

研究论文

磷脂的分离纯化及高效毛细管电泳分析

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摘要 采用溶剂提取和柱色谱法分离纯化市售大豆粉末磷脂(卵磷脂含量14.05%),得到高纯度的卵磷脂产品(纯度92.80%)。重点建立了磷脂的胶束电动毛细管色谱(MECC)分离分析方法。以分离度和峰面积为优化指标,对表面活性剂及其浓度、电泳缓冲液pH、有机改性剂及其含量、缓冲液浓度、温度等条件进行优化,确定了最优电泳条件:电泳缓冲液为35 mmol/L脱氧胆酸钠-1 mmol/L 硼砂缓冲液/正丙醇(体积比为57:43)(pH 8.30),柱温44 °C,操作电压25 kV,检测波长200 nm;内加法定性磷脂组分;外标法定量卵磷脂。结果表明,MECC法能有效分离5种磷脂组分;0.1~1 g/L的质量浓度范围内卵磷脂的线性关系良好($r=0.9990$),平均回收率为98.0%,日内、日间精密度分别为1.36%和3.27%,定性结果与薄层色谱法、红外光谱法的定性结果相符。

关键词 [高效毛细管电泳](#) [胶束电动毛细管色谱](#) [分离纯化](#) [磷脂](#) [卵磷脂](#)

分类号

Fractionation and High Performance Capillary Electrophoretic Analysis of Phospholipids

Abstract

Phosphatidylcholine of high purity (PC, content 92.80%) was prepared from market soybean power phospholipids (PC content 14.05%) by using solvent extraction and column chromatography. As the main objective, micellar electrokinetic capillary chromatography (MECC) was established for the separation and analysis of phospholipids. MECC conditions such as surfactant and its concentration, pH of running buffer solution, organic modifier and its volume content, concentration of buffer solution, temperature etc were optimized to provide good separation and larger peak area of phospholipids. The optimum MECC conditions were as follows: running buffer system of 35 mmol/L sodium deoxycholate (SDC)-1 mmol/L borax buffer solution/n-propanol (57: 43, v/v) with pH 8.30, column temperature of 44 °C, applied voltage of 25 kV and ultraviolet (UV) detection at 200 nm. Addition of standards was used to identify the components of phospholipids. External standard method was used to determine PC content. As the results shown, five components of phospholipids could be effectively separated under the optimum MECC conditions. Correlation coefficient within 0.1-1 g/L PC concentration reached 0.9990. The average recovery of PC was 98.0%. The intra-day relative standard deviation (RSD) and inter-day RSD of peak area of PC were 1.36% and 3.27%, respectively. The qualitative result of PC obtained by MECC was consistent with that determined by thin layer chromatography and infrared analysis, respectively. So MECC can be used as an effective tool for the separation, analysis and quality control of phospholipids.

Key words [high performance capillary electrophoresis \(HPCE\)](#) [micellar electrokinetic capillary chromatography \(MECC\)](#) [fractionation](#) [phospholipids](#) [phosphatidylcholine](#)

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