



Evaluation of the QuEChERS-LC/MS/MS method to determine residues of 31 pesticides in samples of foods with high and low moisture content

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Introduction

The determination of residues of pesticides in foods, mainly in fresh fruits and vegetables, is of great relevance in the agro-food safety. Currently, food safety is a basic requirement of food quality, therefore progress in this area and the expansion of international trade are compatible and mutually reinforcing.

Objective

In this sense, we evaluated the QuEChERS method, for the extraction of 31 pesticides, in food samples of high (fruits) and low (flour) moisture content, and subsequent quantification by liquid chromatography-mass spectrometry (LC/MS/MS).

Materials and Methods

Samples blank were obtained from organic production in the case of fruits, and from the local market in the case of flour. The preparation of the samples was performed according to the Pesticide Analytical Manual (McMahon & Hardin, 1998), which were fortified at seven levels of concentration. Extraction was carried out using the QuEChERS method and quantification by LC/MS/MS (Anastassiades *et al.*, 2003). The method

was validated based on the parameters of specificity, linearity, accuracy, robustness, precision, bias, limit of detection (LOD) and limit of quantification (LOQ).

Results

The results indicate that there is no significant influence of the matrix effect on the identification and quantification of the analytes of interest; high values of the determination coefficients were obtained ($r^2 > 0.99$); the average recovery was between 84 and 104%; the coefficients of variation were in the range of 3.71-10.96% and 5.98 and 16.83% for the samples of high and low moisture content, respectively. Finally, LOD values were set in the range of 0.003 to 0.011 and 0.013 to 0.040 mg/kg for high and low moisture matrices, respectively. While LOQ values were set in the range of 0.010 to 0.032 and 0.04 to 0.149 mg/kg, for high and low moisture matrices, respectively.

Conclusión

The results indicate that the proposed method is highly specific, accurate, and linear in the proposed analytical range.



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