

Thesis Title	Molecular Imprinted Solid Phase Extraction for Determination of Caffeine by High Performance Liquid Chromatography.
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ABSTRACT

The synthetic molecular imprinted polymers (MIPs) was prepared by thermal polymerization at 60 °C, using caffeine as the template, methyl methacrylic acid (MAA) as the functional monomer, ethylene glycol dimethacrylate (EDMA) as the cross-linked monomer and benzoyl peroxide (BPO) as the initiator. This polymer was packed in a cartridge and used as a solid-phase extraction (SPE) sorbent for pre-concentration of caffeine. Studied properties of molecular imprinted polymer by FT-IR. TGA analysis, melting temperature of control polymer (P) was 295.466 °C, molecular imprinted polymer which used template caffeine 0.25 mmol (P₁) is 223.743 °C, molecular imprinted polymer which used template caffeine 0.50 mmol (P₂) is 221.981 °C and molecular imprinted polymer which used template caffeine 0.75 mmol (P₃) is 274.904 °C. The particle size of molecular imprinted polymer was determined by Mastersizer X for control polymer (P) found the average particle size were 47.48 µm., P₁ 47.25 µm., P₂ 48.93 µm. and P₃ 52.58 µm. This 4 types of polymer were packed into cartridge for extraction of caffeine before determined with HPLC. The condition for pre-concentration of caffeine standard solution by solid phase extraction (SPE) technique we found that the loading step used buffer solution (0.05 M CH₃COONH₄(aq) pH 9) as loading solution then buffer solution (0.05 M CH₃COONH₄(aq) pH 9) as first washing step and 1 mL. of CH₃CN-CH₃COOH 1% solution for the second washing. For elution step used 1 mL. of CH₃CN-triethylamine (TEA) 1% solution. In each step we collected the solutions and determination of caffeine by HPLC technique. We found %recovery of P₁, P₂, P₃ and P were 99.43, 99.96 113.55 and 87.64. The extraction

efficiency of molecular imprinted polymer for xanthine compounds found P_1 , P_2 and P_3 specific with caffeine especially for P_2 .