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Fabrication of a high selectivity magnetic solid phase extraction adsorbent based on β-cyclodextrin and application for recognition of plant growth regulators

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Highlights in my paper are as follows:

- A magnetic solid phase extraction adsorbent (Fe_3O_4@SiO_2/GO/β-CD) was successfully fabricated.
- Fe_3O_4@SiO_2/GO/β-CD showed selectivity capability for adsorption of 9 plant growth regulators (PGRs).
- The analysis method for 9 PGRs which combined proposed MSPE process with UHPLC-QTrap-MS/MS detection was successfully established.

Abstract: An adsorbent, consisting of silica-coated Fe_3O_4 grafted graphene oxide and β-cyclodextrin (Fe_3O_4@SiO_2/GO/β-CD), which possessed the merits of antioxidation, superparamagnetism, high surface area, high supramolecular recognition and environment friendly, was successfully fabricated. Considering the synergy between β-CD and graphene oxide in adsorption mechanism, the synthesized adsorbent could grasp compounds especially with aromatic structures through π-π interaction, hydrophobic interaction and host-guest inclusion complex forming. Based on the advantages, a magnetic solid phase extraction (MSPE) method for 9 PGRs using Fe_3O_4@SiO_2/GO/β-CD as adsorbents was developed in this study. The characterizations of Fe_3O_4@SiO_2/GO/β-CD were performed on Fourier transform infrared