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# Evaluation of the combination of micellar electrokinetic capillary chromatography with sweeping and cation selective exhaustive injection for the determination of 5-nitroimidazoles in egg samples

Diego Airado-Rodríguez, Maykel Hernández-Mesa, Ana M. García-Campaña, Carmen Cruces-Blanco\*

Department of Analytical Chemistry, Faculty of Sciences, University of Granada.

Campus Fuentenueva s/n. E-18071 Granada, Spain

\*e-mail address: mcruces@ugr.es

## Abstract

A methodology is presented for the sensitive determination of nitromidazole residues in egg by means of micellar electrokinetic capillary chromatography in combination with cation selective exhaustive injection and ultraviolet detection. Six compounds have been considered and the separation has been achieved in less than 12 minutes in a 61.5-cm effective length capillary with 50- $\mu\text{m}$  internal diameter. Phosphate buffer 44 mM pH 2.5, containing 8 % tetrahydrofurane and 123 mM sodium dodecyl sulfate was employed as running buffer. Solid phase extraction has been employed for sample clean-up. The methodology has been successfully validated in hen eggs, obtaining method detection limits in the range of 2.1-5.0 ng/g. Precision was studied in terms of repeatability and intermediate precision, with relative standard deviations lower than 18.0 %. Recoveries were calculated in quail eggs and a commercial pasteurized egg white product, reaching over 70 % for most of the considered 5-nitroimidazoles.

**Keywords:** 5-nitroimidazoles, micellar electrokinetic capillary chromatography, cation selective exhaustive injection, egg samples.

## INTRODUCTION

5-Nitroimidazoles (5-NDZs) are imidazole heterocycles containing a  $\text{NO}_2$  group on the fifth position of their ring. These compounds have important therapeutic effects against some diseases caused by a variety of protozoans and anaerobic bacteria, being effective against amoebiasis, giardiasis and trichomoniasis. As a result, they were used in the prophylactic and therapeutic treatment of histomoniasis and coccidiosis in poultry (Bishop, 2005) and for combating

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