

Title: Sol-gel coated polypropylene hollow fiber-based liquid-phase microextraction of triazine herbicides in real water samples

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Abstract: A sol-gel coated hollow fiber-based liquid-phase microextraction (LPME) method was developed for the extraction of triazine herbicides. The polypropylene hollow fiber was coated with polydimethylsiloxane-divinylbenzene using sol-gel method and characterized. The developed method was compared with uncoated hollow fiber LPME method for the extraction of simazine, atrazine, and propazine prior to gas chromatography-mass spectrometry analysis. Optimized conditions for both coated and uncoated hollow fibers LPME methods were toluene as an acceptor phase, length of hollow fiber (1.5 cm), volume of acceptor phase (3.0 μ L), stirring rate (1200 rpm), and no addition of salt (sodium chloride). The optimized volumes of donor phase for uncoated fiber and coated fiber were 4.0 and 4.5 mL, respectively, while the optimized extraction times were 30 min for uncoated hollow fiber and 10 min for coated hollow fiber. The developed sol-gel coated hollow fiber LPME method provided good enrichment factors (EFs) ranging from 100 to 139, good recoveries (75.27–104.47%), and good reproducibility (relative standard deviations [RSDs] < 0.83%). Meanwhile, uncoated hollow fiber LPME method showed lower EFs ranging from 80 to 90 and relatively low recoveries of 60.72–68.17%, whereas it has good reproducibility with RSDs < 0.94%. The proposed method was successfully applied to the analysis of real water samples and the analyte recoveries for spiked water samples was in the range of 42.54–78.75%.