Chromatographic Preparation and Performance on Zinc Ion Imprinted Monolithic Column and Its Adsorption Property

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Abstract : The ionic imprinting technique refers to the three-dimensional rigid structure with the fixed pore sizes, which was formed by the binding interactions of ions and functional monomers and used ions as the template, it has a high level of recognition to the ionic template. The preparation of monolithic column by the in-situ polymerization need to put the compound of template, functional monomers, cross-linking agent and initiating agent into the solution, dissolve it and inject to the column tube, and then the compound will have a polymerization reaction at a certain temperature, after the synthetic reaction, we washed out the unread template and solution. The monolithic columns are easy to prepare, low consumption and cost-effective with fast mass transfer, besides, they have many chemical functions. But the monolithic columns have some problems in the practical application, such as low-efficiency, quantitative analysis cannot be performed accurately because of the peak shape is wide and has tailing phenomena; the choice of polymerization systems is limited and the lack of theoretical foundations. Thus the optimization of components and preparation methods is an important research direction. During the preparation of ionic imprinted monolithic columns, pore-forming agent can make the polymer generate the porous structure, which can influence the physical properties of polymer, what's more, it can directly decide the stability and selectivity of polymerization reaction. The compounds generated in the pre-polymerization reaction could directly decide the identification and screening capabilities of imprinted polymer; thus the choice of pore-forming agent is quite critical in the preparation of imprinted monolithic columns. This article mainly focuses on the research that when using different pore-forming agents, the impact of zinc ion imprinted monolithic column on the enrichment performance of zinc ion.

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