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Preparation of hybrid molecularly imprinted polymer with double-templates for rapid simultaneous purification of theophylline and chlorogenic acid in green tea

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Abstract

A novel double-templates technique was adopted for solid-phase extraction packing agent, and the obtained hybrid molecularly imprinted polymers with double-templates (theophylline and chlorogenic acid) were characterized by fourier transform infrared and field emission scanning electron microscope. The molecular recognition ability and binding capability for theophylline and chlorogenic acid of polymers was evaluated by static absorption and dynamic adsorption curves. A rapid and accurate approach was established for simultaneous purification of theophylline and chlorogenic acid in green tea by coupling hybrid molecularly imprinted solid-phase extraction with high performance liquid chromatography. With optimization of SPE procedure, a reliable analytical method was developed for highly recognition towards theophylline and chlorogenic acid in green tea with satisfactory extraction recoveries (theophylline: 96.7% and chlorogenic acid: 95.8%). The limit of detection and limit of quantity of the method were 0.01μg/mL and 0.03μg/mL for theophylline, 0.05μg/mL

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