and CYN, respectively. The methods were developed as followed: ① For NOD, firstly the C₁₈ column was activated by 10 mL methanol and 10 mL Milli-Q water; then the sample was applied to the column at 3-4 mL/min; after washing the column with 10 mL water, the NOD was eluted with 10 mL methanol; then the eluent was dried up with a rotary evaporator, and lastly the final volume was fixed to 1 mL with Milli-Q water for ELISA analyse. ② For CYN, the carb SPE tubes were activated with 10 mL methanol and 10 mL Milli-Q water; then the sample was applied to the tubes at 2-3 mL/min; after washing the tubes with 10 mL methanol, the CYN was eluted with 12 mL methanol containing 0.1% trifluoroacetic acid; then the eluent was dried up with a rotary evaporator, lastly the final volume was fixed to 1 mL with Milli-Q water containing 0.1% ammonia for ELISA analyse. The results indicated that these methods can guarantee the good recoveries of NOD and CYN for ELISA analyse, which could reach to 94.3% and 77%, respectively.

Key words: nodularins cylindrospermopsins ELISAs

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