Accumulation and depuration assessment of microcystin congeners in Basil grown on a hydroculture

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AIM

Accumulation of hepatotoxic microcystin congeners (MCs) in crops through irrigation with contaminated water can result in human health risks. MCs are produced by cyanobacteria, which can proliferate in various water bodies. These waterbodies could consequently be used for irrigation. Data on occurrence, accumulation and depuration of MCs are still lacking for many crops. The current study examines the accumulation and depuration of several MCs in basil as an example of a consumed plant in Belgium. MCs occurrence in basil was assessed by collecting samples from the Belgium market.

MATERIAL AND METHODS

Basil plants were grown in a hydroculture and exposed to 5, 10 or 50 µg/L MC-LR (the most prevalent microcystin congener worldwide) for 7 days. Afterward, plants were transferred for 7 days to uncontaminated Hoagland solution to assess the depuration process. An extra set of basil plants were exposed for 7 days to 5, 10 or 50 µg/L total MCs mixture (MC-LR, MC-YR and MC-RR) obtained from cyanobacterial culture. Basil leaves (lab and market) and roots (lab only) were analyzed using a validated UHPLC-MS/MS-based method.

Keywords: Microcystin, agriculture, UHPLC-MS/MS, Food safety, cyanotoxins

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