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ONLINE SAMPLE PREPARATION METHOD FOR COMPLEX SAMPLE ANALYSIS

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Sample pretreatment techniques have been regarded as the most important role of the whole analytical process. The online sample pretreatment mode is a promising way with the advantages of the automation, improvement of sensitivity and reduction of manual error. In this work, sample preparation media, including metal-organic frameworks, microporous organic polymers, graphene and molecularly imprinted polymers, were developed coupling to HPLC for online analysis of complicated samples. A NH2-MIL-53(Al)-polymer monolithic column was prepared and applied to in-tube SPME for online analysis of estrogens in urine. The enrichment factors were 180-304. A micro-solid-phase extraction (µ-SPE) column based on hydrazone linked covalent organic polymer was developed for online analysis of sudan dyes in chilli powder and sausage. The enrichment factors were 305-757. Acylhydrazone bond gel µ-SPE monolithic column was developed and applied to online enrichment and analysis of trace sulfonamides in weever and shrimp. The extraction capacity were 270-401 pmol. A monolithic column based on covalent cross-linked polymer gels for online extraction and analysis of trace aflatoxins in food sample was developed. The enrichment factors were 36-51. Acrylamide-modified graphene was applied to online µ-SPE for trace heterocyclic amines analysis in foods. The enrichment factors were 78-166. A molecularly imprinted monolithic column was developed for the online analysis of trace antimicrobials. The enrichment factors were 46-211. These online sample preparation methods were successfully applied to complex sample analysis.