

Application a New Liquid Chromatography Method with Charge Aerosol Detector (CAD) for the Determination of Milk Phospholipids

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Investigations of phospholipids (PLs) composition of biological tissues require accurate methods for the separation and quantification of PLs classes. The main problem in these analysis is the lack of satisfactory detection methods enables the quantification of all major PLs classes. Recently a new detection method based upon aerosol charging (charge aerosol detector – CAD) has been introduced.

In this report a new rapid method for the quantitative analysis of phosphatidylcholine - PC, lysophosphatidylcholine - LPC, phosphatidylethanolamine - PE and phosphatidylserine - PS and phosphatidylinositol – PI, using liquid chromatography with charge aerosol detector (CAD) is described. The separation of the compounds of interest was achieved on a diol stationary phase with a mobile phase consisting of 13% HCOOH, hexane and 2-propanol in 19 minutes elution program, including 10 min. equilibration of the column. The method was applied to characterized the phospholipid fractions of cow milk. PLs present in cow milk were separated by solid-phase extraction (SPE) procedure with Si cartridges before LC analysis with recovery ranging from 95.3% to 104.4%. The use of CAD detection of the eluted compounds was precise, linear and sensitive. The RSD values ranged from 0.70 to 11.82% for all analysis. Total amount of PLs in the milk samples ranged from 22.7 to 31.3 mg/100 mL of milk. Phosphatidylcholine (PC) was by far the most predominant PL (43.2 to 46.4%) followed by PE (29.9 to 34.2%), PS (8.1 to 8.6%), PI (7.7 to 11.5%) and SM (4.0 to 5.1%).

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