

Synthesis and Characterization of Molecular Imprinting Polymer Microspheres of Cinnamic: Extraction of Cinnamic Acid from Spiked Blood Plasma

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ABSTRACT

The molecular imprinting technique is used to create the molecularly imprinted polymers (MIPs) with higher binding capacity towards the template. In this research precipitation polymerization method with non-covalent approach was used to synthesize imprinted polymer microspheres. The polymerization reaction was conducted in a flask containing acetonitrile as a porogen, cinnamic acid as a template (T), acrylic acid (AA) as a monomer, divinylbenzene (DVB) as a cross-linker and azobisisobutyronitrile as an initiator. The polymer particles were characterized by using SEM and FTIR. The rebinding efficiency was conducted by batch binding assay and the results were monitored by using HPLC. The batch binding results suggested MIP1 (T: AA: DVB, 1: 6: 20 molar ratio) is most suitable composition for the rebinding of cinnamic acid. The highly selective polymer (MIP1) was used for the extraction of cinnamic acid from human plasma. The extraction efficiency of imprinted polymer of cinnamic acid from spiked plasma was above 75%.

Key words: Molecular imprinting polymers, Cinnamic acid, Acrylic acid, Divinylbenzene