

Improved Determination of Pyrimidines and Purines via Capillary Zone Electrophoresis in Mixed Acetonitrile-Aqueous Media

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SUMMARY. A simple approach for simultaneously determining 11 purine and pyrimidine bases (cytosine, thymidine, thymine, adenine, adenosine, guanine, uracil, guanosine, uridine, hypoxanthine, xanthine) in DNA and beer via capillary zone electrophoresis in mixed aqueous-acetonitrile media was the first to be developed. A running buffer comprising 35% acetonitrile and 17 mM sodium tetraborate was detected to be the most appropriate for such a separation. The detection limits of 11 analytes were above the scope of 0.10-0.26 µg/mL. The RSDs of the migration times as well as the peak zones of the analytes were within the scope of 0.9-2.9% and 1.8%-2.7% (intraday), 1.6-3.5 and 2.2-3.4% (intraday), separately. Within the experimental concentration scope, good linearities of peak zones and concentrations of analytes were achieved. This means has been effectively used to simultaneously determine the 11 purine & pyrimidine bases with recoveries over the range of 95.2 to 104.5%.

RESUMEN. Un enfoque simple para determinar simultáneamente 11 bases de purina y pirimidina (citosina, timidina, timina, adenina, adenosina, guanina, uracilo, guanosina, uridina, hipoxantina, xantina) en ADN y cerveza a través de electroforesis de zona capilar en medios mixtos de acetonitrilo acuoso fue el primero en ser desarrollado. Se detectó que un tampón de funcionamiento que comprendía acetonitrilo al 35% y tetraborato de sodio 17 mM era el más apropiado para dicha separación. Los límites de detección de 11 analitos estaban por encima del alcance de 0,10-0,26 µg/mL. Las RSD de los tiempos de migración, así como las zonas de pico de los analitos, estuvieron dentro del rango de 0,9-2,9 % y 1,8 %-2,7 % (intradía), 1,6-3,5 y 2,2-3,4 % (intradía), por separado. Dentro del alcance de la concentración experimental, se lograron buenas linealidades de las zonas de pico y concentraciones de analitos. Este medio se ha utilizado eficazmente para determinar simultáneamente las 11 bases de purina y pirimidina con recuperaciones en el rango de 95,2 a 104,5%.

KEY WORDS: acetonitrile, capillary zone electrophoresis, purine, pyridine.

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