On-Line Sample Enrichment and Cleanup for High Performance Liquid Chromatography with Column Switching Technique

Hideo IMAI, Tsutomu MASUJIMA*, Ikue MORITA-WADA* and Gen TAMAI

ABSTRACT The usability of column-switching techniques of high performance liquid chromatography is reviewed with special interest given to the enrichment and cleanup of biological samples. In Section 2, band broadening and a fully automated operation system are especially noted. In Sections 3 and 4, it is emphasized that the recovery of on-line solid extraction in a precolumn is quantitative (100%), depending upon the combination of the stationary phase and the mobile phase. In Section 5, are elucidated the deproteinization and recovery from protein-bound entities by a size exclusion coupled with internal-surface reversed-phase techniques or by hydrophobic interaction. These methods are extensively applied to the biological samples, such as whole blood and tissue homogenates, which contain minute particles, by using a large-bore endfitting filter for the precolumn.

抄録 HPLCのカラムスイッチング技術の有用性を、ときに生体試料の濃縮と精製への関心から概説した。第2節に、カラムスイッチングによる溶離ビーグの拡がりと全自動装置について述べ、第3～4節に、プレカラムによる固相抽出の回収率が固定相と移動相の組合せによって100％にできること、ISRPあるいは硫水相互作用クロマトグラフ樹脂を用いて、蛋白結合分を失うことなく除蛋白できることを示した。さらにこの方法を生体組織ホモジネートの直接注入HPLC分析に適用できることについて概説した。

* Hiroshima University School of Medicine 広島大学医学部