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Chromatographic Multivariate Calibration Approaches to the Simultaneous Quantification of Three Different Drugs in Effervescent Tablets

Faysal SELIMOĞLU [1] *, Yücel KADIOĞLU [2] & Erdal DINÇ [3]

[1] *Necmettin Erbakan University, Faculty of Science, Department of Biotechnology, Konya, Turkey*

[2] *Atatürk University, Faculty of Pharmacy, Department of Analytical Chemistry, Erzurum, Turkey*

[3] *Ankara University, Faculty of Pharmacy, Department of Analytical Chemistry, 06100 Tandoğan, Ankara, Turkey*

***SUMMARY*. In this research paper, PCR and PLS calibration models were used for processing chromatographic data to get the simultaneous quantification of paracetamol (PAR), caffeine (CAF) and aspirin (ASP) in effervescent tablets. The chromatographic data of the calibration set and samples of analytes were obtained by measuring photodiode array (PDA) detection at a set of eight different wavelengths (245, 250, 255, 260, 265, 270, 275, and 280 nm). Chromatographic analysis was accomplished using an Acquity UPLC BEH Phenyl (50 × 2.1 mm id, 1.7 μm) column and a mobile phase consisting of 0.1 M acetic acid and methanol (75:25, v/v) with a flow rate of 0.35 mL/min. The validation for the proposed multivariate chromatographic PLS and PCR approaches were accomplished by the analysis of the validation samples containing PAR, CAF, and ASP. Analysis results of chromatographic PLS and PCR techniques were compared to those of traditional ultra-performance liquid chromatography and then comparable results were reported.**

RESUMEN. En este trabajo de investigación, se utilizaron modelos de calibración de PCR y PLS para procesar datos cromatográficos y obtener la cuantificación simultánea de paracetamol (PAR), cafeína (CAF) y aspirina (ASP) en tabletas efervescentes. Los datos cromatográficos del conjunto de calibración y las muestras de analitos se obtuvieron midiendo la detección de la matriz de fotodiodos (PDA) en un conjunto de ocho longitudes de onda diferentes (245, 250, 255, 260, 265, 270, 275 y 280 nm). El análisis cromatográfico se realizó utilizando una columna Acquity UPLC BEH Phenyl (50 × 2.1 mm id, 1.7 μm) y una fase móvil que consiste en ácido acético 0.1 M y metanol (75:25, v/v) con un flujo de 0.35 mL/min. La validación de los enfoques cromatográficos multivariados PLS y PCR propuestos se realizó mediante el análisis de las muestras de validación que contienen PAR, CAF y ASP. Los resultados del análisis de las técnicas cromatográficas de PLS y PCR se compararon con los de la cromatografía líquid de ultra rendimiento tradicional y luego se informaron resultados comparables.

KEY WORDS: aspirin, caffeine ultra-performance liquid chromatography, paracetamol partial least squares, principal component regression.

* Author to whom correspondence should be addressed. *E-mail*: fselimoglu@konya.edu.tr

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