

Fabrication of water-compatible molecularly imprinted resin in deep eutectic solvent for the determination and purification of quinolones in wastewaters

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A novel water-compatible molecularly imprinted resin was prepared in a green solvent deep eutectic solvent (DES). Resorcinol and melamine, as functional monomers with an abundant hydrophilic group, such as -OH, -NH₂ and -NH-, were introduced into the molecularly imprinted resin (MIR). Three DESs (choline chloride-ethylene glycol, tetramethylammonium bromide-ethylene glycol and tetramethylammonium chloride-ethylene glycol) were used to synthesize the molecularly imprinted resin. The resulting deep eutectic solvent-based molecularly imprinted resins (DES-MIRs) were then applied to the adsorption of quinolones in water. The adsorption process of DES-MIRs followed the static adsorption model, Langmuir isotherm ($R^2 \geq 0.9618$) and kinetic model pseudo-second-order ($R^2 > 0.9814$). The highest theory adsorption ability of the three kinds of DES-MIRs was more than 23.79 mg/g. The LODs of DES-MIRs in SPE was less than 0.018 mg/L. The recoveries of this method at three spiked levels were 88.7–94.5%, with RSD of $\leq 4.8\%$.