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研究论文

以四唑为固定相配体的新型离子交换固定相的制备及色谱性能

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摘要 用硅胶与γ-缩水甘油基丙基三乙氧基硅烷和3-羟基丙腈反应, 再采用链接化学(Click chemistry)中腈与叠氮化钠进行的3+2环加成反应, 合成了以四唑基为配体的弱阳离子交换色谱固定相. 结果表明, 所制得的色谱柱(4.6 mm×50 mm, i.d.)对蛋白质具有良好的分离性能, 且质量回收率大于93%. 蛋白质在该固定相上的保留符合弱阳离子交换色谱机理, 但保留值随流动相pH的变化规律与蛋白质在以羧基为交换基团的固定相上的保留值的变化规律不同, 并对此现象进行了初步解释.

关键词 离子交换色谱 固定相 配体 四唑 生物大分子

分类号 0657

Preparation and Chromatographic Behavior of Novel Tetrazole Bonded Stationary Phase for Ion-exchange Chromatography of Proteins

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Abstract A novel tetrazole bonded ion-exchange stationary phase was presented. Tetrazole-functionalized stationary phase was prepared by treatment of silica gel with γ-glycidoxypropyltriethoxysilane, then 3-hydroxypropionitrile, followed by the Zn(Ⅱ)-catalyzed(3+2) azide-nitrile cycloaddition, which is an element of "click chemistry". The resulting column(4.6 mm×50 mm i.d.) exhibited an excellent separation ability for proteins with high protein mass recoveries of more than 93%, and displayed a property of weak cation ion-exchange chromatography, but the changes in the retentions of protein with pH variation were diffe-rent from those obtained on the carboxylic acid bonded ion-exchanger, for which the reason was preliminarily explained.

Key words Ion-exchange chromatography Stationary phase Ligand Tetrazole Biopolymers

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