

研究论文

单分散大孔亲水弱阳离子交换填料的制备及其对鱼精蛋白的分离纯化

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摘要 以自制的5.0 μm单分散大孔亲水交联聚甲基丙烯酸环氧丙酯(PGMA/EDMA)微球为基质, 对其表面进行化学改性, 合成弱阳离子交换色谱填料(WCX)。详细考察了该填料对标准蛋白质的分离性能、表面亲水性能、稳定性和重现性以及流速对蛋白保留的影响。实验结果表明, 该色谱填料对蛋白的分离性能、重现性及稳定性良好; 在流速为3 mL/min时, 采用线性梯度洗脱, 6 min内可分离4种标准碱性蛋白质, 以溶菌酶测定的该填料的动力学吸附容量为29.86 mg/g。将其用于鱼精蛋白的分离纯化, 经反相高效液相色谱测定纯化后鱼精蛋白的纯度为99.2%; 与商品Shodex IEC SP-825强阳离子交换色谱柱比较, 纯化结果几乎一样。

关键词 [单分散大孔亲水交联聚甲基丙烯酸环氧丙酯微球](#) [弱阳离子交换填料](#) [蛋白质纯化](#) [鱼精蛋白](#)

Preparation of weak cation exchange packing based on macroporous monodisperse hydrophilic resins and their application for the separation and purification of protamine

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Abstract

A new kind of weak cation exchange (WCX) stationary phase for high performance liquid chromatography (HPLC) was synthesized by the chemical modification of 5.0 μm macroporous monodisperse hydrophilic poly(glycidylmethacrylate-co-ethylenedimethacrylate)(PGMA/EDMA) beads. The stationary phase was evaluated in detail to determine its separability, hydrophilicity, reproducibility and stability. It was found that the column exhibited excellent properties on the protein separation, reproducibility and stability. Four proteins were separated with linear gradient elution on the synthesized WCX stationary phase in 6 min. The highest dynamics protein loading capacity of the WCX packing for lysozyme (Lys) was 29.86 mg/g. The WCX packing was used for the fast separation and purification of protamine from carp with only one step. The purity of the obtained protamine detected by reversed-phase HPLC was 99.2%. Therefore satisfactory results have been obtained. Compared with the Shodex IEC SP-825 strong cation exchange column for the purification of protamine, the purity of protamine obtained from this column was almost same.

Key words [macroporous monodisperse hydrophilic polymeric beads](#) [weak cation-exchange packing](#) [purification of proteins](#) [protamine](#)

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