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Authors: E. Hakme, A. Lozano, S. Uclés, M.M. Gomez-Ramos, A.R. Fernández-Alba

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High-throughput Gas chromatography-Mass spectrometry analysis of pesticide residues in spices by using the Enhanced Matrix Removal-lipid and the sample dilution approach

E.Hakme, A.Lozano, S.Uclés, M.M.Gomez-Ramos, A.R.Fernández-Alba

European Union Reference Laboratory for Pesticide Residues in Fruit & Vegetables, University of Almeria, Agrifood Campus of International Excellence (ceiA3) Department of Hydrogeology and Analytical Chemistry, Ctra. Sacramento S/Nº, La Cañada de San Urbano, 04120, Almería, Spain. E-mail: amadeo@ual.es Tel: 950 015 034.

Highlights

- The sample dilution approach allows the reduction of matrix interferences.
- QuEChERS citrate using EMR-Lipid resulted in the cleanest extract.
- The analyses were performed on a GC-MS/MS, applying a 15 min runtime method covering 205 compounds.

Abstract

Spices are known as difficult matrices that contain variable amounts of fats, piperine or many other matrix constituents. The increasing sensitivity of new GC-MS/MS platforms opens new approaches to analyze pesticide residue in complex matrices such as spices, by sample dilution. The aim of this work is to develop and validate an effective multiresidue method for the analysis of pesticide residues in spices by GC-MS/MS. In this paper, we highlight the importance of reducing matrix interferences generated from co-extractive components of spices. Moreover, we emphasize the concern of obtaining clean extracts requiring less instrument maintenance. By evaluating the total ion chromatograms (TIC) on GC-Orbitrap-MS of different extracts using various sorbents, QuEChERS citrate using EMR-Lipid sorbent resulted in the cleanest extract among Z-Sep, Primary secondary amine (PSA), Oasis[®] Prime HLB, and Supelclean[™] Ultra

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