



A new solid phase extraction sorbent for the extraction of aflatoxins from corn samples

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A solid phase extraction sorbent of polydopamine coated cellulose acetate filters (PDA/CFs) was successfully synthesized and applied for the extraction and preconcentration of aflatoxins B₁, B₂, G₁, G₂ in corn samples. The polydopamine facilitated the high adsorption efficiency of aflatoxins via hydrogen bonding and π - π interaction. The high porosity and large surface area of the cellulose acetate filters helped to reduce back pressure and increased the amount of polydopamine. Several parameters affecting the extraction efficiency of the target analytes, i.e. polymerization time, type of desorption solvent and its volume, sample pH and ionic strength were investigated and optimized. Under the optimal conditions, the method was linear over the range of 0.080-40.0 $\mu\text{g L}^{-1}$ for B₁ and G₁; and 0.040-20.0 $\mu\text{g L}^{-1}$ for B₂ and G₂. The limit of detection was 0.080 $\mu\text{g L}^{-1}$ for B₁ and G₁; and 0.040 $\mu\text{g L}^{-1}$ for B₂ and G₂. This simple, rapid and cost-effective method was successfully applied for the extraction of aflatoxins from corn samples with satisfactory recovery from 80 to 92 % and a relative standard deviation of less than 10 %.

Keywords Aflatoxins; Polydopamine; Cellulose acetate ; Solid phase extraction