



Extraction and Preconcentration of Indomethacin with Magnetic Nanoparticles adsorbent prior to its Spectrophotometric determination

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Abstract : A novel, fast and sensitive method based on cetyltrimethyl ammonium bromide coated Fe_3O_4 nanoparticles adsorbent was developed for solid-phase extraction of indomethacin. The unique properties of magnetic nanoparticles (MNPs) including high surface area and super paramagnetism give the advantages of high extraction capacity, fast separation and low consumption of the adsorbents to the method. The main parameters affecting the extraction and desorption efficiently, such as the amount of surfactant, pH of sample solution, desorption conditions, breakthrough volume, amount of MNPs, extraction and desorption times, and ionic strength were investigated and optimized. Under optimum conditions, the method was successfully applied to the determination of the analyte and good linearity in the range of $0.09\text{-}25 \mu\text{g mL}^{-1}$ ($r^2=0.9951$) was achieved with the low detection limit of 161 ng mL^{-1} . The relative standard deviations (RSD%) 2.16 and 1.33% (for concentration of 0.9 and $0.09 \mu\text{g mL}^{-1}$ respectively) and a good enrichment factor of 98 were obtained. The method was successfully applied to the determination of indomethacin from human plasma and urine samples and good recoveries in the range of 64-67% were obtained.

Keywords: Indomethacin, Magnetic Nanoparticles Adsorbent..

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