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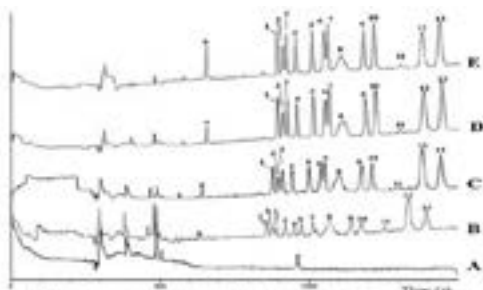
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Fabrication of a magnetic molecularly imprinted polymer for pre-concentration and cleanup of sarcosine, a prostate cancer metabolic biomarker, in urine prior to capillary electrophoresis determination

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Sarcosine, a non-proteinogenic amino acid, is an intermediate product in the synthesis and degradation of amino acid glycine. Recently, it has been investigated as a prostate cancer (CaP) biomarker, a most common type of tumor disease in men. It is a candidate for diagnosis of early stages of CaP in the body fluid such as urine instead of prostate-specific antigen (PSA). PSA can only be detected in plasma when the disease progresses. Scientists have different opinion about its suitability as a biomarker in early diagnosis of CaP. This is due to false positive results because of interference from amino acid, aniline in the quantitation methods. Therefore, liquid chromatography or gas chromatography equipped with tandem mass detection is applied for its quantitation. For the accurate determination in biological matrixes such as urine, a good cleanup and pre-concentration technique is also required. Molecularly imprinted polymer as a synthetic antibody is a good approach. In the present survey, a new magnetic molecularly imprinted polymer (MMIP) using a chelate-Cu-sarcosine as the template, methacrylic amide as the monomer, ethylene glycol dimethacrylate as crosslinker and 2,2-azobis(butyronitril) as an initiator is introduced. Synthesis of the MMIP was optimized by two heating methods, microwave irradiation and conventional heating. On column derivitization capillary electrophoresis analysis was used to determine 13 amino acids including sarcosine. Fig. 1 shows electrophoregram for the mixture of amino acids determined by the proposed method. In the electrophoregram, aniline and sarcosine are appeared at different times. So, the interference of aniline is eliminated.



Biography

Zahra Ramezani is currently professor of analytical chemistry at Ahvaz Jundishapur University of Medical Sciences. She earns her BSc in pure chemistry, MSc and Ph.D. in analytical chemistry at Shiraz University, Iran. She is currently working on the synthesis of artificial antibodies for drug and diseases biomarker determinations in complicated matrixes such as urine, saliva and plasma as well as drug delivery.

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