Research in Pharmaceutical Sciences, 2012;7(5)
School of Pharmacy and Pharmaceutical Sciences
Isfahan University of Medical Sciences

Determination of propranolol in water and hair samples by highly selective molecularly imprinted polymers extraction followed by liquid chromatography

M. Samizade*

Department of Chemistry, Faculty of Sciences, Islamic Azad University, Mashhad Branch, Iran

Background and Aims: This paper describes the development of an analytical methodology to determine propranolol in water and hair samples using molecularly imprinted polymers (MIPs) coupled with nano magnetic material as extraction and pre-concentration material, followed by liquid chromatography. The specific selectivity was discovered with the MIP-coated fibers to propranolol and its structural analogues such as atenolol, pindolol, and alprenolol. In contrast, only non-specific adsorption could be shown with the non-imprinted polymer (NIP)-coated fibers, and the extraction efficiencies of propranolol and pindolol with the MIP-coated fibers were higher markedly than that with the commercial SPME fibers. A MIP-coated SPME coupled with high-performance liquid chromatography (HPLC) method for propranolol determination was developed under the optimized extraction conditions. The method was validated on a C18 column with a mobile phase composed of acetonitrile , methanol and water (25:25:50 , v/v) adjusted to pH 3 and the effluent from the column was monitored at 228 nm.
Results: Linear ranges for propranolol were 20–5000ng.L-1 and detection limits were 2.5 ng.L-1.
Conclusions: Propranolol in the water and hair samples, extracted with organic solvent firstly, could be simultaneous monitored with satisfactory recoveries through this method.

Keywords: Propranolol; Solid phase microextraction; Molecularly imprinted polymer; Liquid chromatography